I'M THE BOSS OF MY BODY!
STOP SEXUAL ABUSE!

STOP SEXUAL ABUSE!
STOP TOUCHING ME!
RUN!

TELL!
REPORT TO POLICE

IT IS EVERYONE'S RESPONSIBILITY TO
STOP SEXUAL ABUSE

ABUSERS MUST
BE REPORTED
AND DEALT WITH
LAWFULLY!

TALK TO PARENTS
AND EDUCATORS

It is EVERYONE’s responsibility to
stop sexual abuse.

Abusers must
be reported
and dealt with
lawfully!

Talk to parents
and educators

Stop touching me!
Run!

Tell!
Report to police

Name: ____________________________
Class: ____________________________
Grade 6

Mathematics

PART 3

WORKSHEETS
65 to 144

ENGLISH

Book 2

Name:
Term 3

1. What would you weigh with the following measuring instruments? Would you weigh it in kilograms or grams?

<table>
<thead>
<tr>
<th>Type</th>
<th>For measuring:</th>
<th>Kilograms or grams</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bathroom scale</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Balance scale</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kitchen scale</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spring scale</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

What would you weigh with these scales? Are they analogue or digital scales?
a. b. c. d.
We use **scales** to measure **mass** and **weight**. Most people use both words as if they are the same, though they are different. The **mass** of an object is how much matter it contains. It does not change. The **weight** of an object changes according to gravity. An object weighs six times more on earth than on the moon, and weighs nothing in empty space, even though its mass remains the same everywhere.

A **balance scale** measures mass. A **spring scale** measures weight. On earth both types of scale give us the same approximate reading, so for everyday practical activities we can also use spring scales (such as bathroom and kitchen scales) to measure mass.

2. How would you measure the mass of the following (with what instrument and in grams or kilograms)?

   a. A bunch of bananas:

   b. Sugar for a cake recipe:

   c. A child visiting the clinic:

   d. A laptop computer:

3. Answer the following questions.

   a. We make use of scales to weigh objects.
      i. Is there only one type of scale? ________
      ii. Name some of the types of scales we use and what we use them for.

   b. Will a bag full of cotton waste have a larger mass than the same size bag half filled with steel nails? ________

   c. We use grams (g) and kilograms (kg) when measuring mass.
      i. Which unit of measurement do you think we use to measure heavier objects? ________
      ii. Which unit of measurement do you think we use for lighter objects? ________
What is a scale? Circle all the measuring instruments used to weigh objects. What would you weight with each of those measuring instruments?

<table>
<thead>
<tr>
<th>Measuring instrument</th>
<th>Give an example what you can weigh with it</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring scale</td>
<td>Meat</td>
</tr>
</tbody>
</table>

1. What do we weigh with measuring instruments?

2. Answer the following:
   a. How many grams are there in a kilogram? __________
   b. How many grams are there in 2.4 kilograms? __________
   c. How many grams are there in 100 kilograms? __________
   d. How many kilograms is 23 500 grams? __________
   e. How many kilograms is 48 250 grams? __________
3. What do you see around you that weighs about 1 kilogram? (You may not answer, “1 kilogram packet of sugar etc.”).

4. Look at these things. Estimate how much each one weighs.

   a. Tennis ball
   b. Medium sized dog
   c. Car
   d. Sport shoes

2. Answer the following:
   a. How many grams are there in a kilogram?
   b. How many grams are there in 2,4 kilograms?
   c. How many grams are there in 100 kilograms?
   d. How many kilograms is 23 500 grams?
   e. How many kilograms is 48 250 grams?
5. Complete the intervals for this spring balance and number them.

6. What is the reading on each of these spring scales?
   
   i. a. __________  b. __________

   c. __________  d. __________

   c. __________  f. __________

   ii. 1 kg = __________ mm on the spring balance? __________

   iii. Will this be the same for all spring balances? __________
7. How much does the object weigh on these spring scales?

Make your own scales

You can make your own scales from household objects.

You can make a spring scale using a spring and paper clips.

You can make a balance scale as illustrated here.
1. Circle the most appropriate unit to measure each object.

<table>
<thead>
<tr>
<th>Mass</th>
<th>Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Truck</td>
<td>mg, g, kg</td>
</tr>
<tr>
<td>Book</td>
<td>mg, g, kg</td>
</tr>
<tr>
<td>Insect</td>
<td>mg, g, kg</td>
</tr>
<tr>
<td>Chicken</td>
<td>mg, g, kg</td>
</tr>
</tbody>
</table>

2. The mass of 1 litre of water = 1 kg. Complete the following:

a. 2 litre of water = kg.
b. 500 ml of water = kg.
c. 250 ml of water = kg.
d. 125 ml of water = kg.
e. 50 ml of water = kg.
f. 2 300 ml of water = kg.
g. 1,5 litre of water = kg.
h. 4,55 litre of water = kg.
3. Complete the table below and answer the questions.

<table>
<thead>
<tr>
<th>Liquid (1 litre)</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>0.737 kg</td>
</tr>
<tr>
<td>Sea water</td>
<td>1.027 kg</td>
</tr>
<tr>
<td>Milk</td>
<td>1.000 kg</td>
</tr>
<tr>
<td>Paraffin</td>
<td>0.800 kg</td>
</tr>
<tr>
<td>Petrol</td>
<td>0.920 kg</td>
</tr>
<tr>
<td>Cooking oil</td>
<td>0.800 kg</td>
</tr>
<tr>
<td>Mercury</td>
<td>13.590 kg</td>
</tr>
</tbody>
</table>

a. Which liquid is the lightest? **Water**
b. Which liquid is the heaviest? **Mercury**
c. Why do the mass of these liquids differ?

Some thinking fun ...

- With an unlimited supply of water and only two unmarked containers with a capacity of exactly 9 litres and 4 litres.
- How can you measure out exactly 6 litres of water into one or both of these containers?
- What will happen if the task spoke of 9 kg, 4 kg and 6 kg of water instead of litres? Would your answer be the same or different? Why?
Solving problems with mass

Revise: go through this summary on solving a problem using the questions as a guide

<table>
<thead>
<tr>
<th>i. Read and underline the question.</th>
<th>ii. Write down the numbers and hidden numbers.</th>
<th>iii. Write down the key word/s.</th>
</tr>
</thead>
<tbody>
<tr>
<td>What are you looking for in this problem?</td>
<td>Note that sometimes the numbers are written in words.</td>
<td>What basic operation (+, - , x or ÷) will you use?</td>
</tr>
<tr>
<td>iv. Cross out the numbers you don't need.</td>
<td>v. Solve by using pictures, drawings or concrete apparatus.</td>
<td>vi. Write a number sentence.</td>
</tr>
<tr>
<td>What information is not needed in solving this problem?</td>
<td>Draw a picture to help you to solve the problem.</td>
<td>What numbers and basic operation(s) will you use?</td>
</tr>
<tr>
<td>vii. Show all your work.</td>
<td>viii. Does your answer make sense? Try it out.</td>
<td></td>
</tr>
<tr>
<td>Why did you choose this response?</td>
<td>After getting an answer, how can I check to see if it is correct?</td>
<td></td>
</tr>
</tbody>
</table>

1. Do the following problems in your writing books.

   a. A 500 g bag of flour costs R3.50. How much will 1.5 kg cost?

Possible solution:

   i. How much will 1.5 kg cost?
   ii. The key numbers are 500 g, R3.50 and 1.5 kg.
   iii. Addition or multiplication and division
   iv. You will need all the numbers in this word problem.
   v. R3.50 + R3.50 + R3.50 = __________ OR 1 500 g ÷ 500 g = 3; 3 x R3.50 = __________
   vi. R9 + R1.50 = R10.50
   vii. R10.50 ÷ 3 = R3.50
b. My mother uses 7.45 kg of rice out of a 10 kg bag. How much is left?

![Rice bag]

RICE

[Continued]

c. My brother has a mass of 25 kg and my sister is double that. What is my sister’s mass?

![Weight scale]

[Continued]

d. If one cake needs 275 g of self-raising flour, how much flour will I need to make three cakes?

![Cake]

[Continued]

e. A shop sells 40 kg of rice for R450. How much does 1 kg cost?

![Rice bags]

[Continued]
f. Ken’s family uses 3.5 kg of rice a week. How much rice does his mother buy a week?

![Rice image]

g. When my mother buys washing powder she pays R45.65 for a 3 kg bag. How much does she pay for 1 kg?

![Washing Powder image]

h. My father eats 125 g of chocolate a day. How many grams will he eat in two weeks?

![Chocolate image]
i. I was given a 4 kg bag of rice to take to my grandmother’s house. On the way there the bag tore and a quarter of it spilled out. How many kilograms of rice will my grandmother have to cook?

j. A chocolate cake needs 445 g of flour. If my aunt wants to bake 20 cakes, how much flour will she need?

k. A school book weighs 25 g and I have 12 books in a bag. How much do the books weigh?
People sometimes speak of a half a million. What does that mean?

1. State whether the following is true or false:
   a. The South African population grows by more than 500 000 in a year. _____
   b. There are 12 500 000 people living in Gauteng. _____
   c. The South African government plans to upgrade 500 000 shacks by 2014. _____
   d. In the first 10 days of the World Cup in 2010 some 500 000 tickets were sold. _____
   e. In an average South African school we will find 500 children. _____

2. Complete the following:
   a. 500 + 40 + 300 000 + 5 000 + 90 000 + 1 = _____
   b. 6 + 900 + 9 000 + 70 + 10 000 + 400 000 = _____
   c. 80 + 6 + 500 + 6 000 + 400 000 + 20 000 = _____
   d. 400 000 + 20 000 + 5 000 + 8 = _____
   e. 300 000 + 400 + 20 = _____

3. Change the digit 5 to zero in each number. Show the operation that will make it zero.
   a. 478 578 = _____
   b. 353 897 = _____
   c. 294 025 = _____
   d. 500 000 = _____
   e. 893 257 = _____
4. Your uncle won R12 million in the lotto. He went to purchase items at different stores. Help him to fill in his cheques. Guess what he purchased with these cheques.

5. Write in expanded notation. Use the digits 1 to 9 to make five different 9-digit numbers smaller than 500 000 000 but bigger than 200 000 000.

   a. 
   b. 
   c. 
   d. 
   e. 
6. What do ascending and descending order mean?

7. Write the following in ascending order.
   a. 22 256 276, 22 256 672, 22 256 267, 22 256 627
   b. 73 782 894, 73 782 498, 73 782 849, 73 782 489
   c. 83 243 228, 83 242 283, 83 243 822, 83 243 282
   d. 44 219 248, 44 219 284, 44 219 842, 44 219 824
   e. 63 318 278, 63 318 827, 63 318 872, 63 318 287
   f. 63 318 278, 63 318 827, 63 318 872, 63 318 287

8. Write the following in descending order.
   a. 11 271 872, 11 271 278, 11 172 827, 11 721 782
   b. 92 287 198, 92 782 891, 92 278 189, 92 891 782
   c. 74 357 543, 74 753 345, 74 375 543, 74 357 534
   d. 53 573 798, 53 375 897, 53 537 798, 53 573 789
My father remembers seeing a beautiful house for sale. It was a beautiful place. He couldn’t remember the price of the house, but he knew it was a 6 digit number.

- He remembered that the first digit was a 5 and the ten thousand’s place was a 7.
- He remembered seeing a number 1.
- In the hundred’s place he remembered the number was 3 times the number in the thousand’s place.
- He said the number in the one’s place was 4 times the number in the ten’s place.
- Finally he said the number 2 was in the thousand’s place.
- What is the number?
What would you rather say?

1. Round off to the nearest 10. Circle the digit which you look at when deciding whether to round up or down to the nearest 10. Complete the sentences.
   a. 345 882 is between 345 880 and 345 890 and would be rounded to 345 900.
   b. 278 947 is between 278 940 and 278 950 and rounded to 278 950.
   c. 2 489 371 is between 2 489 360 and 2 489 380 and rounded to 2 489 400.
   d. 15 218 965 is between 15 218 960 and 15 218 970 and rounded to 15 219 000.
   e. 593 499 999 is between 593 499 990 and 593 500 000 and rounded to 593 500 000.

2. Round off to the nearest 100. Circle the digit which you look at when deciding whether to round up or down to the nearest 100. Complete the sentences.
   a. 345 882 is between 345 880 and 345 890 and would be rounded to 345 900.
   b. 278 947 is between 278 940 and 278 950 and rounded to 278 950.
   c. 3 489 371 is between 3 489 360 and 3 489 380 and rounded to 3 489 400.
   d. 87 218 965 is between 87 218 960 and 87 218 970 and rounded to 87 219 000.
   e. 357 499 999 is between 357 499 990 and 357 500 000 and rounded to 357 500 000.

3. Round off to the nearest 1 000. Circle the digit which you look at when deciding whether to round up or down to the nearest 1000. Complete the sentences.
   a. 345 882 is between 345 800 and 346 000 and would be rounded to 346 000.
   b. 278 947 is between 278 900 and 279 000 and rounded to 279 000.
   c. 3 489 371 is between 3 489 000 and 3 490 000 and rounded to 3 490 000.
   d. 60 218 965 is between 60 218 000 and 60 220 000 and rounded to 60 220 000.
   e. 300 499 999 is between 300 499 000 and 300 500 000 and rounded to 300 500 000.
To estimate the cost of 11 pens at 95c each, you round down 11 to 10 pens and round up 95c to R1.

The estimated cost would then be 10 x R1 = R10,00

4. Complete the questions below:
   a. Estimate the cost of 27 sweets at 81c each? ______________________
   b. Estimate the cost of 41 chocolate at R5,40 each? ______________________
   c. Estimate the cost of 199 cool drinks at R6,90 each? ______________________
   d. Estimate the cost of 1 002 packets of chips at R4,10 each? ______________________
   e. Estimate the cost of 19 542 lollipops at R1,99 each? ______________________

5. The first number below was rounded off to the second number. Was it rounded off to the nearest 5, 10, 100 or 1 000? (The answer could be more than one of the options.)
   a. R83 was rounded off to R100. ______________________
   b. R1 836 was rounded off to R1 840. ______________________
   c. R104 was rounded off to R0. ______________________
   d. R5 790 was rounded off to R6 000. ______________________
   e. R5 080 was rounded off to R5 100. ______________________
   f. R5 049 was rounded off to R5 050. ______________________

Help a friend

Create a picture which explains to a small child the concept of "rounding off". (For example, if you are walking from ... to ..., and it starts to rain, which place of shelter is closer?)

Remember to show very carefully the point at which you start rounding off in the opposite direction.
Addition problems with up to 5-digit numbers

How fast can you answer this?
- **Add** 40 000 + 3 000 + 200 + 30 + 2 + 1.
- What is the **sum** of 2 300 and 6 500?
- How many are 250 and 4 000 **altogether**?
- What three numbers have a **total** of 250?
- **Add** 190 and 45.
- What is the **sum** of 2 000 and 456?
- How many are 375 and 15 **altogether**?
- Which three numbers have a **total** of 1 000?

1. Solve the following problems. The pictures may guide you. Also use the blue word.

   a. At a school concert, 363 adults **and** 655 children were seated in a hall.

   How many chairs were needed altogether?

   ![Diagram of chairs]

   \[300 + 600 + \underline{\text{____}} + 50 + \underline{\text{____}} + 5\]

   \[=\]
   \[=\]
   \[=\]
   \[=\]
b. There were 4,876 spectators at the Pirates soccer match and 6,973 spectators at the Chiefs soccer match. How many people watched these soccer matches?

i. What picture do you see in your mind?

ii. What operation should you use?

iii. Solve the problem.
A farmer planted 5,389 trees in a new plantation. The old plantation has 3,893 trees. How many trees are there altogether?

Look at the pictures below and write an interesting addition word problem.
3. Write an appropriate and interesting word problem for: 37 802 and 65 321. Solve it.

**Operation “Snap”**

**What to do:**

**Step 1:** Deal out an equal number of cards to each player.

**Step 2:** Each player puts their stack of cards face down in front of them.

**Step 3:** Players all turn one card face up and place it next to their face down stack.

**Step 4:** Players look at each other’s cards to see if any of the cards have words with the same meaning.

- If yes, someone says “Snap.”
- The first person to say “Snap” gets all the cards in the face-up stacks that match each other. Play then continues from Step 3.
- If no, play continues from Step 3.
- If a player gets to the end of the face-down stack before the end of the game, he or she turns the face-up stack over again and continues.
- The winner is the player with the most cards.

**What do you need:**

Cut-out 6.
How fast can you answer this?
- Subtract 40 000 from 80 000.
- What is the difference between 7 800 and 5 400?
- Minus 90 000 and 55.
- Decrease 100 000 by 10 000.
- Subtract 19 000 and 450.
- Reduce 50 000 with 1 000.
- Take 15 000 from 45 000.
- Take away 25 000 from 100 000.

1. Solve the following problems. The pictures may guide you. Also use the blue word.

a. At the school concert, 1 018 people attended. 363 are adults. How many seats are left over for the children?

1 018 - 363
b. There are 34 763 trees in a plantation. In a storm 14 999 trees fell. How many trees are still standing?

i. What picture do you see?

ii. What operation should you use?

iii. Solve the problem.
c. There 24,789 people traveling in taxis? 17,989 people get off after 30 minutes. How many people are still in taxis?

2. Look at the pictures below and write an interesting subtraction word problem.
3. Write an appropriate and interesting word problem for: 99 999 and 38 238. Solve it.

Play Operation “Snap”

What do you need:
Cut-out 6.

What to do:
Step 1: Deal out an equal number of cards to each player.
Step 2: Each player puts their stack of cards face down in front of them.
Step 3: Players all turn one card face up and place it next to their face down stack.
Step 4: Players look at each others cards to see if any of the cards have words with same meaning).
- If yes, someone says “Snap.”
- The first person to say “Snap” gets all the cards in the face-up stacks that match each other. Play then continues from Step 3.
- If no, play continue from Step 3.
- If a player gets to the end of the face-down stack before the end of the game, he or she turns the face up stack over again and continues.
- The winner is the player with the most cards.
1. Give five different combinations of these money notes. Your combinations should be in rands or cents.

   a. R5 + R5
   b. 
   c. 
   d. 
   e. 

2. How much does it cost? Gina wants to buy some clothes and accessories. She visits various shops on different days. Every time she looks at her purse. Does she have enough money?

<table>
<thead>
<tr>
<th>Money available</th>
<th>Cost</th>
<th>Need more money?</th>
<th>How much do I still need?</th>
<th>Will get change?</th>
<th>How much change will I get?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shop 1:</td>
<td>R79.95 for jeans</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shop 2:</td>
<td>R99.95 for a jersey</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shop 3:</td>
<td>R65.75 for shoes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shop 4:</td>
<td>R39.95 for a bag</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shop 5:</td>
<td>R55 for cellphone airtime</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. I kept record of my money matters last year. Please help me, I lost some information.

<table>
<thead>
<tr>
<th>Month</th>
<th>Pocket Money</th>
<th>Expenditure</th>
<th>Savings</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>February</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>March</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>April</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>May</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>June</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>July</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>August</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>September</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>October</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>November</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>December</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total:</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. What was the total amount of money you received in one year?  

b. What was your total expenditure for the year?  

c. What was your total savings for the year?
More about money problems

Read the comic strip, and tell what you think Palesa will do next?

1. Help me to calculate my savings for the month using the table below. The till slips may help you.

<table>
<thead>
<tr>
<th>Income</th>
<th>Expenditure</th>
<th>Savings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pocket money:</td>
<td>R150,00</td>
<td>Charity:R50,00</td>
</tr>
<tr>
<td>Birthday money:</td>
<td>R120,75</td>
<td></td>
</tr>
<tr>
<td>Washing and polishing Dad’s car:</td>
<td>R25,00</td>
<td></td>
</tr>
<tr>
<td>Totals</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

Term 3

1. Help me to calculate my savings for the month using the table below. The till slips may help you.

<table>
<thead>
<tr>
<th>Shop</th>
<th>Tel:</th>
<th>VAT</th>
<th>Date of Receipt</th>
<th>Amounts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cool Clothing</td>
<td>(011) 907 0804</td>
<td>437830948092834</td>
<td>15 March 2011</td>
<td>Socks: R12,99, 16% VAT: R1,82, TOTAL: R14,81</td>
</tr>
<tr>
<td>Ring-ring Cells</td>
<td>(011) 907 0805</td>
<td>437830948092834</td>
<td>20 March 2011</td>
<td>Airtime: R29,00</td>
</tr>
<tr>
<td>Shoe-shoe Shops</td>
<td>(011) 907 0806</td>
<td>437830948092834</td>
<td>22 March 2011</td>
<td>Airtime: R105,99, 14% VAT: R15,94, TOTAL: R120,83</td>
</tr>
</tbody>
</table>
2. Do the following money problems.
   a. My pocket money is R75 per month. I spend the following: R15,00 at the school tuck shop. R14,75 for a new pair of socks, R25 for a movie ticket. I also gave R12,50 to charity. Complete the table below.

<table>
<thead>
<tr>
<th>Income</th>
<th>Expenditure</th>
<th>Savings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Totals**

a. Look at the information in the table below. Write down your own word problem.

<table>
<thead>
<tr>
<th>Income</th>
<th>Expenditure</th>
<th>Savings</th>
</tr>
</thead>
<tbody>
<tr>
<td>350</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Airtime:</td>
<td>R29</td>
</tr>
<tr>
<td></td>
<td>Tuck shop money:</td>
<td>R52.50</td>
</tr>
<tr>
<td></td>
<td>Charity:</td>
<td>R75.75</td>
</tr>
<tr>
<td></td>
<td>Jeans:</td>
<td>R95.99</td>
</tr>
<tr>
<td></td>
<td>Movie ticket:</td>
<td>R25</td>
</tr>
</tbody>
</table>

**Totals**

Use the following words/phrases to create a picture:

**Cost**
**Savings**

Money makes the world go round.

**Income**
**What is the difference between the numbers.**

<table>
<thead>
<tr>
<th></th>
<th>10 000</th>
<th>20 000</th>
<th>30 000</th>
<th>40 000</th>
<th>50 000</th>
<th>60 000</th>
<th>70 000</th>
<th>80 000</th>
<th>90 000</th>
<th>100 000</th>
</tr>
</thead>
<tbody>
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<td>10</td>
<td>20</td>
<td>30</td>
<td>40</td>
<td>50</td>
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<td>90</td>
</tr>
<tr>
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<td>20</td>
<td>30</td>
<td>40</td>
<td>50</td>
<td>60</td>
<td>70</td>
<td>80</td>
</tr>
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</tr>
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<td>40 000</td>
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<tr>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<td>20</td>
<td>30</td>
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<td>50</td>
</tr>
<tr>
<td>60 000</td>
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<td>0</td>
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<td>10</td>
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<td>30</td>
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</tr>
<tr>
<td>70 000</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>10</td>
<td>20</td>
<td>30</td>
</tr>
<tr>
<td>80 000</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td>90 000</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>100 000</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

---

1. **What number comes next?**
   
a. 60 000, 70 000, 80 000, ______________ b. 72 500, 82 500, 92 500, ______________

c. 149 999, 159 999, 169 999, ______________ d. 165 250, 175 250, 185 250, ______________

2. **Complete the table:** Use the given number each time.

<table>
<thead>
<tr>
<th>Number</th>
<th>Add 10</th>
<th>Add 100</th>
<th>Add 1 000</th>
<th>Add 10 000</th>
</tr>
</thead>
<tbody>
<tr>
<td>187 563</td>
<td>18573</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>143 784</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>127 899</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>136 999</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>189 999</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Examples:**

Example 1:

135 689 + 42 999

= 100 000 + 30 000 + 40 000 + 5 000 + 2 000 + 600 + 900 + 80 + 90 + 9 + 9

= 100 000 + 70 000 + 7 000 + 1 500 + 170 + 18

= 100 000 + 70 000 + 7 000 + 1 000 + 500 + 100 + 70 + 10 + 8

= 100 000 + 70 000 + 8 000 + 600 + 80 + 8

= 178 688
Example 2:

\[
\begin{array}{c}
1 & 3 & 5 & 6 & 8 & 9 \\
+ & 4 & 2 & 9 & 9 & 9 \\
\hline
1 & 8 \\
1 & 7 & 0 \\
1 & 5 & 0 & 0 \\
7 & 0 & 0 & 0 \\
1 & 0 & 0 & 0 & 0 \\
\hline
1 & 7 & 8 & 6 & 8 & 8
\end{array}
\]

Example 3:

\[
\begin{array}{c}
1 & 3 & 5 & 6 & 8 & 9 \\
+ & 4 & 2 & 9 & 9 & 9 \\
\hline
1 & 7 & 8 & 6 & 8 & 8
\end{array}
\]

3. Use any two methods to calculate the following. Write the steps down.

a. \(145345 + 32453 = \)

b. \(137876 + 52128 = \)

c. \(163762 + 25289 = \)

d. \(152784 + 35568 = \)

e. \(172689 + 29999 = \)

f. \(99999 + 99999 = \)

4. Test your answers to questions 3 a to f using the inverse operation of addition. Use a separate piece of paper.
5. Solve the following word problems.
   a. The chicken farmer delivered 29 500 eggs on Monday and 32 700 on Tuesday. How many eggs are there in total?

   b. We walked 120 000 mm from point A to B. We walked another 350 000 mm from point B to C. How far did we walk. Give your answer in mm and m. Which is more appropriate to use m or mm?
6. Write an appropriate and interesting word sum for: 150 000 and 30 000. Solve it.

What is the size of your number:

- 45 999
- 32 372
- 65 392
- 99 999
- 76 690

What do you need:
- Use the 1 000s, and 10 000s and 100 000s dice. (Cut out 3)
- Piece of paper.

What to do:
- Roll the 1 000s die.
- Add the number landed on to the first number on the blue card. Write your sum on a piece of paper.
- Do the same with the next four numbers.
- Repeat the activity with the 10 000s and 100 000s dice.
- Learners check each others sums.
- The winner is the person with the most correct answers.
### Subtraction with up to 6-digit numbers

What is the difference between the numbers.

<table>
<thead>
<tr>
<th>10 000</th>
<th>20 000</th>
<th>30 000</th>
<th>40 000</th>
<th>50 000</th>
<th>60 000</th>
<th>70 000</th>
<th>80 000</th>
<th>90 000</th>
<th>100 000</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 009</td>
<td>20 009</td>
<td>30 005</td>
<td>40 009</td>
<td>50 009</td>
<td>60 009</td>
<td>70 009</td>
<td>80 009</td>
<td>90 009</td>
<td>100 009</td>
</tr>
<tr>
<td>10 055</td>
<td>20 055</td>
<td>30 055</td>
<td>40 055</td>
<td>50 055</td>
<td>60 055</td>
<td>70 055</td>
<td>80 055</td>
<td>90 055</td>
<td>100 055</td>
</tr>
<tr>
<td>110 400</td>
<td>120 400</td>
<td>130 400</td>
<td>140 400</td>
<td>150 400</td>
<td>160 400</td>
<td>170 400</td>
<td>180 400</td>
<td>190 400</td>
<td>200 400</td>
</tr>
</tbody>
</table>

1. What number comes next?
   - a. 187 500, 177 500, 167 500, _______
   - b. 135 250, 125 250, 115 250, _______
   - c. 152 999, 142 999, 132 999, _______
   - d. 143 654, 133 654, 123 654, _______

2. Complete the table: use the given numbers:

<table>
<thead>
<tr>
<th>Number</th>
<th>Subtract 10</th>
<th>Subtract 100</th>
<th>Subtract 1 000</th>
<th>Subtract 10 000</th>
</tr>
</thead>
<tbody>
<tr>
<td>164 389</td>
<td>164 289</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>158 304</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>187 643</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>199 999</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>109 000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Examples:**

#### Example 1:

185 743 – 59 857

\[
\begin{align*}
185 743 &= 100 000 + (80 000 – 50 000) + (5 000 – 9 000) + (700 – 800) + (40 – 50) + (3-7) \\
&= 100 000 + 30 000 + (5 000 – 9 000) + (700 – 800) + (30 – 50) + (13-7) \\
&= 100 000 + 30 000 + (5 000 – 9 000) + (600 – 800) + (130 – 50) + (13-7) \\
&= 100 000 + 30 000 + (4 000 – 9 000) + (1 600 – 800) + (130 – 50) + (13-7) \\
&= 100 000 + 20 000 + (14 000 – 9 000) + (1 600 – 800) + (130 – 50) + (13-7) \\
&= 100 000 + 20 000 + 5 000 + 800 + 80 + 6 \\
&= 125 886
\end{align*}
\]
Example 2:

\[
\begin{array}{cccccc}
1 & 8 & 5 & 7 & 4 & 3 \\
- & 5 & 9 & 8 & 5 & 7 \\
\hline
6 & 13 & -7 \\
8 & 0 & (130 - 50) \\
8 & 0 & (1600 - 800) \\
5 & 0 & 0 & 0 & (14000 - 9000) \\
2 & 0 & 0 & 0 & 0 & (70000 - 50000) \\
+ & 1 & 0 & 0 & 0 & 0 & (100000 - 0) \\
\hline
1 & 2 & 5 & 8 & 8 & 6
\end{array}
\]

Example 3:

\[
\begin{array}{cccccc}
7 & 14 & 16 & 13 & 10 \\
- & 5 & 9 & 8 & 5 & 7 \\
\hline
1 & 2 & 5 & 8 & 8 & 6
\end{array}
\]

3. Use both methods to solve the sums:

a. \(188763 - 56541 = \)  

b. \(175754 - 44639 = \)

\[\begin{array}{cccccc}
\hline
\end{array}\]

Continue on an extra sheet of paper

c. \(169657 - 53489 = \)  
d. \(163864 - 48986 = \)

\[\begin{array}{cccccc}
\hline
\end{array}\]

Continue on an extra sheet of paper

e. \(157802 - 99999 = \)  
f. What method do you prefer? Why?

\[\begin{array}{cccccc}
\hline
\end{array}\]

Continue on an extra sheet of paper

continued
4. Solve the following word problems:
   a. There are 190,500 tomatoes coming from a tomato farm. 47,925 were rotten. How many tomatoes can we send to the market?

   b. Children in our grade drank 145,000 ml of water. The grade fives drank 28,500 ml less than us. How much did they drink? Write your answer in ml and litres. Which measurement is more appropriate to use?

5. Use a calculator to check your answers in question 4.
6. Write an appropriate and interesting subtraction word sum for: 190 000 and 35 000. Solve it.

What do you need:
- Use the 1 000s and 10 000s dice.
- Piece of paper.

What to do:
- Roll the 1 000s die.
- Subtract the number landed on, to the first number on the blue card. Write your sum on a piece of paper.
- Do the same for the next four numbers.
- Repeat the activity with the 10 000s dice.
- Learners check each others sums.
- The winner is the person with the most correct answers.
Addition and subtraction

What is the difference between the numbers in each of these rows?

<table>
<thead>
<tr>
<th>100 000</th>
<th>200 000</th>
<th>300 000</th>
<th>400 000</th>
<th>500 000</th>
</tr>
</thead>
<tbody>
<tr>
<td>91 000</td>
<td>101 000</td>
<td>201 000</td>
<td>301 000</td>
<td>401 000</td>
</tr>
<tr>
<td>70 500</td>
<td>80 500</td>
<td>90 500</td>
<td>100 500</td>
<td>110 500</td>
</tr>
<tr>
<td>89 999</td>
<td>99 999</td>
<td>109 999</td>
<td>119 999</td>
<td>129 999</td>
</tr>
<tr>
<td>187 663</td>
<td>287 663</td>
<td>387 663</td>
<td>487 663</td>
<td>587 663</td>
</tr>
</tbody>
</table>

What is the difference between the numbers? Count backwards.

1. What number comes next?
   a. 100 000, 200 000, 300 000,
   b. 172 500, 272 500, 372 500,
   c. 199 999, 299 999, 399 999,
   d. 283 321, 293 321, 303 321

2. Complete the table:

<table>
<thead>
<tr>
<th>Number</th>
<th>Add 10 000</th>
<th>Subtract 10 000</th>
<th>Add 100 000</th>
<th>Subtract 100 000</th>
</tr>
</thead>
<tbody>
<tr>
<td>223 340</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>367 245</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>378 392</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>263 287</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>399 999</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Examples
Example 1:
278 467 + 197 539
= 200 000 + 100 000 + 70 000 + 90 000 + 8 000 + 7 000 + 400 + 500 + 60 + 30 + 7 + 9
= 300 000 + 160 000 + 15 000 + 900 + 90 + 16
= 300 000 + 100 000 + 60 000 + 10 000 + 5 000 + 900 + 90 + 10 + 6
= 400 000 + 70 000 + 5 000 + 900 + 100 + 6
= 400 000 + 70 000 + 5 000 + 1 000 + 6
= 400 000 + 70 000 + 6 000 + 6
= 476 006

Example 2:
\[
\begin{array}{ccccccc}
2 & 7 & 8 & 4 & 6 & 7 \\
+ & 1 & 9 & 7 & 5 & 3 & 9 \\
\hline
1 & 6 & (7 + 9) \\
9 & 0 & (60 + 30) \\
9 & 0 & 0 & (400 + 500) \\
1 & 5 & 0 & 0 & (8 000 + 7 000) \\
1 & 6 & 0 & 0 & 0 & (70 000 + 90 000) \\
+ & 3 & 0 & 0 & 0 & 0 & (200 000 + 100 000) \\
\hline
4 & 7 & 6 & 0 & 0 & 6
\end{array}
\]

Test your answer.
\[
\begin{array}{ccccccc}
4 & 7 & 6 & 0 & 0 & 6 \\
- & 1 & 9 & 7 & 5 & 3 & 9 \\
\hline
7 & (16 – 9) \\
6 & 0 & (90 – 30) \\
4 & 0 & 0 & (900 – 500) \\
8 & 0 & 0 & 0 & (15 000 – 7 000) \\
7 & 0 & 0 & 0 & 0 & (16 000 – 9 000) \\
+ & 2 & 0 & 0 & 0 & 0 & (300 000 – 100 000) \\
\hline
2 & 7 & 8 & 4 & 6 & 7
\end{array}
\]

Example 3:
\[
\begin{array}{cccccccc}
1 & 1 & 1 & 1 & 1 \\
\hline
2 & 7 & 8 & 4 & 6 & 7 \\
+ & 1 & 9 & 7 & 5 & 3 & 9 \\
\hline
4 & 7 & 6 & 0 & 0 & 6
\end{array}
\]

Test your answer.
\[
\begin{array}{cccccccc}
9 & 9 & 9 & 9 \\
\hline
3 & 1 & 0 & 1 & 0 & 1 & 0 \\
\hline
2 & 7 & 8 & 4 & 6 & 7
\end{array}
\]
3. Use any two methods to calculate the following. Write down the steps.

   a. 233 432 + 124 321 =  
   
   b. 256 782 + 243 219 =  
   
   c. 318 764 + 271 287 =  
   
   d. 357 573 + 122 847 =  
   
   e. 276 894 + 228 248 =  
   
   f. 278 872 + 199 999 =  
   
4. Check your answers to Question 3. (Remember the inverse operation of addition is subtraction.) Show your checks.
5. Complete the following:

a. You live in a street with 6 houses. Each family owns a car. The 1st family’s car cost R100 000. The 2nd family’s car cost R59 900 more. The 3rd family’s car cost R25 000 less than the 2nd family’s car. The 4th family paid a half a million rand for their car. The 5th family paid the same as the 1st family, and the last family paid R250 000 less than the 4th family.

How much did each of these families pay for their cars?

i. 2nd family
ii. 3rd family
iii. 4th family
iv. 5th family
v. 6th family

b. What is the value of the first and second family’s cars?

c. Show your calculations for a. and b.

Continue on an extra sheet of paper

d. What is the value of the fourth and third family’s cars?

e. What is the difference in price between the 4th and the 3rd family’s cars?

I dropped my puzzle pieces...

What to do:
I dropped my puzzle pieces. Help me to fill the spaces so that each row and column adds up to 30. You can only use each number once.

There are 144 ways to place the pieces.
### More addition and subtraction

#### Term 3

**What is the difference between the numbers? Count forwards.**

<table>
<thead>
<tr>
<th>600 000</th>
<th>700 000</th>
<th>800 000</th>
<th>900 000</th>
<th>1 000 000</th>
</tr>
</thead>
<tbody>
<tr>
<td>500 010</td>
<td>600 010</td>
<td>700 010</td>
<td>800 010</td>
<td>900 010</td>
</tr>
<tr>
<td>507 000</td>
<td>607 000</td>
<td>707 000</td>
<td>807 000</td>
<td>907 000</td>
</tr>
<tr>
<td>590 000</td>
<td>690 000</td>
<td>790 000</td>
<td>890 000</td>
<td>990 000</td>
</tr>
<tr>
<td>546 999</td>
<td>556 999</td>
<td>566 999</td>
<td>576 999</td>
<td>586 999</td>
</tr>
</tbody>
</table>

**What is the difference between the numbers? Count backwards.**

1. **What number comes next?**
   - a. 700 000, 800 000, 900 000, __________
   - b. 683 500, 783 500, 883 500, __________
   - c. 699 999, 799 999, 899 999, __________
   - d. 577 382, 587 382, 597 382, __________

2. **Complete the table:**

<table>
<thead>
<tr>
<th>Number</th>
<th>Add 10 000</th>
<th>Subtract 10 000</th>
<th>Add 100 000</th>
<th>Subtract 100 000</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 893 490</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 473 894</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 302 809</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 200 008</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 500 900</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. **First estimate and then calculate the answers to the following:**
   - a. $784 459 + 378 = $
   - b. $654 458 + 9 832 = $
   - c. $689 492 + 12 599 = $
   - d. $529 376 + 298 743 = $

Continue on an extra sheet of paper.
4. Subtract the following. Before you calculate estimate the answer. Then estimate the answer by rounding off the two numbers to be subtracted. How do the three answers differ?

a. $987\,342 - 199 = \phantom{000}$

b. $856\,439 - 5\,568 = \phantom{000}$

c. $789\,453 - 78\,999 = \phantom{000}$

d. $654\,342 - 285\,492 = \phantom{000}$

Continue on an extra sheet of paper

5. Mpho and David had 52 sweets. If Mpho ate 11 sweets and gave 5 sweets to David he would have 19 fewer sweets than David. How many sweets did David have in the beginning?

Continue on an extra sheet of paper

I dropped my puzzle pieces

What to do.
I dropped my number puzzle pieces. Help me to fill the spaces so that each row and column adds up to 34. You can only use each number once.
What shape would we see from above if we turned each object shown here upside down?

Words to remember:
- top view
- bottom view
- side view
- front view
- back view

1. This person is looking at a car. Where is the person standing?

   a. 
   b. 
   c. 

   d. 
   e. 

---

**Term 3**
2. Imagine a round cake.
   a. If you look at the cake directly from above, what shape will you see?

   ________________

   b. If you look at the cake directly from the side?

   __________________

   c. If someone has cut a piece out of the cake, and you are looking at the side of
      the piece of cake, what shape will you see?

   __________________

3. We often think of houses as looking like this:

   [Image of a house]

   a. Where would we be standing for the house to look like that?

   __________________

   b. Move to a different side of the house. What does it look like now (what shapes
      make up the picture we see now)?

   [Blank page for student response]
4. Look at the plan below. It shows the view of a house from above. The white squares in the middle represent the garden. Complete the table below.

<table>
<thead>
<tr>
<th>Room</th>
<th>Co-ordinates</th>
<th>Area (in square units)</th>
<th>Room area as fraction of whole house</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>A1, B1, C1, D1, E1, A3, B3, C3, D3, E3</td>
<td>5 x 3 = 15</td>
<td>(\frac{15}{100}) or 0.15</td>
</tr>
<tr>
<td>b</td>
<td></td>
<td>5 x 2 + 2 = 12</td>
<td></td>
</tr>
<tr>
<td>c</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>e</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>f</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>g</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>h</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
5. Draw your dream house:
   a. From above (top view).
   b. From the front.

Views everywhere

How fast can you identify the view. Tick the correct answer.
Find all the quadrilaterals in this picture.
Can you identify the same quadrilaterals in your class?
Measure their sides.

1. Answer the following questions:
   a. You know the lengths of 3 sides of a parallelogram: 14 cm, 9 cm and 9 cm. Is that enough information to work out the 4th side? If so, what is it? Make a drawing to support your answer.

   [Blank space for answer]

   [Continue on an extra sheet of paper]

   b. You know the lengths of 4 sides of a pentagon: 3 cm, 4 cm, 3.5 cm and 6 cm. What will the 5th side be? Make a drawing to support your answer.

   [Blank space for answer]

   [Continue on an extra sheet of paper]

   c. What do we name a shape where not all sides are equal? 

   d. Circle the irregular shapes. Name each shape:

   [Images of shapes]
2. How can you tell that there is something wrong with this diagram?

3. Draw the following:

a. A rectangle with sides: 4.5 cm and 14 mm.

b. A square with sides of 2.3 cm.

c. An irregular pentagon with one side that equals to 18 mm.

d. An irregular hexagon with all sides of different length.

Magazine or newspaper search

Find the following shapes in a magazine: parallelogram, rectangle and a square. Paste it here and describe it according to angles and sides.
1. Identify the angles that are smaller, bigger and equal to $90^\circ$. 
2. Find a picture in magazines or newspaper, and identify the angles.

3. Say if the shown angles are bigger, smaller or equal to 90° and give them their correct names: acute, right, obtuse or reflex.

   a.  
   b.  
   c.  
   d.  
   e.  
   f.  

I am an architect

Draw a building with angles bigger, smaller, and equal to 90 degrees.
Look at the pictures. Find angles that are smaller and angles that are bigger than 90 ° on the South African flag.

1. Outline at least 2 angles that are bigger than 90 ° in red, and/or 2 angles that are less than 90 ° in blue in each photograph.

a. 

b. 

c. 

d.
2. On the protractor draw in red:
   a. An angle bigger than 90°.
   b. An angle smaller than 90°.

   c. Tick which protractor/s shows an angle bigger than 90°.
      i. 
      ii. 
      iii. 

   d. Tick which protractor/s shows an angle smaller than 90°.
      i. 
      ii. 
      iii. 

3. Tick the angles that are bigger than 90° in red and those that are smaller than 90° in blue. Name the type of angle. Name the type of angle.

   a. 
   b. 
   c. 

   d. 
   e. 
   f. 

I am an architect

Add more angles to the drawing you did for the previous worksheet. Some angles should be smaller and others bigger than 90°.
Revise the following. Say which shape is the original shape.

Reflection
- Flip

Rotation
- Turn
- Point of rotation

Translation
- Slide

1. In nature we get the most beautiful examples of reflections. Show the line of reflection on each picture and then describe each reflection.

   The centre line is called the line of reflection or mirror line.

   The line of reflection is horizontal. The reflection of the elephants, trees and island have the same size as the original image.

2. Find a picture on reflection, paste it here and describe it.
2. Show the centre of rotation and describe each rotation. Here are some words that might help you to describe the rotation: distance from the centre, circle around the centre, point of rotation, angle. Note that in picture b we have two examples:

(a) 

(b) Our Solar System

3. Describe the translation. Here are some words that will help you to describe the translation: moving, rotating, not rotating, reflecting, not reflecting, same distance, same direction, shapes.

(a) 

(b) 

(c) 

Maths and Nature

Describe this plant using transformations.
1. Say whether the following have been enlarged or reduced.

a. b. c. d.

2. Explain what happened with the shape using words such as enlarge and reduce.

a. 

b. 

c. 

Term 3
3. Use the grid paper below to draw the following:
   a. Draw a rectangle with an area of six blocks. Then draw the same rectangle reduced by two in green. Then draw a rectangle enlarged by three in blue.

   b. If each block in the grid above is 1 cm by 1 cm, explain the reduction and enlargement in cms.

   c. Draw any object in red. Reduce it to half its size, in blue. Explain your reduction in cm.
Look at the diagram below. Discuss it in your groups.

Purple rectangle:
The length = 3
The width = 2

Red rectangle:
The length = 9
The width = 6

The length of the red rectangle is 3 times more than the purple rectangle.

The width of the red rectangle is 3 times more than the purple rectangle.

Therefore, we say that the red rectangle is enlarged 3 times.

4. Look at the rectangles. Answer the questions below.

Orange rectangle
a. The length =

b. The width =

Blue rectangle
c. The length =
d. The width =

e. The length of the blue rectangle is times more than the orange rectangle.

f. The width of the blue rectangle is times more than the orange rectangle.

g. The blue rectangle is enlarged times.

5. Answer the following questions:

Orange rectangle
a. The length =

b. The width =

Blue rectangle
c. The length =
d. The width =

e. The blue rectangle is enlarged times.
6. By what factor is this shape enlarged? Write down all the steps.

7. Enlarge the rectangle by:
   a. 4
   b. 2

8. Complete the table. Make drawings if needed.

<table>
<thead>
<tr>
<th>Rectangle</th>
<th>Perimeter</th>
<th>Area</th>
<th>Enlarge by:</th>
<th>Perimeter</th>
<th>Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Length: 4 cm Width: 2 cm</td>
<td></td>
<td></td>
<td>5 Length: Width:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. Length: 3 cm Width: 2 cm</td>
<td></td>
<td></td>
<td>8 Length: Width:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. Length: 7 m Width: 5 m</td>
<td></td>
<td></td>
<td>6 Length: Width:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. Length: 9 m Width: 8 m</td>
<td></td>
<td></td>
<td>10 Length: Width:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

I am an artist

What do you need: Square paper

What to do: Find or draw a picture. Enlarge the picture by 2.
Look at the pictures. What do you think is the temperature for each?

1. Choose the correct answer.
   a. What happens to the liquid in the thermometer when the temperature rises?
      i. The mercury rises.
      ii. The mercury drops.
   b. What happens to the liquid when the temperature drops?
      i. The mercury rises.
      ii. The mercury drops.
   c. The temperature on a very hot day in South Africa is:
      i. 15 ºC
      ii. 35 ºC
      iii. 0 ºC
   d. The temperature on a very cold day in South Africa is:
      i. 18 ºC
      ii. 28 ºC
      iii. 4 ºC
   e. The temperature shown on the thermometer is:
      i. 15 ºC
      ii. 24 ºC
      iii. 29 ºC

The degree Celsius (ºC) is the metric unit for measuring temperature.
2. Match the temperature to the correct thermometer.

Body temperature = 37 °C
Soup temperature = 45 °C
Cool drink temperature = 10 °C

3. Write down each temperature.

4. Record this week’s minimum and maximum temperature.

<table>
<thead>
<tr>
<th>Sunday</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
<th>Saturday</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min:</td>
<td>Min:</td>
<td>Min:</td>
<td>Min:</td>
<td>Min:</td>
<td>Min:</td>
<td>Min:</td>
</tr>
<tr>
<td>Max:</td>
<td>Max:</td>
<td>Max:</td>
<td>Max:</td>
<td>Max:</td>
<td>Max:</td>
<td>Max:</td>
</tr>
</tbody>
</table>

Describe the temperature for the week:

Celsius and Fahrenheit

Have you ever heard of the word Fahrenheit? Find out what it means. How does it differ from Celsius?
Measuring temperature

What did we learn so far? How to read a thermometer.

Look at the top of the red line.

Look down at the number line for the nearest ten.

Count up the lines to find the exact temperature.

Write the temperature with a degree mark ° and a C.

1. Answer the following questions on temperature:
   a. What is the temperature on a hot, sunny day? Show it on the thermometer on the right hand side.
   b. What does it mean for the temperature to be 2 degrees below zero?

   Show it on the thermometer.
   c. What sign would you use to show this number is below zero?

2. Write the following temperature in numbers and symbols:
   a. 5 degrees Celsius.
   b. 3 degrees Celsius below zero.
   c. 10 degrees Celsius above zero.
   d. 10 degrees Celsius below zero.
   e. The temperature is minus 2 this morning in Joburg.

I understand now. If the temperature falls below 0 °C (zero degrees Celsius) we use negative numbers to say how far below zero it has fallen. Such as – 5 °C.

3. Is it very often below zero degrees Celsius in South Africa? Explain your answer.
4. Write down each temperature.

a. 

b. 

c. 

d. 

e. 

f. Which temperature is the coldest? 

g. Which temperature is the warmest? 

5. Complete the following:

a. The temperature -6 °C is colder than -4 °C as it is 2 ° less than  

b. The temperature 7 °C is warmer than -8 °C as it is more than  

c. The temperature -9 °C is colder than -6 °C as it is less than  

d. The temperature -5 °C is warmer than -10 °C as it is more than  

e. The temperature -15 °C is colder than -9 °C as it is less than  

6. Write down what you will do if it is below zero in your area. 

Temperature and negative numbers

Make the same cards as below from paper or cardboard. Cut them out and place them in order from the smallest to the largest number.

5  -3  0  -4  3  -2
4  2  1  -1
Temperature scales and displays

Look at the pictures and compare it to the thermometer used in the previous worksheet. Explain how you think each one is used.

We use thermometers to measure the temperature of the air, our bodies, food, and many other things.

There are analogue and digital thermometers. An analogue thermometer shows the temperature directly on a scale or dial; a digital thermometer changes the analogue reading into an electric one shown as numbers on a display screen.

1. Fill in the correct answers

a. Temperature is measured in many different scales, including __________, __________, and __________ scales.

b. The units of the ___________ and ___________ scales are called degrees; the units of the Kelvin scale are called kelvins.

c. The symbol for degree is ___.

d. We use the ___________ in South Africa to measure temperature.

2. Complete the table below.

<table>
<thead>
<tr>
<th>Temperature</th>
<th>Fahrenheit</th>
<th>Celsius</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water boils</td>
<td>212 °F</td>
<td>a.</td>
</tr>
<tr>
<td>Water freezes</td>
<td>32 °F</td>
<td>b.</td>
</tr>
<tr>
<td>Normal human body temperature</td>
<td>98.6 °F</td>
<td>c.</td>
</tr>
<tr>
<td>Room temperature</td>
<td>70 °F</td>
<td>d.</td>
</tr>
</tbody>
</table>

3. Write the digital times in words.

a. 

b. 

c. 

d. 

e. 

Share this table with an adult that needs to convert Fahrenheit to Celsius or vice versa.
4. Use the temperatures above to answer the questions.

a. What will ascending order mean when we work with temperature?

_____________________________________________________________________________

b. Write the temperatures in Question 3 in ascending order.

_____________________________________________________________________________

c. What will descending order mean when we work with temperature?

_____________________________________________________________________________

d. Write the temperatures in Question 3 in descending order.

_____________________________________________________________________________

e. When in everyday life will we write temperature in ascending or descending order? Why?

_____________________________________________________________________________

_____________________________________________________________________________

5. We have learnt that normal body temperature is 37 °C. Studies show us that body temperature can vary from person-to-person, their age, what they have been doing, the time of the day and the part of the body you take the temperature from. This is the range for the normal body temperature. Fill in all the other possible readings you can have on a digital thermometer counting in tenths.

36.1 °C 36.2 °C 36.3 °C 36.4 °C 36.5 °C 36.6 °C 36.7 °C 36.8 °C 36.9 °C 37.0 °C

Challenge

Beneath Earth’s surface, the temperature increases 10 °C every kilometre. Suppose that the surface temperature is 22 °C, and the temperature at the bottom of a gold mine is 45 °C. What is the depth of the gold mine?

1. What fraction of the square is blue?
2. What percentage of the square is blue?

a. 
   i. 
   ii. 

b. 
   i. 
   ii. 

c. 
   i. 
   ii. 

3. Colour in \( \frac{73}{100} \).
   Write your answer as a percentage.

3. Colour in 99 per cent.
   Write your answer as a fraction.

What does \% mean?

The symbol for percentage is \%.

Oh! I have 80 percent for my test.

Yes, it means you have 80 out of 100 for your test.
5. Complete the following:

<table>
<thead>
<tr>
<th>one quarter</th>
<th>half</th>
<th>three quarters</th>
<th>whole</th>
</tr>
</thead>
<tbody>
<tr>
<td>25%</td>
<td>50%</td>
<td>75%</td>
<td>100%</td>
</tr>
</tbody>
</table>

a. 100% means all of a whole.
b. 50% means _______ of a whole.
c. 25% means _______ of a whole.
d. 75% means _______ of a whole.

6. What percentage of the circle is red?

a. _______
b. _______
c. _______
d. _______

7. Look at the diagram and answer the questions below.

a. 1 tenth = _______ %
b. 4 tenths = _______ %
c. 9 tenths = _______ %

---

What did we learn so far?
Parts of a whole can be described using percentages too.
A percentage is an amount out of 100 and is written like this: %.

---

What does cent mean?

- century
- centipede
- centimetre
- cent
- percent
Match the fractions, decimal fractions and percentages that stand for the same amount:

<table>
<thead>
<tr>
<th>Fraction</th>
<th>Percentage</th>
<th>Decimal fraction</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\frac{75}{100}$</td>
<td>75%</td>
<td>0.75</td>
</tr>
<tr>
<td>$\frac{1}{2}$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$\frac{25}{100}$</td>
<td>25%</td>
<td>0.25</td>
</tr>
<tr>
<td>$\frac{3}{10}$</td>
<td></td>
<td>0.3</td>
</tr>
<tr>
<td>$\frac{1}{4}$</td>
<td>25%</td>
<td>0.25</td>
</tr>
<tr>
<td>$\frac{3}{4}$</td>
<td></td>
<td>0.75</td>
</tr>
<tr>
<td>0.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. Complete the table below.

<table>
<thead>
<tr>
<th>Fraction</th>
<th>Percentage</th>
<th>Decimal fraction</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\frac{89}{100}$</td>
<td></td>
<td>0.89</td>
</tr>
<tr>
<td>$\frac{1}{4}$</td>
<td>25%</td>
<td></td>
</tr>
<tr>
<td>$\frac{1}{10}$</td>
<td>10%</td>
<td></td>
</tr>
<tr>
<td>$\frac{1}{100}$</td>
<td>1%</td>
<td></td>
</tr>
<tr>
<td>$\frac{1}{4}$</td>
<td>25%</td>
<td></td>
</tr>
</tbody>
</table>
2. Complete the following:
   a. Colour in one half of each shape.
   b. Colour in one quarter of each shape.

   A half can be written...
   As a fraction: 
   As a decimal: 
   As a percentage: 

   A quarter can be written...
   As a fraction: 
   As a decimal: 
   As a percentage: 

3. Answer the following:
   a. What is 50 % of R1,00? 
   b. What is 0,5 of R1,00? 
   c. What is \( \frac{1}{2} \) of R1,00? 
   d. What is 25 % of R1,00? 
   e. What is 0,25 of R1,00? 
   f. What is \( \frac{1}{4} \) of R1,00? 

4. Complete the following:
   There are 120 children in grade 6.
   a. 50 % of the children are boys. How many children are boys? 
   b. 25 % of the children like strawberry ice cream. How many children like strawberry ice cream? 
   c. What percentage of children like other flavoured ice-creams? 

   How many children like other flavoured ice-creams? 

Advertisement search

Go through a newspaper. See how many times can you find the symbol %.

Bring it to class to share with the other children.
Look at the pictures below. Make up your own prices to explain the discount.

All shoes 50% discount.  All jackets 25% discount.  All skirts 10% discount.

1. Look at the diagrams and answer the following:
   a. What is 20% of 100? 20
   b. What is 40% of 200?
   c. What is 60% of 300?
   d. What is 80% of 400?
   e. What is 70% of 500?
2. Look at the diagram and answer the questions.

\[ \text{=} 1 \, 000 \text{ small cubes} \]

a. How many small cubes are there? 

b. How many small blue cubes are there? 

c. How many small white cubes are there? 

d. What percentage of the small cubes are blue? 

e. What percentage of the small cubes are white? 

f. How many small cubes are there? 

g. How many small blue cubes are there? 

h. How many small white cubes are there? 

i. What percentage of the small cubes are blue? 

j. What percentage of the small cubes are white? 

3. Answer the following:

a. What is 50\% \text{ of R100}? 

b. What is 25\% \text{ of R100}? 

c. What is 50\% \text{ of R50}? 

d. What is 25\% \text{ of R50}? 

4. The music shop is having a sale in which they are offering 30\% \text{ off the marked price of a CD you want to buy. Another shop nearby is offering the same CD at the same price, and the sale sticker says you can get } \frac{1}{4} \text{ of the price off. Which shop will you buy from and why?} 

Advertisement search

Go through a newspaper.

See how many times can you find discounts offered on goods.
## Percentages and money

**What is in my basket? Calculate the total cost of each basket.**

<table>
<thead>
<tr>
<th>Basket 1</th>
<th>Basket 2</th>
<th>Basket 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Basket 1" /></td>
<td><img src="image2" alt="Basket 2" /></td>
<td><img src="image3" alt="Basket 3" /></td>
</tr>
</tbody>
</table>

1. **How much do I save on each basket?**

<table>
<thead>
<tr>
<th>Which basket</th>
<th>Discount</th>
<th>Amount after discount</th>
<th>Savings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basket 1</td>
<td>25 %</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basket 2</td>
<td>50 %</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basket 3</td>
<td>10 %</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- a. Which basket cost the least? [Blank]
- b. Which basket cost the most? [Blank]
- c. On which basket did you save the least? [Blank]
- d. On which basket did you save the most? [Blank]
- e. What is the total cost of all the baskets before discount? [Blank]
- f. What is the total cost of all the baskets after discount? [Blank]
2. Here are four families’ groceries for the month.

<table>
<thead>
<tr>
<th>Total cost</th>
<th>Discount coupons</th>
<th>Total amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family 1</td>
<td>Wash. powder R2.00 off</td>
<td>R1 500.00</td>
</tr>
<tr>
<td>Family 2</td>
<td>Lucky Customer scratch card.</td>
<td>R1 275.00</td>
</tr>
<tr>
<td>Family 3</td>
<td>Lucky Customer scratch card.</td>
<td>R1 687.25</td>
</tr>
<tr>
<td>Family 4</td>
<td>Lucky Customer scratch card.</td>
<td>R999.99</td>
</tr>
</tbody>
</table>

LUCKY CUSTOMER
Scratch card
Three trolleys in a row. 10 % off.
Four trolleys in a row. 20 % off.
Five trolleys in a row. 50 % off.

Shop search
Go to your nearest shop or shopping centre.
Find out about discount prices.
How much can you save?
Say where you think you will look for the following world data.

- Today’s population
- Earthquakes
- Children liking chocolate ice cream
- Largest countries
- Learners with cell phones
- Language spoken

1. “Do the children in our school eat a healthy breakfast?” What do you normally eat for breakfast? Tick whether you normally eat any of these things for breakfast.

   a) Cooked porridge  
   b) Cereal with added sugar  
   c) Cereal without added sugar  
   d) Bread  
   e) Fruit  
   f) Yoghurt  
   g) I don’t eat breakfast  
   h) Something else (please say what).  

2. You need to find out what the favourite chocolate of each learner in your school.

   a. What type of data will you collect?  
   b. How will you collect it?  
   c. Where will you find the information?  
   d. What will the data tell us?  
   e. Do I think the data can help us to answer the question? Why? 
3. **Draw up a frequency to record the data given below.**

Put the names in order starting with the most common name.

<table>
<thead>
<tr>
<th>Names</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Remember our tally competition …**

In pairs we are going to see who can count the tallies this time the fastest.
Look at the table. Make your own story using words such as.

<table>
<thead>
<tr>
<th>Temperature</th>
<th>Tally</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 °C – 5 °C</td>
<td>//</td>
</tr>
<tr>
<td>6 °C – 10 °C</td>
<td>///</td>
</tr>
<tr>
<td>11 °C – 15 °C</td>
<td>///</td>
</tr>
<tr>
<td>16 °C – 20 °C</td>
<td>///</td>
</tr>
<tr>
<td>20 °C – 25 °C</td>
<td>///</td>
</tr>
</tbody>
</table>

1. Grouping data

When a large amount of data has to be collected it may help to tally it.

The following tally chart represents the ages of 200 people who went to a school concert.

<table>
<thead>
<tr>
<th>Age</th>
<th>Tally</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>0–9</td>
<td>///</td>
<td>9</td>
</tr>
<tr>
<td>10–19</td>
<td>///</td>
<td></td>
</tr>
<tr>
<td>20–29</td>
<td>///</td>
<td></td>
</tr>
<tr>
<td>30–39</td>
<td>///</td>
<td></td>
</tr>
<tr>
<td>40–49</td>
<td>///</td>
<td></td>
</tr>
<tr>
<td>50–59</td>
<td>///</td>
<td></td>
</tr>
<tr>
<td>60–69</td>
<td>///</td>
<td></td>
</tr>
<tr>
<td>70–79</td>
<td>///</td>
<td></td>
</tr>
<tr>
<td>80–89</td>
<td>///</td>
<td></td>
</tr>
<tr>
<td>90–99</td>
<td>///</td>
<td></td>
</tr>
</tbody>
</table>

a. Complete the table by filling in the frequencies.
b. How are the ages grouped?

c. You decide to group the ages differently. The first group is 0-5. Group the rest of the ages. Draw a table like the one on the previous page and complete it.
2. You got the information below on a piece of paper. Record this data onto the table on the next page.

<table>
<thead>
<tr>
<th>Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>1°C</td>
</tr>
<tr>
<td>2°C</td>
</tr>
<tr>
<td>3°C</td>
</tr>
<tr>
<td>4°C</td>
</tr>
<tr>
<td>5°C</td>
</tr>
<tr>
<td>6°C</td>
</tr>
<tr>
<td>7°C</td>
</tr>
<tr>
<td>8°C</td>
</tr>
<tr>
<td>9°C</td>
</tr>
<tr>
<td>10°C</td>
</tr>
<tr>
<td>11°C</td>
</tr>
<tr>
<td>12°C</td>
</tr>
<tr>
<td>13°C</td>
</tr>
<tr>
<td>14°C</td>
</tr>
<tr>
<td>15°C</td>
</tr>
<tr>
<td>16°C</td>
</tr>
<tr>
<td>17°C</td>
</tr>
<tr>
<td>18°C</td>
</tr>
<tr>
<td>19°C</td>
</tr>
<tr>
<td>20°C</td>
</tr>
<tr>
<td>21°C</td>
</tr>
<tr>
<td>22°C</td>
</tr>
<tr>
<td>23°C</td>
</tr>
<tr>
<td>24°C</td>
</tr>
<tr>
<td>Temperature</td>
</tr>
<tr>
<td>-------------</td>
</tr>
</tbody>
</table>

**Tally competition** ...

In pairs see who can count the tallies the fastest.
How many apples were eaten this week at the school?

= 10 apples

= 5 apples

Monday
Tuesday
Wednesday
Thursday
Friday

1. Look at the pictograph and answer the questions.

Favourite food in our school

Key:

= 20 children

= 10 children

Pap and stew
Hamburger
Hot dog
Curry and rice
Sandwiches

a. How many children have chosen pap and stew as their favourite meal? 50 children
b. How many children have chosen sandwiches as their favourite meal? 25 children
c. How many children have chosen hamburgers as their favourite meal? 25 children
d. How many more children like the most favourite meal than the least favourite meal? 25 children
e. How many children were asked? 100 children
f. What if the burger picture represented:

<table>
<thead>
<tr>
<th></th>
<th>Pap and stew</th>
<th>Hamburger</th>
<th>Hot dog</th>
<th>Curry and rice</th>
<th>Sandwiches</th>
</tr>
</thead>
<tbody>
<tr>
<td>= 50 children</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>= 25 children</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
2. Use the pictograph to answer the questions.

Books read over the last 4 years.

<table>
<thead>
<tr>
<th>Key:</th>
<th>24 books</th>
<th>12 books</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lydia</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lindiwe</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dan</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sipho</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. How many books did Lindiwe read? __________
b. How many more books did Lydia read than Dan? __________
c. Two children read the least number of books. How many books did they read? __________
d. How many books do you think Lydia, Lindiwe, Dan and Sipho will read in 8 years? __________

3. Answer the question on the pictograph.

2015 Housing project

<table>
<thead>
<tr>
<th>Houses built</th>
<th>Houses being built</th>
<th>Houses planned to be built</th>
</tr>
</thead>
</table>

Key:

- = 100 000 houses
- = 50 000 houses

a. How many houses should still be build? __________
b. How many houses are built? __________
c. How many houses are in the process of being built? __________
d. Calculate the total number of houses in this housing project. __________

How many did they see?

- = 25 000 insects

When and where do you think this was?
1. Look at the pictograph and complete the pie chart.

Bread eaten in four days.

Key:

= 10 loaves
= 5 loaves

Monday
Tuesday
Wednesday
Thursday

2. Answer the following questions:
   a. How many loaves of bread were eaten on Monday?
   b. How much bread was eaten on Wednesday?
   c. On which day was the most bread eaten?
   d. How many loaves were eaten in total?
   e. What fraction of bread was eaten on Tuesday?
      Thursday? Monday?
      Wednesday? Remember to write your answers in the simplest form.
3. Look at the pie chart and answer the questions.

Ice cream liked by children in grade 6.

- a. What is the favourite ice-cream in grade 6?
- b. What is the least favourite ice-cream in grade 6?
- c. What is the difference between the favourite and the least favourite ice-cream?
- d. What fraction of grade 6 like strawberry ice-cream? vanilla ice-cream? lime ice-cream? chocolate ice cream?

4. Look at the pie chart and answer the questions.

Favourite day of the week.

- a. What is the favourite day of the week?
- b. What do you think so?
- c. Write the following in fractions: People that like: Monday, Thursday, Friday
- d. Compare question 2 and 3’s pie charts.

Which circle shows …?

\[ \frac{1}{2} + \frac{1}{4} + \frac{3}{12} = \]
### How many hours do they help at home per week?

<table>
<thead>
<tr>
<th></th>
<th>Simon</th>
<th>Lee</th>
<th>Suraya</th>
<th>Ben</th>
<th>Lisa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Making beds</td>
<td>½ hour</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Washing dishes</td>
<td>1 hour</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drying dishes</td>
<td></td>
<td>½ hour</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clean my room</td>
<td></td>
<td></td>
<td>3 hours</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dusting</td>
<td></td>
<td></td>
<td>1 hour</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cleaning own bedroom</td>
<td>2 ½ hours</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Making beds</td>
<td></td>
<td></td>
<td></td>
<td>2 hours</td>
<td></td>
</tr>
<tr>
<td>Dusting</td>
<td></td>
<td></td>
<td>3 hours</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Washing dishes</td>
<td></td>
<td></td>
<td>4 hours</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drying dishes</td>
<td></td>
<td></td>
<td>½ hour</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 1. Use the information above to complete the pictograph.

**Key:**
- 1 hour
- ½ hour

<table>
<thead>
<tr>
<th></th>
<th>Simon</th>
<th>Lee</th>
<th>Suraya</th>
<th>Ben</th>
<th>Lisa</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 hour</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>½ hour</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 2. Use the pictograph above to label you pie chart. We did the first one for you.

**Title:**

- Simon
- Lee
- Suraya
- Ben
- Lisa
3. Look at the bar graph and answer the questions.

<table>
<thead>
<tr>
<th></th>
<th>Simon</th>
<th>Lee</th>
<th>Suraya</th>
<th>Lisa</th>
<th>Ben</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Making beds</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Washing dishes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drying dishes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dusting</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cleaning own bedroom</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

![Bar Graph]

Before answering the questions below compare the table above and the bar graph on your left.

a. Write your answers in hours and minutes. What time did they spend on:
   i. Making beds? [ ] hours [ ] minutes
   ii. Washing dishes? [ ] hours [ ] minutes
   iii. Drying dishes? [ ] hours [ ] minutes
   iv. Dusting? [ ] hours [ ] minutes
   v. Cleaning own bedroom? [ ] hours [ ] minutes

b. On what task did they spend the most time? [ ]

c. On what task did they spend the least time? [ ]
When we have a list of numbers as part of some data, we often find it useful to work out the average number.

I kept a record of last week’s materials collected. I wonder what was the average amount of material collected.

<table>
<thead>
<tr>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 kg</td>
<td>2 kg</td>
<td>4 kg</td>
<td>5 kg</td>
<td>2 kg</td>
</tr>
</tbody>
</table>

12 + 2 + 4 + 5 + 2
= 25
= 25 ÷ 5
= 5 kg

So we need to divide 25 by 5 to get the average, because we have five days.

There are three different types of average: the mean, the median and the mode. We are calculating the mean here.

Calculate the average (mean) of the following:

• 25, 15, 20, 9, 11 and 10
• 50, 1 000, 250, 350, 100, 500, 200, 700, 00, and 300
• 1, 5; 2, 7 and 4, 2
• 36, 40, 80 and 100
• 21, 70, 35, 14, 63, 77 and 28

To first put the numbers in order of size makes it easier to work out the average.

After calculating the averages, say which numbers are above and which are below the mean.

Example: recycling material example above
5 kg was the average for the week.

• Monday was above the average for the week
• Tuesday, Wednesday and Friday were below the average for this week.

1. Use the tables to answer the questions.

<table>
<thead>
<tr>
<th>Amount of glass collected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1</td>
</tr>
<tr>
<td>5 kg</td>
</tr>
</tbody>
</table>

i. What is the mean score? ____________________________

ii. What is the median score? _________________________

iii. What is the mode? ________________________________
Calculate the average (mean) of the following:

- 25, 15, 20, , 11 and 10
- 50, 1000, 250, 350, 100, 500, 200, 700, 00, and 300
- 1, 5, 2, 7 and 4, 2
- 3, 40, 0 and 100
- 21, 70, 35, 14, 3, 77 and 2

After calculating the averages, say which numbers are above and which are below the mean.

Example: recycling material example above
5 kg was the average for the week.

- Monday was above the average for the week
- Tuesday, Wednesday and Friday were below the average for this week.

<table>
<thead>
<tr>
<th>Amount of plastic collected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1</td>
</tr>
<tr>
<td>8 kg</td>
</tr>
</tbody>
</table>

i. What is the mean score? ____________________________

ii. What is the median score? ____________________________

iii. What is the mode? ____________________________

<table>
<thead>
<tr>
<th>Amount of metal collected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1</td>
</tr>
<tr>
<td>5 kg</td>
</tr>
</tbody>
</table>

i. What is the mean score? ____________________________

ii. What is the median score? ____________________________

iii. What is the mode? ____________________________

2. Here are the heights of some of the recycling bins.

135 cm, 145 cm, 125 cm, 135 cm, 145 cm, 125 cm, 120 cm, 120 cm, 130 cm and 115 cm.

i. What is the mean score? ____________________________

ii. What is the median score? ____________________________

3. Here is the total amount of paper collected in seven weeks.

<table>
<thead>
<tr>
<th>Amount of paper collected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day 1</td>
</tr>
<tr>
<td>7 kg</td>
</tr>
</tbody>
</table>

i. What is the mean score? ____________________________

ii. What is the median score? ____________________________

4. Go back to Question 1 and work out how many kilograms of each material were collected.
1. Look at the number sequence 125, 250, 375, 500.
   a. What is the difference between the numbers. __________________________

   b. Describe the pattern. ____________________________________________

2. Look at the number sequence 8, 24, 72.
   a. What is the difference between the numbers. __________________________

   b. Describe the pattern. ____________________________________________

3. Give the next three numbers of the sequence. Describe the pattern.
   a. 286  311  336  __________________________
4. Complete the pattern.

a. 373, 374, 376, ______, ______, ______

b. 650, 653, 659, ______, ______, ______

c. 298, 303, 313, ______, ______, ______

d. 642, 644, 648, ______, ______, ______

e. 589, 593, 601, ______, ______, ______

f. 461, 467, 479, ______, ______, ______

Collecting shells

James collects shells. Every day he picks up twice as many shells as the previous day. On the first day he picks up 7 shells. On the second day he picks up 14. How many shells would he collect on the ninth day?
1. Answer these questions.

a. input output

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td>3</td>
<td>24</td>
</tr>
<tr>
<td>5</td>
<td>40</td>
</tr>
<tr>
<td>7</td>
<td>56</td>
</tr>
<tr>
<td>9</td>
<td>72</td>
</tr>
</tbody>
</table>

i) What would you write in the empty box?

ii) What do we call it?

b. input output

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>9</td>
</tr>
<tr>
<td>3</td>
<td>19</td>
</tr>
<tr>
<td>5</td>
<td>29</td>
</tr>
<tr>
<td>6</td>
<td>34</td>
</tr>
<tr>
<td>8</td>
<td>44</td>
</tr>
<tr>
<td>11</td>
<td>59</td>
</tr>
</tbody>
</table>

i) What would you write in the empty box?

ii) What do we call it?

c. input output

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>40</td>
</tr>
<tr>
<td>5</td>
<td>25</td>
</tr>
<tr>
<td>9</td>
<td>45</td>
</tr>
<tr>
<td>4</td>
<td>20</td>
</tr>
<tr>
<td>7</td>
<td>35</td>
</tr>
</tbody>
</table>

i) What would you write in the empty box?

ii) What do we call it?
2. Create your own flow diagram and describe it.

b. input

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

output

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. Determine the rule and then write a number sentence for each.

a. input

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
</tr>
</tbody>
</table>

output

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>32</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td></td>
</tr>
<tr>
<td>26</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td></td>
</tr>
<tr>
<td>29</td>
<td></td>
</tr>
</tbody>
</table>

i. \(9 + 24 = 32\)

ii. \(6 + 17 = 23\)

iii. \(7 + 18 = 26\)

iv. \(3 + 11 = 14\)

v. \(4 + 15 = 17\)

vi. \(4 + 25 = 29\)

b. input

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

output

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>62</td>
<td></td>
</tr>
<tr>
<td>46</td>
<td></td>
</tr>
<tr>
<td>70</td>
<td></td>
</tr>
<tr>
<td>38</td>
<td></td>
</tr>
<tr>
<td>78</td>
<td></td>
</tr>
<tr>
<td>54</td>
<td></td>
</tr>
</tbody>
</table>

i. \(7 \times 10 = 62\)

ii. \(5 \times 9 = 45\)

iii. \(8 \times 9 = 72\)

iv. \(4 \times 18 = 72\)

v. \(9 \times 6 = 54\)

vi. \(6 \times 9 = 54\)
Revise measuring instruments by saying what you will use these measurement instruments for.

<table>
<thead>
<tr>
<th>Measuring tape</th>
<th>Tape measure</th>
<th>Ruler</th>
<th>Trundle wheel</th>
<th>Metre stick</th>
<th>Odometre</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Measuring tape" /></td>
<td><img src="image" alt="Tape measure" /></td>
<td><img src="image" alt="Ruler" /></td>
<td><img src="image" alt="Trundle wheel" /></td>
<td><img src="image" alt="Metre stick" /></td>
<td><img src="image" alt="Odometre" /></td>
</tr>
</tbody>
</table>

1. What would you use to measure the following with? Give 5 examples and in what unit you will measure.

   a. I will measure in ___ and ___.
      
      i.  
      ii.  
      iii.  
      iv.  
      v.  

   b. I will measure in ___ and ___.
      
      i.  
      ii.  
      iii.  
      iv.  
      v.  

   b. I will measure in ___ and ___.
      
      i.  
      ii.  
      iii.  
      iv.  
      v.  

3. Draw the following lines with your ruler.

a. 9 cm

b. 6.3 cm

c. 142 mm
Converting between lengths

• Show 98 mm on the ruler.
• Show where it says cm.
• How many cm is it?

We can sometimes record measurements in centimetres and fractions of centimetres, e.g. the eraser is \(2 \frac{1}{2}\) cm long. This is easy to do because on a ruler, the fifth millimetre gradation line is normally longer. Once you have learnt, from reading commercial mass and capacity packaging, that \(2 \frac{1}{2}\) is the same as 2.5, you will also be able to use the decimal, 0.5 in your recording, i.e. 2.5 cm long.

1. First do the practical activity and then write the following in cm and mm and then cm only.

   a. 98 mm =
   b. 57 mm =
   c. 74 mm =
   d. 66 mm =
   e. 85 mm =
   f. 49 mm =

2. Write the following as mm.

   a. \(9 \frac{1}{2}\) cm =
   b. \(5 \frac{1}{2}\) cm =
   c. \(7 \frac{1}{2}\) cm =
   d. \(4 \frac{1}{2}\) cm =
   e. \(8 \frac{1}{2}\) cm =
   f. \(6 \frac{1}{2}\) cm =
3. Write the following in m and cm.  
Example: 786 cm = 7 m and 86 cm

Show 786 cm on a tape measure.

a. 963 cm  
   ____________

b. 698 cm  
   ____________

c. 741 cm  
   ____________

d. 587 cm  
   ____________

e. 852 cm  
   ____________

f. 479 cm  
   ____________

4. Write the following in cm.  
Example: 9 m and 75 cm = 975 cm

Show 9 m and 75 cm on a tape measure.

a. 9 m and 73 cm  
   ____________

b. 7 m and 58 cm  
   ____________

c. 6 m and 91 cm  
   ____________

d. 4 m and 89 cm  
   ____________

e. 8 m and 62 cm  
   ____________

f. 5 m and 47 cm  
   ____________

continued
5. Write the following in m and cm

Example: 3 650 cm = 36 m and 50 cm or 36.5 m

Show 3 650 cm on a long tape measure.

- a. 6 260 cm
- b. 7 590 cm
- c. 3 920 cm
- d. 9 100 cm
- e. 8 450 cm
- f. 4 220 cm

6. Write the following in m.

Example: 6 m and 400 cm = 6 400 m

Show 6 m and 400 cm on a tape measure.

- a. 7 m and 300 cm
- b. 6 m and 200 cm
- c. 8 m and 500 cm
- d. 9 m and 400 cm
- e. 3 m and 200 cm
- f. 4 m and 100 cm
7. Write the following as m.

Example: \(5 \frac{1}{2} \text{ km} = 5500 \text{ m}\)

Show \(5 \frac{1}{2} \text{ km}\) on an odometer (trip meter).

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a. (9 \frac{1}{2} \text{ km})</td>
<td>b. (6 \frac{1}{2} \text{ km})</td>
</tr>
<tr>
<td>c. (7 \frac{1}{2} \text{ km})</td>
<td>d. (4 \frac{1}{2} \text{ km})</td>
</tr>
<tr>
<td>e. (8 \frac{1}{2} \text{ km})</td>
<td>f. (5 \frac{1}{2} \text{ km})</td>
</tr>
</tbody>
</table>

8. Write the following as km.

Example: \(6500 \text{ m} = 6 \frac{1}{2} \text{ km}\) or \(6,5 \text{ km}\)

Show \(6500 \text{ m}\) on the odometer.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a. (1400 \text{ m})</td>
<td>b. (3900 \text{ m})</td>
</tr>
<tr>
<td>c. (7500 \text{ m})</td>
<td>d. (2800 \text{ m})</td>
</tr>
<tr>
<td>e. (8600 \text{ m})</td>
<td>f. (9700 \text{ m})</td>
</tr>
</tbody>
</table>

Who travelled further?

Our friends travelled 3.5 km to the event. We travelled 3.250 m to the event. Who travelled the farthest?
1. Round off to the nearest cm. Draw the arrows on the number lines.

Example: a. 3 mm rounded off is 0 mm, 6 mm rounded off is 1 cm

a. 14 mm rounded off is ________ 16 mm rounded off is ________

b. 44 rounded off is ________ 45 rounded off is ________

c. 189 rounded off is ________ 182 rounded off is ________

2. Round off to the nearest m.

Example: a. 30 cm rounded off is 0 m, 90 cm rounded off is 1 m
1. Round off to the nearest mm.

Example: a. 400 mm rounded off is 0, 800 mm rounded off is 1

a. 6 400 mm rounded off is __________

b. 8 100 mm rounded off is __________

c. 5 400 mm rounded off is __________

2. Round off to the nearest cm.

Example: a. 6 m rounded off is 6 m, 7 m rounded off is 7 m

a. 6 45 cm rounded off is __________

b. 8 54 cm rounded off is __________

c. 3 35 cm rounded off is __________

3. Round off to the nearest m.

Example: a. 400 rounded off is 0, 800 rounded off is 1

a. 6 400 mm rounded off is __________

b. 8 100 mm rounded off is __________

c. 5 400 mm rounded off is __________

4. Round off to the nearest km.

Example: Round off to km. To round off 1 km and 750 m using your knowledge of rounding off to thousand. 2 km and 650 m ≈ 3 km.

a. 3 km and 230 m ________________

b. 6 km and 520 m ________________

c. 7 km and 150 m ________________

d. 9 km and 610 m ________________

e. 2 km and 470 m ________________

f. 4 km and 460 m ________________

g. 3 km and 380 m ________________

h. 8 km and 740 m ________________

i. 5 km and 890 m ________________

Rounding off is easy

Why is it easier to work of with a rounded quantity? Give an example.
Measurement problem solving

1. First work through these examples and then solve the problems

**Example 1:**
I bought 4 200 mm and then 3 300 mm of string. How much string did I buy? Write down your answer in mm and cm and then in m.

\[
4\ 200\ mm + 3\ 300\ mm = 4\ 000\ mm + 3\ 000\ mm + 200\ mm + 300\ mm = 7\ 000\ mm + 500\ mm = 7\ 500\ mm
\]

m and cm : 7 m 500 mm
Metres: \(7\frac{1}{2}\) m

**Example 2:**
I bought \(7\frac{1}{2}\) m of ribbon. I used \(3\frac{1}{2}\) m. How much ribbon do I have left?
Make a drawing.

\[3\frac{1}{2}\ \text{metres of ribbon are left.}\]

**Example 3:**
We travelled 530 km 500 m on the first day. Our holiday destination is 1 000 km from home. How far should we still travel?

\[
1\ 000\ km – (530\ km\ 500m) = 470\ km – 500\ m = 469\ km\ 500\ m\ \text{or}\ 469.5\ km
\]
a. I bought 4 600 mm of string and then 2 800 mm more. How much string did I buy? Write down your answer in mm and cm, and then in m.

b. I bought 9 m of ribbon. I used 3½ m. How much ribbon do I have left? Write your answer in m.

c. My father’s desk is 3 300 mm long and mine measures 6 200 mm. How much longer is my desk than my father’s desk? Write down your answer in m and cm, and then in m.

d. I bought 90 m of wool. I used 19½ m. How much wool do I have left? Write your answer in m.

e. Sandra and Sipho travelled 1 520 km. Sandra drove 579 km. How far did Sipho drive?

f. My car has to go for a service in 2 871 km. I drove 1 264 km during the month. How many kilometres before I have to take my car for the service?
What is a kilometre?
Find out what a kilometre is.
How many times should you go around a soccer field to make one kilometre?
About how many big adult steps will make a kilometre?
How many times should you go around a netball court to make one kilometre?

1. Extend the number lines below. What do you notice?

2. Complete the table below by estimating and measuring.

<table>
<thead>
<tr>
<th>Estimate</th>
<th>Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length of the classroom</td>
<td></td>
</tr>
<tr>
<td>Distance from your home to school</td>
<td></td>
</tr>
<tr>
<td>Distance from your classroom to Grade 1 classroom</td>
<td></td>
</tr>
</tbody>
</table>

3. Convert the following:
   a. 3 000 m = ______ km
   b. 200 m = ______ km
   c. 4 500 m = ______ km
   d. 350 m = ______ km
   e. 2 876 m = ______ km
   f. 420 m = ______ km

4. What unit will you use when measuring each of the following? mm, cm, m, or km
   a. Pencil
   b. Book
   c. Length of netball court
   d. Distance from Durban to Johannesburg
   e. Eraser
   f. Desk
1. How far do you think it is from:
   a. Johannesburg to Cape Town?
   b. Pretoria to Johannesburg?
   c. Your town or city to Johannesburg?
   d. Your town or city to Durban?
   e. Your town or city to Cape Town?

2. Look at the distance chart below to complete the table on the next page:

   a. Beaufort West is from Johannesburg: 951 km, 951 000 m
   b. Durban from Johannesburg:
   c. Kimberley from Cape Town:
   d. Mossel Bay from Pretoria:
   e. East London from Cape Town:
   f. Komatipoort from Oudtshoorn:
   g. Phalaborwa from Johannesburg:
   h. Stellenbosch from Pretoria:
   i. Stellenbosch from Cape Town:
   j. Nelspruit from Pretoria:
   k. Windhoek from Johannesburg:

Kilometre outing

Your teacher will take you on a kilometre outing.
You will be divided into 5 groups.
Each group will guess what (place, landmark, etc.) is about 1 km from the school.
The group whose guess is the closest is the winning group.
1. Say if the following is true or false:
   a. There are 1 000 000 millimetres in 1 kilometre. [True]  
   b. There are 1 000 000 metres in 1 kilometre. [False]  
   c. There are 1 000 000 grams in 1 ton. [False]  
   d. There are 1 000 000 millilitres in 1 litre. [True]  
   e. There are 1 000 000 millilitres in 1 000 litres. [True]  

2. Complete the following:
   a. 1 000 000 + 500 000 + 70 000 + 8 000 + 400 + 90 + 6 = 2 000 000  
   b. 1 000 000 + 300 000 + 40 000 + 9 000 + 500 + 1 = 1 300 000  
   c. 1 000 000 000 + 900 000 + 50 = 1 000 000 590  
   d. 1 000 000 + 3 = 1 000 003  
   e. 300 + 800 000 + 9 + 50 000 + 1 000 000 + 40 + 2 000 = 1 000 999 849  

3. What is the place value of the underlined digits in each number?
   a. 1 389 532 = 1000000  
   b. 1 743 949 = 0  
   c. 10 902 482 = 1000000  
   d. 100 002 005 = 1000000  
   e. 1 999 999 999 = 1000000000  

4. Circle the number that is:
   a. 200 000 more than 1 547 893: 1 567 893, 1 547 895, 1 747 893, 1 569 893  
   b. 50 000 more than 2 732 410: 2 732 415, 2 782 425, 2 787 425, 2 782 410  
   c. 4 000 more than 35 185 432: 35 189 432, 35 185 932, 35 185 437, 35 185 932  
   d. 300 000 more than 231 365 464: 231 365 764, 231 368 464, 231 665 464  
   e. 1 000 000 more than 2 786 453: 2 886 453, 3 786 453, 2 886 453, 1 796 453  

5. Use any digits to make five different 9-digit numbers smaller than 999 999 999 but bigger than 500 000 000.
   a. [Number]  
   b. [Number]  
   c. [Number]  
   d. [Number]  
   e. [Number]  

6. Answer <, > or =
   a. 1 893 349 [True]  
   b. 2 454 390 [True]  
   c. 3 300 900 [True]  
   d. 99 999 009 [True]  
   e. 6 404 080 [True]  

7. Write the following in numbers:
   a. One million six hundred and thirty two thousand five hundred and eighty one. 1 632 581  
   b. Two hundred and twenty five thousand four hundred and eleven. 225 411  

8. Write the following in words:
   a. 1 568 700 One million five hundred and sixty eight thousand seven hundred.  
   b. 2 701 298 Two million seven hundred and one thousand two hundred and ninety eight.  
   c. 17 876 305 Seventeen million eight hundred and seventy six thousand three hundred and five.  
   d. 34 984 534 Thirty four million nine hundred and eighty four thousand five hundred and thirty four.  

What is a million? Look at all the pictures, numbers and words.
1 000 000 A million seconds is 12 days.

Million sided shape is a hecatommyriagon.
Six zeros in a million.
9. Answer the following questions:
   a. What is a prime number?
   b. Give 5 prime numbers bigger than 10 but smaller than 100?
   c. What is a composite number?
   d. Give 5 composite numbers bigger than 10 but smaller than 100?

10. Round the numbers off to the nearest 10:
   a. 18
   b. 21
   c. 376
   d. 1 282
   e. 45 693
   f. 187 008
   g. 2 345 999
   h. 68 483 704

11. What number do you see to round off to the nearest 5?

<table>
<thead>
<tr>
<th>ten</th>
<th>hundred</th>
<th>thousand</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. 92</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. 348</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. 2 871</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. 5 908</td>
<td></td>
<td></td>
</tr>
<tr>
<td>e. 47 610</td>
<td></td>
<td></td>
</tr>
<tr>
<td>f. 989 898</td>
<td></td>
<td></td>
</tr>
<tr>
<td>g. 1 707 078</td>
<td></td>
<td></td>
</tr>
<tr>
<td>h. 29 999 999</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

13. A production manager needs to have an estimate of how many items his factory produces per week. He normally rounds off the tallies and then adds them. The tallies are as follows: 4 232 145 ; 5 468 099 ; 8 000 892.

   a. Round off these tallies to the nearest 10 and then add them.
   b. Round off these tallies to the nearest 100 and then add them.
   c. Round off these tallies to the nearest 1 000 and then add them.
   d. Which of the above answers is the most accurate? Give a reason for your answer.

   Really big numbers
   Million: 1 000 000
   Billion: 1 000 000 000
   Trillion: 1 000 000 000 000
   Quadrillion: 1 000 000 000 000 000
   Quintillion: 1 000 000 000 000 000 000
   Sextillion: 1 000 000 000 000 000 000 000
   Septillion: 1 000 000 000 000 000 000 000 000
   Octillion: 1 000 000 000 000 000 000 000 000 000
   Nonillion: 1 000 000 000 000 000 000 000 000 000 000
   Centillion: 1 followed by 303 zeros

   Is this the same in South Africa?
What number comes next?

Try this!

What if I start with 20,000?

1. Complete the table below.

<table>
<thead>
<tr>
<th>Number</th>
<th>100</th>
<th>200</th>
<th>300</th>
<th>400</th>
<th>500</th>
<th>600</th>
<th>700</th>
<th>800</th>
<th>900</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>150</td>
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<td></td>
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<td>200</td>
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<td>250</td>
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<td></td>
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<tr>
<td>300</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>350</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. Use both methods to do the sums below.

Examples:
Example 1:

<table>
<thead>
<tr>
<th>5 4 3</th>
<th>5 4 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>x 7 9 8</td>
<td>x 7 9 8</td>
</tr>
<tr>
<td>2 4</td>
<td>3 x 8</td>
</tr>
<tr>
<td>2 1 0 0</td>
<td>3 x 700</td>
</tr>
<tr>
<td>3 2 0</td>
<td>40 x 8</td>
</tr>
<tr>
<td>3 6 0 0</td>
<td>40 x 90</td>
</tr>
<tr>
<td>2 8 0 0 0</td>
<td>40 x 700</td>
</tr>
<tr>
<td>4 0 0 0 0</td>
<td>500 x 8</td>
</tr>
<tr>
<td>4 5 0 0 0</td>
<td>500 x 90</td>
</tr>
<tr>
<td>3 5 0 0 0 0 0</td>
<td>(500 x 700)</td>
</tr>
<tr>
<td>4 3 3 3 1 4</td>
<td></td>
</tr>
</tbody>
</table>

Check your answer using a calculator.

Example 2:

<table>
<thead>
<tr>
<th>5 4 3</th>
<th>5 4 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>x 7 9 8</td>
<td>x 7 9 8</td>
</tr>
<tr>
<td>4 3 4 4</td>
<td></td>
</tr>
<tr>
<td>4 8 8 7 0</td>
<td></td>
</tr>
<tr>
<td>+ 3 8 0 1 0 0</td>
<td></td>
</tr>
<tr>
<td>4 3 3 3 1 4</td>
<td></td>
</tr>
</tbody>
</table>

Check your answer using a calculator.

a. 678 x 324 =
|     |     |
|     |     |

b. 795 x 382 =
|     |     |
|     |     |

c. 849 x 473 =
|     |     |
|     |     |
d. 699 x 399 =
|     |     |
|     |     |
e. 938 x 525 =
|     |     |
|     |     |
3. Solve the problems.
   a. A leaking tap drips 5 ml every minute. How many litres of water will be wasted in a week?

   b. This morning, at O.R. Tambo airport, 34 aeroplanes landed with 327 people in each plane. How many people landed at the airport this morning?

   c. On a apple farm there are 999 apple trees. If there are 73 apples in each tree, how many apples will there be?

   Using all the digits

   The following multiplication sum uses every digit from 0 to 9 once (not counting the intermediate steps).

   Fill in the missing numbers.

   \[
   \begin{array}{c}
   7 \\
   \times \\
   4 \\
   \end{array}
   \]
Describe what you see?

When you list the multiples of two (or more) numbers, and find the same number in both, then that is a common multiple of those numbers.

1. Write down the multiples for the following numbers, and circle the common multiples for the two numbers.
   
   a. 2
   
   4
   
   6
   
   8
   
   10
   
   12
   
   14
   
   16
   
   18
   
   20
   
   b. 3
   
   6
   
   9
   
   12
   
   15
   
   18
   
   21
   
   24
   
   27
   
   30
   
   c. 4
   
   8
   
   12
   
   16
   
   20
   
   24
   
   28
   
   32
   
   36
   
   40
   
   44
   
   50
   
   d. 5
   
   10
   
   15
   
   20
   
   25
   
   30
   
   35
   
   40
   
   45
   
   50
   
   e. 10
   
   20
   
   30
   
   40
   
   50

2. Look at the examples above. What is the smallest common multiple for the following?

   - 2 and 6
   - 3 and 9
   - 4 and 7
   - 5 and 8
   - 10 and 12

The smallest common multiple is called the lowest common multiple.

3. Use the example to complete the number lines below.

   Multiples of 3
   
   3
   
   6
   
   9
   
   12
   
   15
   
   18
   
   21
   
   24
   
   27
   
   30
   
   33
   
   36
   
   39
   
   42
   
   45
   
   48
   
   51
   
   54
   
   57
   
   60

   Multiples of 5
   
   5
   
   10
   
   15
   
   20
   
   25
   
   30
   
   35
   
   40
   
   45
   
   50
   
   55
   
   60
   
   65
   
   70
   
   75

Match a black puzzle piece with an orange piece.

- Multiples of 2 and 4.
- Multiples of 3 and 6.
- Multiples of 2 and 8.
- Multiples of 3 and 4.
- Multiples of 2 and 7.
3. Solve the problems.

a. 39 aeroplanes were chartered to bring tourists from Europe to South Africa. Each plane can carry 345 passengers. How many people in total can be carried by 39 aeroplanes? Show all your calculations.

Check your answer using a calculator. Mark your answer.

b. Green Point Football Stadium is divided into 124 stands. Each stand can seat 544 people. How many people can be seated in total? Show all your calculations.

Check your answer using a calculator. Mark your answer.

c. On the chicken farm, 2,391 eggs are laid every day of the year. How many eggs are laid in a year?

Check your answer using a calculator. Mark your answer.

Using all the digits

Fill in the missing numbers. Use the numbers 1 to 9 to complete the sums. Each number is only used once. Each row is a math sum. Each column is a math sum. Remember that multiplication and division are performed before addition and subtraction.

Answers that are -70 and -11! I am sure somebody will help me!!

Check your answer using a calculator. Mark your answer.
1. Say if the following is true or false:
   a. 12 has 5 factors.
   b. The multiples of 3 are: 3, 6, 9, 12, ....
   c. 13 is a prime number.
   d. 21 is a composite number.
   e. The lowest common multiple for 3 and 5 is 5.

2. Choose and tick (✓) the correct answer:
   a. The first five multiples for six are:
      i. 5, 10, 15, 20, 25, 30
      ii. 6, 12, 18, 24, 30
      iii. 5, 6, 7, 8, 9, 10
   b. 15 has ________ factors:
      i. 2
      ii. 3
      iii. 4
   c. 7 has ________ factors:
      i. 2
      ii. 3
      iii. 4
   d. 4, 8, 12, 16, 20, ... are multiples of ________
      i. 4
      ii. 8
      iii. 20
   e. The first four multiples for 100 000 are:
      i. 4, 8, 12, 16, 20, ...
      ii. 400 000, 800 000
      iii. 100 000, 200 000, 300 000, 400 000

3. Find the factors of 1 000 000. Remember that factors come in pairs, e.g.
   i. 1, 2
   ii. 250 000
   iii. 500 000

Show your workings below.

4. Write down the multiples for these numbers, but not bigger than 1 000 000.
   a. 100 000
   b. 250 000
   c. 125 000
   d. 300 000
   e. 200 000

Problem solving

Palesa has 126 books stacked in equal piles. Name all the ways the books could be stacked.
1. Round the numbers off to the nearest 10, 100 and 1 000.

<table>
<thead>
<tr>
<th></th>
<th>Nearest 10</th>
<th>Nearest 100</th>
<th>Nearest 1 000</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>3 879</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b.</td>
<td>9 304</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c.</td>
<td>4 673</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d.</td>
<td>2 214</td>
<td></td>
<td></td>
</tr>
<tr>
<td>e.</td>
<td>2 387</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. Multiply the numbers by rounding off the first number (multiplier) to the nearest 1 000 and the second number (multiplicand) to the nearest 100.

Example 1:
3 353 x 104
≈ 3 000 x 100
≈ 300 000

Why do you think we sometimes round off numbers before we multiply them?

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>9 317 x 687 =</td>
</tr>
<tr>
<td>b.</td>
<td>2 863 x 239 =</td>
</tr>
</tbody>
</table>

3. Multiply the numbers by rounding off the first number (multiplier) to the nearest 100.

Example 1:
3 353 x 104
≈ 3 000 x 100
≈ (4 000 x 100) + (4 000 x 4)
≈ 300 000 + 16 000
≈ 316 000

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>9 517 x 535 =</td>
</tr>
<tr>
<td>b.</td>
<td>6 485 x 187 =</td>
</tr>
<tr>
<td>c.</td>
<td>7 204 x 684 =</td>
</tr>
<tr>
<td>d.</td>
<td>8 396 x 579 =</td>
</tr>
</tbody>
</table>

Continue on an extra sheet of paper.
4. Multiply the numbers by rounding off the second number (multiplicand) to the nearest 100.

Example:
3 353 x 104
= 3 353 x 100
= 335 300

Example:
3 353 x 104
= 3 400 x 100
= 340 000

Continue on an extra sheet of paper.

Continue on an extra sheet of paper.

Continue on an extra sheet of paper.

Continue on an extra sheet of paper.

Continue on an extra sheet of paper.

5. Multiplying the numbers by rounding off the first number (multiplier) and the second number (multiplicand) to the nearest 100.

Example:
3 353 x 104
= 3 400 x 100
= 340 000

Continue on an extra sheet of paper.

Continue on an extra sheet of paper.

Continue on an extra sheet of paper.

Continue on an extra sheet of paper.

Continue on an extra sheet of paper.

6. Go back to question 2-5. Check to see how close your answer were by multiplying the numbers with a calculator.

7. Estimate what the answers will be. Calculate and then check your calculation against your estimation.

a. 35 421 + 42 365 =

b. 4 235 x 76 =

Birthday money
My mother sells birthday hampers. In each hamper is chocolate worth R25, candy worth R22 and toffees worth R18. The box for the sweets costs R5. My mother adds another R20 for making it and for her delivery cost. She sold R2 320 worth of hampers last year. What was the total amount of money my mother received?
Revising the distributive property.

\[ 6 \times (5 + 3) = (6 \times 5) + (6 \times 3) \]
\[ 6 \times 8 = 30 + 18 \]
\[ 48 = 48 \]

**Method 1:**
\[ \begin{align*}
(4 + 6) \times (5 + 7) &= (4 \times 5) + (4 \times 7) + (6 \times 5) + (6 \times 7) \\
&= 20 + 28 + 30 + 42 \\
&= 120
\end{align*} \]

**Method 2:**
\[ \begin{align*}
4 \times 5 &= 20 \\
4 \times 7 &= 28 \\
6 \times 5 &= 30 \\
6 \times 7 &= 42
\end{align*} \]

\[ 20 + 28 + 30 + 42 = 120 \]

1. **Calculate the following using both methods above.**

a. \((9 + 5) \times (2 + 9)\)

**Method 1**

**Method 2**

b. \((7 + 3) \times (8 + 2)\)

**Method 1**

**Method 2**

2. **Calculate the following using the example to guide you.**

**Example:**
\[ 2 \, 643 \times 45 = (2 \, 000 + 600 + 40 + 3) \times (40 + 5) \]
\[ = (80 \, 000 + 10 \, 000 + 24 \, 000 + 3 \, 000 + 1 \, 600 + 200 + 120 + 15) \]
\[ = 80 \, 000 + 10 \, 000 + 20 \, 000 + 4 \, 000 + 3 \, 000 + 1 \, 000 + 600 + 200 + 100 + 20 + 10 + 5 \]
\[ = 110 \, 000 + 8 \, 000 + 900 + 30 + 5 \]
\[ = 100 \, 000 + 10 \, 000 + 8 \, 000 + 900 + 30 + 5 = 118 \, 935 \]

**Boots and all**

a. This year a company gave 6,273 boxes of soccer balls to children. Each box had 45 soccer balls. How many soccer balls did the company give away?

b. A company bought 556 new laptops for R6,750.00 each. How much did they pay in total?
1. Write the following in expanded notation.

Example: \(456 = 400 + 50 + 6\)

a. 678 _________________________  b. 937 _________________________

c. 1735 _________________________  d. 1 753 _________________________

e. 2 583 _________________________  f. 4 987 _________________________

g. 5 383 _________________________  h. 9 364 _________________________

2. Calculate the following.

Example:

\[5 \times 2 847 = 5 \times (2 000 + 800 + 40 + 7) = 10 000 + 4 000 + 200 + 35 = 14 235\]

a. 8 \times 2 844

b. 7 \times 9 873

3. Calculate the following.

Example:

\[2 163 \times 14 = 4 \times 2 163 = 4 \times (2 000 + 100 + 60 + 3) = 8 000 + 400 + 240 + 12 = 8 652 + 21 630 = 10 \times 2 163 = 21 630 \]

\[30 282\]

a. 7 382 \times 39

b. 6 928 \times 72

a. 937 \times 32  
b. 7 843 \times 96

4. Calculate the following.

Example:

\[3 432 \times 26 = 6 \times (3 000 + 400 + 30 + 2) = 18 000 + 2 400 + 180 + 12 = 20 592 + 68 640 = 20 \times 3 432 = 60 000 + 8 000 + 600 + 40 = 68 640 \]

\[89 232\]
5. Write the following in expanded notation.

Example: \(1 638 = 1 000 + 600 + 30 + 8\)

a. 6 642  
b. 3 545  
c. 5 971  
d. 1 253  
e. 4 822  
f. 6 987

6. Calculate the following.

Example:
\[
5 \times 5 963 \\
= 5 \times (5 000 + 900 + 60 + 3) \\
= 25 000 + 4 500 + 300 + 15 \\
= 29 815
\]

a. \(7 \times 1 748\),  
b. \(9 \times 8 115\)

7. Calculate the following.

Example:
\[
\begin{align*}
5 963 \\
& \times 104 \\
23 852 \\
+ 596 300 \\
\hline
620 152
\end{align*}
\]

\[4 \times 5 963 = 4 \times (5 000 + 900 + 60 + 3) = 20 000 + 3 600 + 240 + 12 = 23 852 + 596 300 = 620 152\]

a. \(5 158 \times 270\),  
b. \(8 772 \times 409\)

### Apples and students

- A farmer planted 3,650 apple trees in a row. He planted 135 rows. How many trees did he plant?
- 3,758 students enrolled in a college. They had to pay R450 for admission fees. How much money did the students pay altogether?
Let us revise!

A ratio shows the relative sizes of two or more values. Ratios can be shown in different ways. Using the " : " to separate example values, or as a single number by dividing one value by the total. We can have “part-to-part” and “part-to-whole” ratios.

Example:

Part to part:

- The ratio of even numbers to odd numbers is 2:4 or \( \frac{2}{4} \)
- The ratio of odd numbers to even numbers is 4:2 or \( \frac{4}{2} \)

Part to whole:

- The ratio of even numbers to all the numbers is 2:6 or \( \frac{2}{6} \)
- The ratio of odd numbers to all the numbers is 6:2 or \( \frac{6}{2} \)

1. Write four ratios for each statement. We have done the first one for you.

   a. There are 8 puppies, 6 are male, and 2 are female.
      i. 6 male to 2 female (6:2) part to part
      iii. 6 male to all (6:8) part to whole
      b. A recipe for pancakes uses 3 cups of flour and 2 cups of milk.
      i. 
      iii. 
      c. You need to make pancakes for 4 times the quantity above. Write down four new ratios.
      i. 

2. Read the following and discuss. Take a 4-digit number with no repeating digit. 1234. It has 24 possible combinations using each digit only once.
   1234, 1243, 1324, 1342, 1423, 1432, 2134, 2143, 2314, 2341, 2413, 2431, 3124, 3142, 3214, 3241, 3412, 3421, 4123, 4132, 4213, 4231, 4312, 4321
   a. How many of these combinations are prime numbers. Check the number sentences with a calculator. We gave you five possible answers.
      a. 1234 = 2 x 617
      b. 2134
      c. 1243 = 11 x 113
      e. 1324 = 2 x 2 x 331
      g. 1342 = 2 x 11 x 61
      i. 1432 is a prime number
      k. 1432
      m. 3124
      o. 3142
      q. 3214
      s. 3241
      u. 3412
      w. 3421
   b. How many of these 24 combinations in question 2 can be divided by 2 and 4? Work out a set of ratios as shown below.

<table>
<thead>
<tr>
<th>Example: All the numbers ending with an even number is divisible by 2. There are 12 numbers divisible by 2 (12 numbers)</th>
<th>Divisible by 2</th>
<th>Divisible by 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. What is the ratio of the numbers not divisible by 2 or 4 to all the numbers divisible by 2 or 4? [part to part]</td>
<td>12:12</td>
<td>30</td>
</tr>
<tr>
<td>b. What is the ratio of the numbers divisible by 2 or 4 to all the numbers not divisible by 2 or 4? [part to part]</td>
<td>12:12</td>
<td>30</td>
</tr>
<tr>
<td>c. What is the ratio of numbers not divisible by 2 or 4 to all the numbers? [part to whole]</td>
<td>12:24</td>
<td>50 %</td>
</tr>
<tr>
<td>d. What is the ratio of numbers divisible by _____ to all the numbers? [part to whole]</td>
<td>12:24</td>
<td>50 %</td>
</tr>
</tbody>
</table>

Problem solving

Use the 5-digit number 12345 and show which numbers have a ratio of \( \frac{2}{3} \) to the total of all numbers?
1. Look at the fraction circles above and answer the questions.
   a. What is \( \frac{1}{5} \) of 5 000?
   b. What is \( \frac{2}{5} \) of 5 000?
   c. What is \( \frac{3}{5} \) of 5 000?
   d. What is \( \frac{4}{5} \) of 5 000?
   e. What is \( \frac{1}{8} \) of 8 000?
   f. What is \( \frac{2}{8} \) of 8 000?
   g. What is \( \frac{3}{8} \) of 8 000?
   h. What is \( \frac{4}{8} \) of 8 000?
   i. What is \( \frac{1}{10} \) of 8 000?
   j. What is \( \frac{2}{10} \) of 8 000?
   k. What is \( \frac{3}{10} \) of 8 000?
   l. What is \( \frac{4}{10} \) of 8 000?
   m. What is \( \frac{5}{10} \) of 8 000?
   n. What is \( \frac{6}{10} \) of 8 000?

2. Look at the number line and answer the questions below.
   a. What is \( \frac{2}{10} \) of 10 000?
   b. What is \( \frac{7}{10} \) of 10 000?
   c. What is \( \frac{9}{10} \) of 10 000?
   d. What is \( \frac{5}{10} \) of 10 000?
   e. What is \( \frac{2}{10} \) of 30 000?
   f. What is \( \frac{5}{10} \) of 30 000?
   g. What is \( \frac{8}{10} \) of 30 000?
   h. What is \( \frac{5}{10} \) of 30 000?

3. Use the fraction circles to answer the following:
   a. Total apples transported to the market in 3 months.
      i. How many apples were transported to the market?
      ii. What is \( \frac{1}{5} \) of the apples?
      iii. What is \( \frac{2}{5} \) of the apples?
   b. Total of people visiting an exhibition for 6 days.
      i. How many people in total visited the exhibition?
      ii. What is \( \frac{1}{10} \) of the people?
      iii. What is \( \frac{2}{10} \) of the people?
      iv. What is \( \frac{3}{10} \) of the people?
      v. What is \( \frac{4}{10} \) of the people?
      vi. What is \( \frac{5}{10} \) of the people?
   c. The total amount of goods they sold in one year.
      i. What is the total amount of goods sold per year?
      ii. What is \( \frac{1}{5} \) of the total amount?
      iii. What is \( \frac{2}{5} \) of the total amount?
      iv. What is \( \frac{3}{5} \) of the total amount?
      v. What is \( \frac{4}{5} \) of the total amount?

4. If I buy R200 worth of goods and they say I got less than \( \frac{3}{4} \) of the price. How much did I pay for the goods? 

Advertisement

Go through a newspaper.
Find any article, advertisement, etc. where they mention fractions.
Look at the fractions circles. What do they mean?

1. Add the following. Remember to write your answer in the simplest form.
   a. \[ \frac{3}{4} + \frac{2}{4} = \frac{4}{4} \]
   b. \[ \frac{1}{3} + \frac{3}{5} = \frac{1}{15} \]
   c. \[ \frac{1}{6} + \frac{4}{5} = \frac{10}{30} \]
   d. \[ \frac{3}{8} + \frac{1}{4} = \frac{5}{8} \]
   e. \[ \frac{5}{8} + \frac{7}{4} = \frac{3}{2} \]

2. Add the following fractions with the same denominators.
   a. \[ \frac{1}{2} + \frac{1}{4} = \frac{3}{4} \]
   b. \[ \frac{3}{4} + \frac{1}{2} = \frac{5}{4} \]
   c. \[ \frac{1}{3} + \frac{1}{2} = \frac{5}{6} \]

3. Add the following fractions with different denominators.
   a. \[ \frac{5}{3} + \frac{1}{2} = \frac{11}{6} \]
   b. \[ \frac{4}{5} + \frac{3}{4} = \frac{22}{20} \]
   c. \[ \frac{2}{12} + \frac{11}{5} = \frac{127}{60} \]

4. My mother has been working for \( \frac{3}{4} \) days and then she rested for 2 days and then worked another \( \frac{1}{4} \) days. For how many days did she work?

What is the magic fraction?

| \( \frac{6}{4} \) | \( \frac{2}{2} \) | \( \frac{5}{5} \) |
| \( \frac{3}{2} \) | \( \frac{2}{2} \) | \( \frac{5}{2} \) |
| \( \frac{1}{4} \) | \( \frac{1}{2} \) | \( \frac{3}{6} \) |
At the start of summer, the tree was 4.5 metres tall. The farmer cut off 2.25 metres. During the summer, it grew another 1.25 metres. How tall was the tree by the end of summer?

Sipho’s recipe needs $\frac{5}{4}$ cups of flour. He has $\frac{1}{2}$ cups. How much more flour does he need?

1. Subtract the following. Remember to write your answer in the simplest form.
   
   a. \[ \frac{5}{3} - \frac{1}{4} = \]
   
   b. \[ \frac{9}{8} - \frac{3}{8} = \]
   
   c. \[ \frac{2}{3} - \frac{1}{4} = \]
   
   d. \[ \frac{6}{4} - \frac{2}{4} = \]
   
   e. \[ \frac{8}{5} - \frac{4}{5} = \]
   
   f. \[ \frac{12}{12} + \frac{11}{12} = \]

2. Subtract the following fractions with the same denominators:
   
   a. \[ \frac{8}{4} - \frac{3}{4} = \]
   
   b. \[ \frac{9}{4} - \frac{3}{8} = \]
   
   c. \[ \frac{7}{12} + \frac{4}{12} = \]

3. Subtract the following fractions with different denominators:
   
   a. \[ \frac{5}{3} - \frac{1}{4} = \]
   
   b. \[ \frac{9}{5} - \frac{2}{7} = \]
   
   c. \[ \frac{12}{9} - \frac{11}{6} = \]

4. At the start of summer, the tree was 4.5 metres tall. The farmer cut off 2.25 metres. During the summer, it grew another 1.25 metres. How tall was the tree by the end of summer?
All about fractions

Make your own fractions sentences using the words below. Try to use as many words you can in one sentence.

- one quarter
- one half
- 500 ml
- one tenth
- 250 g
- 200 mm
- 125 mm
- 10 cm
- one fifth
- one eighth

1. Say if the following is true or false:
   a. \( \frac{1}{10} \) of a 1 000 ml jug equals to 1 litre.
   b. \( \frac{1}{5} \) of a 100 equals to 20.
   c. \( \frac{1}{3} \) is bigger than \( \frac{1}{4} \).
   d. 200 g is a quarter of 1 kg.
   e. 25 % of R20 is R5.

2. Look at the diagram and complete the table below:

<table>
<thead>
<tr>
<th>Coloured in</th>
<th>Common Fraction</th>
<th>Decimal fraction</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue</td>
<td>( \frac{1}{8} )</td>
<td>0.125</td>
<td>12.5 %</td>
</tr>
<tr>
<td>Red</td>
<td>( \frac{1}{4} )</td>
<td>0.25</td>
<td>25 %</td>
</tr>
<tr>
<td>Yellow</td>
<td>( \frac{1}{2} )</td>
<td>0.5</td>
<td>50 %</td>
</tr>
<tr>
<td>Green</td>
<td>( \frac{1}{5} )</td>
<td>0.2</td>
<td>20 %</td>
</tr>
<tr>
<td>Pink</td>
<td>( \frac{1}{10} )</td>
<td>0.1</td>
<td>10 %</td>
</tr>
</tbody>
</table>

3. Place a tick (✓) next to the correct answer:

   a. One eighth of 1 m is:
      i. 500 mm
      ii. 125 mm
      iii. 800 mm
   b. Which fraction is bigger than \( \frac{1}{8} \)?
      i. \( \frac{1}{4} \)
      ii. \( \frac{1}{2} \)
      iii. \( \frac{1}{3} \)
   c. Which fraction is smaller than \( \frac{1}{4} \)?
      i. \( \frac{1}{5} \)
      ii. \( \frac{1}{2} \)
      iii. \( \frac{1}{3} \)
   d. One half of 60 kg is?
      i. 120 kg
      ii. 30 kg
      iii. 60 kg
   e. \( \frac{1}{4} + \frac{1}{4} = \)
      i. \( \frac{1}{2} \)
      ii. \( \frac{1}{4} \)
      iii. \( \frac{1}{8} \)
   f. \( \frac{2}{3} + \frac{1}{4} = \)
      i. \( \frac{11}{12} \)
      ii. \( \frac{7}{12} \)
      iii. \( \frac{3}{12} \)
   g. \( \frac{2}{6} + \frac{4}{7} = \)
      i. \( \frac{11}{12} \)
      ii. \( \frac{7}{12} \)
      iii. \( \frac{3}{12} \)
   h. \( \frac{1}{2} + 2\frac{1}{3} = \)
      i. \( 1\frac{5}{6} \)
      ii. \( 3\frac{2}{6} \)
      iii. \( 3\frac{2}{5} \)
   i. 50 % of R10 is:
      i. R500
      ii. R50
      iii. R5

What is the magic fraction?
### Equivalent Fractions

#### Which of the following fractions are equal?

<table>
<thead>
<tr>
<th>Fraction</th>
<th>1/5</th>
<th>2/8</th>
<th>4/10</th>
<th>4/20</th>
<th>0.9</th>
<th>0.45</th>
<th>0.18</th>
<th>1/100</th>
</tr>
</thead>
</table>

- By just looking at these fractions, can you tell which are equal?
- Is there a way to work out if any of these fractions are equal?
- Yes, we need the fractions to be in the same form to work out if they are equal.

#### 1. Convert to common fractions (remember simplest form).

<table>
<thead>
<tr>
<th>Fraction</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a. 80%</td>
<td>80/100 = 8/10 = 4/5</td>
<td>b. 0.25</td>
<td>c. 0.5</td>
<td>d. 21%</td>
<td>e. 58%</td>
<td>f. 0.72</td>
<td>g. 0.81</td>
<td>h. 0.16</td>
</tr>
</tbody>
</table>

i. 67% j. 45% k. 63% l. 0.87

#### 2. Convert to decimal fractions.

<table>
<thead>
<tr>
<th>Fraction</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a. 32%</td>
<td>32/100 = 0.32</td>
<td>b. 4/10</td>
<td>c. 2/5</td>
<td>d. 28%</td>
<td>e. 49%</td>
<td>f. 0.4</td>
<td>g. 5/25</td>
<td>h. 89/100</td>
</tr>
</tbody>
</table>

i. 66% j. 25% k. 13% l. 14/20

#### 3. Convert to percentages.

<table>
<thead>
<tr>
<th>Fraction</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a. 4/10</td>
<td>b. 0.8</td>
<td>c. 0.5</td>
<td>d. 89/100</td>
<td>e. 56/100</td>
<td>f. 0.42</td>
<td>g. 0.21</td>
<td>h. 0.96</td>
<td></td>
</tr>
</tbody>
</table>

i. 3/20 j. 18/25 k. 38/50 l. 0.37

#### 4. Fill in <, > or =.

<table>
<thead>
<tr>
<th>Fraction</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a. 85%</td>
<td>b. 4/10</td>
<td>c. 4/10</td>
<td>d. 25%</td>
<td>e. 67%</td>
<td>f. 0.98</td>
<td>g. 0.65</td>
<td>h. 23%</td>
<td></td>
</tr>
</tbody>
</table>

i. 47/100 j. 55% k. 95/100 l. 1/4

m. 10% n. 30% o. 0.35

#### Number line fractions

Draw a number line that starts at 0 and ends at 1. Place the following on the number line: 1/10, 20%, 3/5 and 0.5.
Addition and subtraction of common fractions

Work through these two examples and then answer the questions.

Example 1:
\[
\frac{4}{10} + \frac{4}{10} = \frac{8}{10} \\
\frac{8}{10} - \frac{4}{10} = \frac{4}{10}
\]

Example 2:
\[
\frac{1}{2} + \frac{2}{8} = \quad \frac{1}{2} - \frac{2}{8} = \\
\frac{1}{2} + \frac{2}{8} = \quad \frac{1}{2} - \frac{2}{8} = \\
= \frac{1}{2} \times \frac{4}{4} + \frac{2}{8} = \frac{1}{2} \times \frac{4}{4} - \frac{2}{8} \\
= \frac{4}{8} + \frac{2}{8} = \frac{4}{8} - \frac{2}{8} \\
= \frac{6}{8} = \frac{2}{8}
\]

Don’t forget that the denominator stays the same and only the numerator is added or subtracted.

Remember when we change the denominator, we change the numerator as well, because what we do to the bottom, we have to do to the top.

1. Add the following.
   a. \(\frac{3}{6} + \frac{2}{6} = \)    b. \(\frac{3}{10} + \frac{5}{10} = \)
   
   c. \(\frac{6}{9} + \frac{2}{9} = \)    d. \(\frac{2}{3} + \frac{1}{2} = \)
   
   e. \(\frac{5}{7} + \frac{4}{14} = \)    f. \(\frac{2}{5} + \frac{5}{6} = \)

2. Subtract the following.
   a. \(\frac{6}{9} - \frac{2}{9} = \)    b. \(\frac{8}{10} - \frac{6}{10} = \)
   
   c. \(\frac{8}{12} - \frac{5}{12} = \)    d. \(\frac{2}{3} - \frac{4}{12} = \)
   
   e. \(\frac{3}{4} - \frac{4}{14} = \)    f. \(\frac{8}{9} - \frac{1}{2} = \)

3. Fill in the missing information.
   a. \(\frac{1}{4} \quad \frac{1}{4} = \)    b. \(\frac{1}{5} = \frac{3}{5} \)
   
   c. \(\frac{7}{7} + \frac{1}{2} = \frac{15}{21} \)
   
   d. \(\frac{4}{4} + \frac{4}{4} = \frac{8}{4} \)
   
   e. \(\frac{2}{4} + \frac{3}{6} = 1 \)
   
   f. \(\frac{1}{8} + \frac{3}{16} = \)    g. \(\frac{5}{29} = \)
   
   h. \(\frac{1}{2} + \frac{5}{29} = \)

4. Story sum.
   Maria cuts a cake into 20 pieces. She eats \(\frac{1}{2}\) of the cake now and \(\frac{1}{3}\) later. What fraction of the cake did she eat?

Pie problems

My father eats \(\frac{3}{10}\) of a pie and later another \(\frac{1}{3}\). What fraction of the pie did my father eat?
Look at the example and discuss.

James saves R1 565 for a game. When he gets to the shop it is discounted by $\frac{2}{5}$. How much money does he save?

What is the question? How much money does he save?
What are the numbers or fractions? R1 565 and $\frac{2}{5}$
What is the key word? I am going to use sharing.
What will the number sentence be? $\frac{2}{5}$ of R1 565 =
Possible drawing: I will first start to share R1 565 between 5.

I will then circle $\frac{2}{5}$ of the purses and add the money. R313 + R313 = R626
James saved R626.

1. Solve the following problems.

a. My aunt’s food budget is R3 500. She saves $\frac{1}{5}$ of her budget. How much money did she save?

b. A wall has 124 panels. A painter paints $\frac{4}{5}$ of these panels. How many panels are painted?

c. What is $\frac{2}{5}$ of 354 cupcakes?

d. Bongi’s father has 364 sweets. He gives $\frac{3}{7}$ of them to her mother for school lunch-boxes. How many sweets will she get?
e. Thandi uses one 50 ℓ container of paraffin for her stove. If she has used \( \frac{3}{5} \) of the bottle already, how many litres are left?

f. Jack has worked on his homework for \( \frac{3}{5} \) of 3 hours. How many minutes have passed?

g. Grandfather uses \( \frac{2}{5} \) of his 800 ml of gel. How much gel has he used?

h. My friend’s cat weighs 1 568 g and her kitten weighs \( \frac{2}{5} \) of the cat’s mass. What is the mass of the kitten?

i. A chocolate cake needs \( \frac{3}{4} \) cup of flour. If my mother wants to bake 5 cakes, how much flour will she need?

Solve more word problems:

- Phulani has 1 452 stamps. If she gives \( \frac{2}{6} \) of the stamps to her friend, how many stamps will they each have?
- Zama earns \( \frac{2}{5} \) of what his father earns in a month. If his father earns R18 000, how much does Zama earn?
3. Describe these houses in terms of 2-D shapes and 3D objects. Use words such as:

Look at the picture. Which country is this? Match one of the objects on the right with the picture.

1. Label the parts of these diagrams.

2. Complete the following table:

<table>
<thead>
<tr>
<th>Faces of the 3D object</th>
<th>Number of faces</th>
<th>Number of vertices</th>
<th>Number of edges</th>
<th>Net</th>
</tr>
</thead>
<tbody>
<tr>
<td>Triangular prism</td>
<td>2 triangles</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rectangular prism</td>
<td>3 rectangles</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pentagonal prism</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tetrahedron</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Designing a house

You need to design a variety of houses. How many different houses can you design using some objects:

- as roofs
- as wall structures

Continue on another sheet of paper.
3-D objects

1. Identify and count the:
   i. vertices    ii. edges    iii. faces
   i. ________________    ii. ________________    iii. ________________
   i. ________________    ii. ________________    iii. ________________
   i. ________________    ii. ________________    iii. ________________

2. Find or draw pictures of objects with:
   a. 8 vertices, 12 edges and 6 faces
   b. 4 vertices, 6 edges and 4 faces

3. Can a 3-D object have equal numbers of vertices, edges and faces?
   __________________________________________

4. Match the skeleton with the 3-D object. Label and say how many of the following you count.
   i. faces    ii. edges    iii. vertices
   a. Pentagonal pyramid
      i. ________________    ii. ________________    iii. ________________
   b. Hexagonal pyramid
      i. ________________    ii. ________________    iii. ________________
   c. Square pyramid
      i. ________________    ii. ________________    iii. ________________
   d. Triangular pyramid (tetrahedron)
      i. ________________    ii. ________________    iii. ________________

5. Count the:
   Faces    ______________________
   Edges    ______________________
   Vertices ______________________

6. Compare the tetrahedron above with all the other pyramids.

What 3-D object will have seven vertices and seven faces?
1. Write a sum to work out the square units.
   a. 
   b. 
   c. 
   d. 

2. Label each side saying if it is the length or the width of the rectangle. Then write a sum for each rectangle
   a. 
   b. 
   c. 
   d. 
   e. 

3. Draw 10 different rectangles. What is the area of each rectangle? Give your answer in square units.

4. Work out the square units for each shape. Write down how you did it.
   a. 
   b. 
   c. 

What is the size of the dam?
   a. Pink
   b. Green
   c. Blue
   d. Purple
   e. Yellow
   f. Orange
   g. Brown
   h. Red
Area and perimeter

1. Calculate the perimeter and area of the following rectangles.
   a. Length: 3 cm; Width: 2 cm
   b. Length: 1 cm; Width: 3 cm
   c. Length: 3 cm; Width: 2 cm
   d. Length: 1 cm; Width: 6 cm

2. Calculate the perimeter and area of the following rectangles:
   a. Length: 10 cm; Width: 8 cm
   b. Length: 25 cm; Width: 20 cm

3. If you have a rectangle with the following area, what could its length and breadth (width) be? What is the perimeter?
   a. Area = 72 square metres (m²).
   b. Area = 108 m²

4. Themba has a small garden with a perimeter of 30 metres and an area of 30 square metres. He wants to double the dimensions of his garden next year. What will be the new perimeter and new area of his larger garden? Show the calculations.

5. Mpho and his father are building a deck because the old one is too small. The old deck was 2 m x 3 m. They are going to double the dimensions of the deck. They'll need to know how much railing and wood stain to purchase. What will be the perimeter and area of the new deck be? Show the calculations.

Investigate

How many different ways can you draw a square and rectangles covering 36 square units?
Show them.
Do all of the above shapes have the same area?
Do they all have the same perimeter?
Discuss the following. Area

<table>
<thead>
<tr>
<th>front view</th>
<th>side view</th>
<th>top view</th>
</tr>
</thead>
</table>

1. Calculate the cubic units.

**Count the cube units**

Draw all the faces and then calculate the square areas. We did the first two faces for you. Do the rest on an extra sheet of paper.

- 5 square units x 4 square units =
- 5 square units x 4 square units =

Write it down:

$$4 \text{ cubic units} \times 5 \text{ cubic units} \times 3 \text{ cubic units} = 2 \times (5 \times 4) + 2 \times (3 \times 4) + 2 \times (5 \times 3)$$

2. Calculate the volume and then the area. We did the first drawings for you.

a. 

b. 

c. You will need extra paper for c-f.

- 6 cubic units x 5 cubic units x 4 cubic units.
- 5 cubic units x 6 cubic units x 4 cubic units.
- 3 cubic units x 3 cubic units x 4 cubic units.
- 7 cubic units x 8 cubic units x 9 cubic units.
- 4 cubic units x 8 cubic units x 2 cubic units.

**Millimetre fun**

What will the surface area in square units be of a rectangular prism with 6 cubic units by 4 cubic units by 3 units?
1. Complete the table:

<table>
<thead>
<tr>
<th>Rectangle</th>
<th>Length</th>
<th>Width</th>
<th>Perimeter in:</th>
</tr>
</thead>
<tbody>
<tr>
<td>30 mm</td>
<td>20 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30 cm</td>
<td>10 cm</td>
<td></td>
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<tr>
<td>180 cm</td>
<td>200 cm</td>
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<tr>
<td>275 mm</td>
<td>233 mm</td>
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<td>132 mm</td>
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</tbody>
</table>

2. Draw the rectangles.

Length: 80 mm  Width: 40 mm  Perimeter in mm: __ cm: __ m: __

Length: 76 mm  Width: 42 mm  Perimeter in mm: __ cm: __ m: __

Length: 92 mm  Width: 35 mm  Perimeter in mm: __ cm: __ m: __
### Perimeter, length and width continued

3. Calculate the following for each space:
   
   a. The length is 54 cm and the width is 30 cm. What is the perimeter?
   
   b. The length is 108 cm and the width is 76 cm. What is the perimeter?
   
   c. The perimeter is 100 cm. What can the length and width be? Give 5 possible answers.
   
   d. What is the width, if the perimeter is 90 cm, and one length is 30 cm?
   
   e. What is the length, if the perimeter is 210 cm, and the width is 40 cm?

### How to play:

**Perimeter search**

- **Play in pairs.** Search for any 5 rectangular shapes in your classroom. First guess what the perimeter is and then measure it. The person that guesses the closest gets one point. The person with the most points is the winner.
Division and remainders

Calculate the following:

<table>
<thead>
<tr>
<th>Term 4</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a. 2 500 ÷ 40 =</td>
<td>b. 3 100 ÷ 80 =</td>
</tr>
<tr>
<td>c. 5 100 ÷ 10 =</td>
<td>d. 4 400 ÷ 7 =</td>
</tr>
<tr>
<td>e. 1 700 ÷ 40 =</td>
<td>f. 6 300 ÷ 10 =</td>
</tr>
<tr>
<td>g. 3 200 ÷ 50 =</td>
<td>h. 4 700 ÷ 40 =</td>
</tr>
</tbody>
</table>

1. Estimate and then calculate the following:
   a. 2 500 ÷ 40 =
   b. 3 100 ÷ 80 =
   c. 5 100 ÷ 10 =
   d. 4 400 ÷ 7 =
   e. 1 700 ÷ 40 =
   f. 6 300 ÷ 10 =
   g. 3 200 ÷ 50 =
   h. 4 700 ÷ 40 =

2. Complete the multiplication board.

<table>
<thead>
<tr>
<th>×</th>
<th>10</th>
<th>20</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
<th>80</th>
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</table>

a. Colour the numbers that are divisible by 30 in blue.
b. Colour the numbers that are not divisible by 30 in red.
c. How did the multiplication board help you to work it out quickly?
d. What are the first 10 multiples of 30?

e. What are the first 10 multiples of 400 and 500?

3. Colour the numbers that are divisible by 400 red and the numbers that are divisible by 500 blue.

<table>
<thead>
<tr>
<th></th>
<th>100</th>
<th>200</th>
<th>300</th>
<th>400</th>
<th>500</th>
<th>600</th>
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</tbody>
</table>

a. What do you get when you mix red and blue?
b. Which numbers are coloured purple?
c. What do you know about these numbers?
d. Are the purple numbers divisible by 300?
e. What are the first 10 multiples of 400 and 500?
f. What are the factors of 800?

I have a number

In pairs play the following.

Say to your friend: “I have a 2 digit number. It is divisible by 2. Guess what my number is?”
Give your friend some clues until he or she gets it correct.
Take more turns using other numbers.
Quick recall:

<table>
<thead>
<tr>
<th></th>
<th>6 ÷ 2</th>
<th>28 ÷ 7</th>
<th>14 ÷ 2</th>
<th>12 ÷ 6</th>
<th>40 ÷ 4</th>
<th>16 ÷ 8</th>
</tr>
</thead>
<tbody>
<tr>
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<td></td>
<td>12 ÷ 2</td>
<td>40 ÷ 4</td>
<td>42 ÷ 7</td>
<td>18 ÷ 9</td>
<td>16 ÷ 2</td>
<td>24 ÷ 4</td>
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<td></td>
<td>21 ÷ 3</td>
<td>6 ÷ 3</td>
<td>10 ÷ 5</td>
<td>30 ÷ 5</td>
<td>54 ÷ 6</td>
<td>90 ÷ 9</td>
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<tr>
<td></td>
<td>72 ÷ 8</td>
<td>45 ÷ 9</td>
<td>63 ÷ 9</td>
<td>40 ÷ 5</td>
<td>56 ÷ 7</td>
<td>27 ÷ 3</td>
</tr>
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</tr>
<tr>
<td></td>
<td>20 ÷ 5</td>
<td>56 ÷ 8</td>
<td>32 ÷ 4</td>
<td>24 ÷ 3</td>
<td>15 ÷ 3</td>
<td>8 ÷ 4</td>
</tr>
</tbody>
</table>

Example 1:

364 ÷ 50 =

= (300 + 64) ÷ 50

= (300 ÷ 50) + (64 ÷ 50)

= 6 + 1 remainder 14

= 7 remainder 14

Test the answer.

Example 2:

785 ÷ 70 =

= (700 + 85) ÷ 70

= (700 ÷ 70) + (85 ÷ 70)

= 10 + 1 remainder 15

= 11 remainder 15

Test the answer.

Example 3:

674 ÷ 80 =

= (600 + 74) ÷ 80

= (600 ÷ 80) + (74 ÷ 80)

= 10 + 1 remainder 14

= 11 remainder 12

Example 4:

894 ÷ 80 =

= (800 + 94) ÷ 80

= (800 ÷ 80) + (94 ÷ 80)

= 10 + 1 remainder 14

= 11 remainder 14

1. Show your calculations.

a. 278 ÷ 50 =

b. 463 ÷ 50 =

c. 871 ÷ 50 =

d. 983 ÷ 50 =

e. 391 ÷ 50 =

2. Show your calculations.

a. 438 ÷ 70 =

b. 223 ÷ 70 =

c. 291 ÷ 70 =

d. 713 ÷ 70 =

e. 859 ÷ 70 =

3. Show your calculations.

a. 738 ÷ 60 =

b. 253 ÷ 60 =

c. 131 ÷ 60 =

d. 193 ÷ 60 =

e. 491 ÷ 60 =

4. Show your calculations.

a. 178 ÷ 80 =

b. 253 ÷ 80 =

c. 331 ÷ 80 =

d. 415 ÷ 80 =

e. 496 ÷ 80 =

Continue on an extra sheet of paper.

continued
Example 5:
\[
\begin{array}{c}
2 & 6 \\
25 & | 6 & 5 & 0 \\
- & 5 & 0 & 0 & 25 \times 20 \\
\hline
1 & 5 & 0 \\
- & 1 & 5 & 0 & 25 \times 6 \\
\hline
0 & 25 \times 6 \\
\end{array}
\]
Answer: 26

Example 6:
\[
\begin{array}{c}
2 & 6 \\
25 & | 6 & 5 & 4 \\
- & 5 & 0 & 0 & 25 \times 20 \\
\hline
1 & 5 & 0 \\
- & 1 & 5 & 0 & 25 \times 6 \\
\hline
4 & 25 \times 6 \\
\end{array}
\]
Answer: 26 remainder 4

5. Say in each case whether there is a remainder or not, and if there is, then what it is. Show all your calculations.

\[
\begin{align*}
478 \div 25 &= 19 \text{ remainder } 3 \\
808 \div 15 &= 53 \text{ remainder } 8 \\
911 \div 50 &= 18 \text{ remainder } 11 \\
778 \div 15 &= 51 \text{ remainder } 8 \\
763 \div 35 &= 21 \text{ remainder } 38 \\
988 \div 12 &= 82 \text{ remainder } 4 \\
\end{align*}
\]

6. Test all your answers to Question 5. Show all your calculations on a separate piece of paper.

Example 7:
\[
\begin{array}{c}
2 & 5 \\
\times & 2 & 6 \\
\hline
3 & 0 \\
1 & 2 & 0 \\
1 & 0 & 0 & 20 \times 5 \\
\hline
+ & 4 & 0 & 0 & 20 \times 20 \\
\hline
6 & 5 & 0 \\
\end{array}
\]

Example 8:
\[
\begin{array}{c}
2 & 5 \\
\times & 2 & 6 \\
\hline
3 & 0 \\
1 & 2 & 0 \\
1 & 0 & 0 & 20 \times 5 \\
\hline
+ & 4 & 0 & 0 & 20 \times 20 \\
\hline
6 & 5 & 0 \\
\end{array}
\]

7. I invited 29 children to my birthday party. My budget is R1 500 for all of us. How much do I have per head to spend?

Continue on an extra sheet of paper

How fast are you?

Colour in the multiplication sums and answers that match. What do you notice?

\[
\begin{align*}
7 \times 30 &= \boxed{210} \\
70 \times 30 &= \boxed{2100} \\
2 \times 50 &= \boxed{100} \\
20 \times 50 &= \boxed{1000} \\
1 \times 80 &= \boxed{80} \\
10 \times 80 &= \boxed{800} \\
6 \times 90 &= \boxed{540} \\
60 \times 90 &= \boxed{5400} \\
\end{align*}
\]
1. Show your calculations on a separate piece of paper.
   a. $4350 \div 50 = $
   b. $5500 \div 50 = $
   c. $6962 \div 50 = $
   d. $7492 \div 50 = $
   e. $8855 \div 50 = $

2. Show your calculations on a separate piece of paper.
   a. $7490 \div 70 = $
   b. $3570 \div 70 = $
   c. $4980 \div 70 = $
   d. $6395 \div 70 = $
   e. $8492 \div 70 = $

3. Show your calculations on a separate piece of paper.
   a. $3600 \div 60 = $
   b. $2460 \div 60 = $
   c. $3065 \div 60 = $
   d. $4282 \div 60 = $
   e. $7295 \div 60 = $

4. Show your calculations on a separate piece of paper.
   a. $2400 \div 80 = $
   b. $3280 \div 80 = $
   c. $6495 \div 80 = $
   d. $4883 \div 80 = $
   e. $9699 \div 80 = $

5. Show your calculations on a separate piece of paper.
   a. $2700 \div 90 = $
   b. $3690 \div 90 = $
   c. $4597 \div 90 = $
   d. $8192 \div 90 = $
   e. $9999 \div 90 = $

Use a calculator to check your answers to questions 1 to 5.

Calculate the following:

<table>
<thead>
<tr>
<th>Calculation</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>$48 \div 8 \times x = 6$</td>
<td>$x = 8$</td>
</tr>
<tr>
<td>$72 \div x \times 1 = 8$</td>
<td>$x = 9$</td>
</tr>
<tr>
<td>$25 \div (25 \times 0) = $</td>
<td>$= 0$</td>
</tr>
<tr>
<td>$3 \times 2 + 1 = $</td>
<td>$= 3 + 2 = $</td>
</tr>
<tr>
<td>$121 \div x \times x = 11$</td>
<td>$x = 11$</td>
</tr>
<tr>
<td>$10 \div (4 \times 1) = 80$</td>
<td>$= 80$</td>
</tr>
<tr>
<td>$45 \div 9 \times 2 \div 0 = $</td>
<td>$= 2 \div 2 \div 0 = $</td>
</tr>
<tr>
<td>$63 \div x \times 1 = 9$</td>
<td>$x = 9$</td>
</tr>
<tr>
<td>$14 \div 2 \times 2 \div 0 = $</td>
<td>$= 0$</td>
</tr>
<tr>
<td>$15 \div (1 + 0) = $</td>
<td>$= 15$</td>
</tr>
<tr>
<td>$12 \div (3 + 2) = $</td>
<td>$= 2 + 2 + 1 = $</td>
</tr>
<tr>
<td>$144 \div x \times x = 0$</td>
<td>$= 0$</td>
</tr>
</tbody>
</table>

Example 1:
$4800 + 20 = (8000 + 400 + 80) \div 20$
$= (8000 + 20) + (400 + 20) + (80 + 20)$
$= 8000 + 20 + 424$

Example 2:
$9676 \div 60 = (9000 + 600 + 70 + 6) \div 60$
$= (9000 + 60) + (600 + 60) + (76 + 60)$
$= 150 + 10 + 1 \text{ rem } 16$
$= 161 \text{ rem } 16$

Example:
$\frac{128}{3} \times 30 = 3840$
$- 2880 = 960$
$\frac{960}{10} = 96$

6. Say in each case whether there is a remainder or not, and if there is, then what is it? Show all your calculations on extra sheets of paper.
   a. $6783 \div 23 = $  
   b. $7954 \div 28 = $  
   c. $6592 \div 32 = $  
   d. $8329 \div 48 = $  
   e. $9483 \div 57 = $  
   f. $8927 \div 63 = $

7. Do the following problems on an extra sheet of paper.
   a. The farmer has 18 432 eggs. He has to put them in boxes of 8 dozen to take to the supermarket. How many boxes does he need?
   b. A class raised R4 286 for a maths dictionary for each child. There are 41 children in the class. A dictionary cost R120. How much money do they still need to raise?
   c. The ratio of boys to girls in a school is 1 200: 960.
      i) What fraction of the children are girls?
      ii) What fraction are boys?
   d. A salesman travelled 6 342 km in 21 days at an average speed of 100 km per hour.
      i) How far did he travel per day?
      ii) How many hours did he travel per day?

Using all the digits

Fill in the missing numbers.
Use the numbers 1 to 9 to complete the sums.
Each number is only used once.
Each column is a math sum.
Each row is a math sum.
Remember that multiplication and division are performed before addition and subtraction.
1. Calculate and check your answers. The blocks might help you with your calculations.
   a. \(1248 \div 16 = \)  
   b. \(1872 \div 24 = \)  
   c. \(2529 \div 56 = \)

   - 1 x 16 = 16
   - 2 x 16 = 32
   - 3 x 16 = 48
   - 4 x 16 = 64
   - 5 x 16 = 80
   - 6 x 16 = 96
   - 7 x 16 = 112
   - 8 x 16 = 128
   - 9 x 16 = 144

   - 10 x 16 = 160
   - 11 x 16 = 176
   - 12 x 16 = 192

   - 2 x 16 = 32
   - 3 x 16 = 48
   - 4 x 16 = 64
   - 5 x 16 = 80
   - 6 x 16 = 96
   - 7 x 16 = 112
   - 8 x 16 = 128
   - 9 x 16 = 144

   - 10 x 16 = 160
   - 11 x 16 = 176
   - 12 x 16 = 192

   - 3 x 16 = 48
   - 4 x 16 = 64
   - 5 x 16 = 80
   - 6 x 16 = 96
   - 7 x 16 = 112
   - 8 x 16 = 128
   - 9 x 16 = 144

   - 4 x 16 = 64
   - 5 x 16 = 80
   - 6 x 16 = 96
   - 7 x 16 = 112
   - 8 x 16 = 128
   - 9 x 16 = 144

   - 5 x 16 = 80
   - 6 x 16 = 96
   - 7 x 16 = 112
   - 8 x 16 = 128
   - 9 x 16 = 144

   - 6 x 16 = 96
   - 7 x 16 = 112
   - 8 x 16 = 128
   - 9 x 16 = 144

   - 7 x 16 = 112
   - 8 x 16 = 128
   - 9 x 16 = 144

   - 8 x 16 = 128
   - 9 x 16 = 144

   - 9 x 16 = 144

2. Complete the clue boards. Calculate a-c using the clue boards to help you.
   a. \(2772 \div 116 = \)
   b. \(2829 \div 123 = \)

   - Example 1: \(2898 \div 126 = \)
     \(= (2520 \div 126) + (378 \div 126)\)
     \(= 20 + 3\)
     \(= 23\)

   - Example 2: \(3434 \div 17 = \)
     \(= (3400 \div 17) + (34 \div 17)\)
     \(= 200 + 2\)
     \(= 202\)

   - We will write the number in multiples of 17.
   - We first write 3400 divided by 17 in brackets.
   - Then write the addition symbol.
   - Then write 34 divided by 17 in brackets.

3. Story sums
   - A farmer wants to plant 6764 apple trees. He can only fit in 76 rows. How many apple trees must he plant in each row?
   - A rich man gives boxes of toys to a school. Each box has 126 toys. If there are 5292 toys, how many boxes are needed?
Sign:
Date:

1. Complete the clue boards and calculate the sums. (Remember to check your answers.)
   a. 2 391 ÷ 129 =  
   b. 3 277 ÷ 157 =  
   c. 3 843 ÷ 226 =  
   d. 5 492 ÷ 286 =  
   e. 5 926 ÷ 326 =  
   f. 6 681 ÷ 398 =  
   g. 8 253 ÷ 412 =  
   h. 8 981 ÷ 422 =  
   i. 9 653 ÷ 452 =  

   Example:
   
   $\begin{array}{c}
   6 681 \\
   - 3 98 \\
   2 701 \\
   - 2 388 \\
   313 \\
   \end{array}$

   Term 4
Properties of numbers

What will happen:

1. Complete the following:
   a. 4 - ____ = 0
   b. ____ - 15 = ____
   c. 100 000 - ____ = ____
   d. ____ - 299 999 = 0
   e. ____ - ____ = ____

2. Replace:
   - = 5  = 25  = 1/4
   - = 0,5  = 500 000

3. Complete the flow diagrams.
   a. c. 15
      201 005
      1
      0,75
      2,3
   b. 8
      387 342
      3
      1,5
   d. 36
      163
      1/3
      1,9

4. What is the value of x:
   a. x + 19 = 19 + 5
   b. 8 × 25 = x × 8
   c. (12 + x) + 14 = 12 + (15 + 14)
   d. (10 × 0,5) × 1 = 10 × (x × 0,5)
   e. (90 + 10) × 0,2 = 90 × x + 10 ×
   f. 478 321 + 0 = x
   g. 327 321 × 1 = x
   h. 289 471 - x = 0
   i. 2,5 + x = 2,5
   j. 7,9 × x = 7,9

5. If, a = 10, b = 200, and c = 3 000, then complete and calculate the sums.
   a. a + b = b + a
   b. a × b = b × a
   c. (a + b) + c = a + (b + c)
   d. (a × b) × c = a × (b × c)
   e. (a + b) × c = a × c + b × c
   f. a - a =
   g. c × 1 =
   h. b + 0 =

Sudoku fun

Solve the Sudoku puzzle.
Each block of 9 squares must have all the numbers 1 to 9.
Each horizontal row must have all the numbers 1 to 9.
Each vertical column must have all the numbers 1 to 9.
1. Do the operation marked in blue first. Compare your answers.

<table>
<thead>
<tr>
<th>Expression</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>22 + 43 – 15</td>
<td>50</td>
</tr>
<tr>
<td>15 x 8 + 6</td>
<td>126</td>
</tr>
<tr>
<td>24 – 12 + 6</td>
<td>18</td>
</tr>
<tr>
<td>2 x 80 ÷ 4</td>
<td>10</td>
</tr>
</tbody>
</table>

2. Follow the BODMAS order of operation to calculate each of the following:

<table>
<thead>
<tr>
<th>Expression</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. 7 – 3 + 6</td>
<td>10</td>
</tr>
<tr>
<td>b. 16 + 29 – 87</td>
<td>-42</td>
</tr>
<tr>
<td>c. 38 – 12 – 15</td>
<td>11</td>
</tr>
<tr>
<td>d. (20 ÷ 10) + 3</td>
<td>4</td>
</tr>
<tr>
<td>e. 13 + (7 x 6)</td>
<td>53</td>
</tr>
<tr>
<td>f. (56 ÷ 28) x 5 + 12</td>
<td>14</td>
</tr>
<tr>
<td>g. 18 – (12 + 3) + 6</td>
<td>11</td>
</tr>
<tr>
<td>h. (96 + 16) x 2</td>
<td>224</td>
</tr>
<tr>
<td>i. 27 – (16 + 8) x 11</td>
<td>-135</td>
</tr>
<tr>
<td>j. 49 ÷ (56 + 8) – 4</td>
<td>1</td>
</tr>
<tr>
<td>k. 18 x (13 – 11) ÷ 6</td>
<td>1</td>
</tr>
<tr>
<td>l. 35 + 5 + (18 – 16)</td>
<td>56</td>
</tr>
<tr>
<td>m. 29 – 6 x (8 – 7)</td>
<td>16</td>
</tr>
<tr>
<td>n. (30 + 15) ÷ (3 x 7)</td>
<td>3</td>
</tr>
<tr>
<td>o. (17 – 9) + 2 – 3</td>
<td>10</td>
</tr>
<tr>
<td>p. 34 – (16 x 2) + 7</td>
<td>31</td>
</tr>
<tr>
<td>q. 14 + (36 – 29) ÷ 11</td>
<td>17</td>
</tr>
<tr>
<td>r. 56 + 2 ÷ (2 x 4)</td>
<td>57</td>
</tr>
</tbody>
</table>

3. Organize the operations so that each equation is correct. Use each symbol only once.

<table>
<thead>
<tr>
<th>Expression</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. 18 x 6 ÷ 3 + 5 = 30</td>
<td>30</td>
</tr>
<tr>
<td>b. 24 x 3 x 9 ÷ 2 = 1</td>
<td>12</td>
</tr>
<tr>
<td>c. 15 x 3 x 2 ÷ 4 = 6</td>
<td>6</td>
</tr>
<tr>
<td>d. 21 x 3 x 8 ÷ 1 = 2</td>
<td>16</td>
</tr>
</tbody>
</table>

4. Organize the numbers so that each equation is correct. Use each number only once per equation.

<table>
<thead>
<tr>
<th>Expression</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 + 4 + 5 + 10</td>
<td>39</td>
</tr>
<tr>
<td>a. ( ) x ( ) + ( ) = 2</td>
<td>2</td>
</tr>
<tr>
<td>b. ( ) x ( ) + ( ) = 25</td>
<td>25</td>
</tr>
<tr>
<td>c. ( ) x ( ) + ( ) = 6</td>
<td>6</td>
</tr>
<tr>
<td>d. ( ) x ( ) + ( ) = 8</td>
<td>8</td>
</tr>
</tbody>
</table>

5. Organize the numbers and operations so that each equation is correct. Use each number only once per equation.

<table>
<thead>
<tr>
<th>Expression</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 + 12 + 18 + 36 ÷ ( )</td>
<td>66</td>
</tr>
<tr>
<td>a. ( ) x ( ) ÷ ( ) = 15</td>
<td>15</td>
</tr>
<tr>
<td>b. ( ) x ( ) ÷ ( ) = 22</td>
<td>22</td>
</tr>
<tr>
<td>c. ( ) x ( ) ÷ ( ) = 41</td>
<td>41</td>
</tr>
<tr>
<td>d. ( ) x ( ) ÷ ( ) = 45</td>
<td>45</td>
</tr>
</tbody>
</table>

6. Sudoku fun
Basic operations

Term 4

1. Work these out in your head:
   a. 18 plus 28
   b. 8 multiplied by 9
   c. The sum of 26 and 32
   d. Divide 890 by 10
   e. The product of 25 and 4
   f. What is the remainder if 87 is divided by 5?
   g. What is 30 less than 5 time a thousand?

2. Circle the correct answer.
   a. Another word for addition is:
      i. subtraction
      ii. product
      iii. plus
   b. Minus means the same as:
      i. subtraction
      ii. product
      iii. divide
   c. One million has zeros.
      i. 4
      ii. 5
      iii. 6
   d. One million is a digit number.
      i. 5
      ii. 6
      iii. 7
   e. The product of 20 and 200 is:
      i. 220
      ii. 4000
      iii. 180
   f. When adding or subtracting, if a number ends with a 9 round it off to the next 10, and then take away or add
      i. 10
      ii. 9
      iii. 1
   g. 62 x 3. The r stands for:
      i. remainder
      ii. number
      iii. revision
   h. Share 900 000 between 2:
      i. 900
      ii. 450 000
      iii. 700 000

3. Say if the following is true or false:
   a. All whole numbers that end in 0 or 5 are divisible by 10.
   b. All even numbers are divisible by 2.
   c. All odd numbers will have a remainder of 1 when divided by 2.
   d. All whole numbers that end with 0 or 3 are exactly divisible by 5.
   e. All whole numbers are divisible by 1.

4. Match column A with column B.
   A          B
   a. Addition  i. Share
   b. Subtraction ii. Product
   c. Multiplication iii. Increase by
   d. Division iv. Decrease by

5. Identify what the person did wrong, when she or he tried to calculate the following?
   a. 489 + 375
   b. 45 x 36
   c. 2 840 ÷ 40
      = (400 + 300 + 80 + 70 + 9 + 5)
      = (40 + 5) x (30 + 6)
      = 700 + 150 + 14
      = 754.
      = (40 x 30) + (5 x 6)
      = 7 + 1
      = 1200 + 30
      = 1530

6. A greengrocer had 410 oranges. He put some of them into 15 boxes containing 12 oranges each. He then put the rest into 15 boxes, each containing the same number of oranges.
   a. How many oranges were in each of the 15 boxes?
   b. How many oranges were left?
   c. Write a number sentence for the word sum.

Number block

Try to fill in the missing numbers.
The missing numbers are integers between 0 and 9.
The numbers in each row add up to totals to the right.
The numbers in each column add up to the totals along the bottom.
The diagonal lines also add up the totals to the right.
Quick recall. How fast can you answer the following.

<table>
<thead>
<tr>
<th>6 x 9 =</th>
<th>5 x 8 =</th>
<th>4 x 6 =</th>
<th>2 x 6 =</th>
<th>8 x 6 =</th>
<th>6 x 7 =</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 x 7 =</td>
<td>2 x 7 =</td>
<td>2 x 8 =</td>
<td>2 x 9 =</td>
<td>8 x 9 =</td>
<td>4 x 9 =</td>
</tr>
<tr>
<td>3 x 9 =</td>
<td>7 x 7 =</td>
<td>9 x 8 =</td>
<td>8 x 7 =</td>
<td>9 x 7 =</td>
<td>9 x 6 =</td>
</tr>
<tr>
<td>3 x 6 =</td>
<td>5 x 6 =</td>
<td>3 x 7 =</td>
<td>7 x 9 =</td>
<td>4 x 8 =</td>
<td>3 x 8 =</td>
</tr>
<tr>
<td>6 x 8 =</td>
<td>5 x 9 =</td>
<td>9 x 9 =</td>
<td>7 x 6 =</td>
<td>4 x 7 =</td>
<td>6 x 6 =</td>
</tr>
</tbody>
</table>

1. Determine if the following expressions are equivalent to each other. Insert an = if they are the same and ≠ if they are not.

a. (2 + 5) x 3 ≠ (2 x 3) + (5 x 3)

b. 4 - 2 ≠ 2 - 4

c. 2 + 5 x 3 = 2 x 3 + 5 x 3

d. 9 x 8 = 9 + 8

e. (10 + 2) x 4 ≠ 10 + (2 x 4)

f. 8 ÷ 2 + 1 ≠ (8 + 2) + 1

g. (8 x 1) + 2 ≠ (8 + 1) x 2

h. 5 + 4 x 3 ≠ 5 + (4 x 3)

i. 5 x (2 + 4) ≠ (5 x 2) + (5 x 4)

j. 72 ÷ 3 x 3 ≠ 72 ÷ (3 x 3)

2. Complete the following:

a. 100 x (30 + 50) = (100 x 30) + (100 x 50)

b. 120 x (80 + 20) = ______________________

c. 150 x (30 + 10) = ______________________

d. 20 x (60 + 30) = ______________________

e. 100 x (70 + 60) = ______________________

f. Make up your own sum like this:

(1 000 x [2 + 3]) = (1 000 x 2) + (1 000 x 3)

3. Complete the following:

a. (1 000 x 2) + (1 000 x 3) = 1 000 x (2 + 3)

b. 150 x 10 + 150 x 50 = ______________________

c. 200 x 40 + 200 x 5 = ______________________

d. 17 x 200 + 17 x 100 = ______________________

e. 25 x 40 + 25 x 300 = ______________________

g. Make up more of your own sums like this:

(1 000 x 5) = (1 000 x 2) + (1 000 x 3)
4. Complete the following:

a. $5 \times (12 + 18) = (5 \times 12) + (5 \times 18)$

\[
\begin{align*}
5 \times (30) & = 150 \\
150 & = \\
\end{align*}
\]

b. $30 \times (40 + 50) = (30 \times 40) + (30 \times 50)$

\[
\begin{align*}
\text{ } & \\
\text{ } & \\
\end{align*}
\]

c. $70 \times (20 + 10) =$

\[
\begin{align*}
\text{ } & \\
\text{ } & \\
\end{align*}
\]

d. $(25 + 5) \times 4 =$

\[
\begin{align*}
\text{ } & \\
\text{ } & \\
\end{align*}
\]

e. $(125 + 25) \times 8 =$

\[
\begin{align*}
\text{ } & \\
\text{ } & \\
\end{align*}
\]

5. Identify the rule in each case.

a. 225, 250, 275

b. 950, 900, 850

c. 875, 750, 625

d. 14, 39, 64

6. Look at the patterns on the boards. Describe each one in your own words. Write a number sentence for each pattern.

<table>
<thead>
<tr>
<th></th>
<th>a</th>
<th>b</th>
<th>c</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>9</td>
<td>10</td>
<td>11</td>
<td>12</td>
</tr>
</tbody>
</table>

- Each block of 9 squares must have all the numbers 1 to 9.
- Each horizontal row must have all the numbers 1 to 9.
- Each vertical column must have all the numbers 1 to 9.
Quick recall. How fast can you answer the following:

1. What is the value of \( a \)?
   a. \( 400 + 500 = \) \( + 400 \)
   b. \( + 300 = 300 + 200 \)
   c. \( 200 \times = 300 \times 200 \)
   d. \( 500 \times 600 = \) \( \times 600 \)
   e. \( (1,000 + 500) + 2 = 1,000 + (500 + \) \( ) \)
   f. \( 3 \times 400 + 500 = \) \( 3 \times 500 \)
   g. \( (500 \times 10) \times 20 = 500 \times (10 \times \) \( ) \)
   h. \( 7 \times 600 = 7 \times 200 + 7 \times 600 \)
   i. \( (300 + 50) \times 2 = 300 \times \) \( + 50 \times 2 \)

2. What is the value of \( \) ?
   a. \( + 2,000 = 2,000 + 8,000 \)
   b. \( 10,000 \times 8 = 8 \times \) \( \)
   c. \( (250 + 750) \times 500 = + (250 + 750) \)
   d. \( (150 \times 3) \times 10 = 150 \times ( \times 10) \)
   e. \( (740 + 10) \times 20 = 740 \times + 10 \times \) \( ) \)

3. What is the value of \( \) ?
   a. \( a + 725 = 725 + 567 \)
   b. \( 825 \times 100 = 100 \times a \) \( \)
   c. \( (350 + 250) + 10,000 = 350 + (250 + a) \) \( ) \)
   d. \( (10 \times 1,200) \times 400 = a \times (1,200 \times 400) \) \( ) \)
   e. \( (1,250 + 750) \times 10 = 1,250 \times a + 750 \times a \) \( ) \)

continued
3. Calculate the following:  \( a = 1000 \)

a. \( a + 50000 = 50000 + a \)  
   \[ \boxed{1005000} \]

b. \( a \times 20 = 20 \times a \)  
   \[ \boxed{20000} \]

c. \( (a + 40000) + 500 = a + (40000 + 500) \)  
   \[ \boxed{a + 40500} \]

d. \( (a \times 50) \times 2 = a \times (50 \times 2) \)  
   \[ \boxed{a \times 100} \]

e. \( (a + 25) \times 3 = (a \times 3) + (25 \times 3) \)  
   \[ \boxed{3a + 75} \]

f. \( a \times 0 = 0 \times a \)  
   \[ \boxed{0} \]

4. Calculate the following:  \( a = 50 \quad b = 100 \quad c = 2 \)

a. \( a + b = b + a \)  
   \[ \boxed{150} \]

b. \( a \times b = b \times a \)  
   \[ \boxed{5000} \]

c. \( (a + b) + c = a + (b + c) \)  
   \[ \boxed{152} \]

d. \( (a \times b) \times c = a \times (b \times c) \)  
   \[ \boxed{10000} \]

e. \( (a + b) \times c = a \times c + b \times c \)  
   \[ \boxed{150c} \]

f. \( a \times b \times c = c \times b \times a \)  
   \[ \boxed{10000} \]

Solve this Sudoku puzzle

- Each block of 9 squares must have all the numbers 1 to 9.
- Each horizontal row must have all the numbers 1 to 9.
- Each vertical column must have all the numbers 1 to 9.

```
1 6 8  
3 5 7 9
2 4 5 8  
7 5 9 4  
6 3 2 1  
```

6. Five patterns (each a different colour) are shown in this 10 x table number board. Write a number sentence for each pattern.
Properties of numbers again

Quick recall. How fast can you answer the following:

<table>
<thead>
<tr>
<th>Calculation</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>40 x 50 =</td>
<td>2000</td>
</tr>
<tr>
<td>400 x 90 =</td>
<td>36000</td>
</tr>
<tr>
<td>5 000 x 6 =</td>
<td>30000</td>
</tr>
<tr>
<td>70 x 60 =</td>
<td>4200</td>
</tr>
<tr>
<td>900 x 60 =</td>
<td>54000</td>
</tr>
<tr>
<td>600 x 80 =</td>
<td>48000</td>
</tr>
<tr>
<td>11 x 400 =</td>
<td>4400</td>
</tr>
<tr>
<td>200 x 90 =</td>
<td>18000</td>
</tr>
<tr>
<td>20 x 30 =</td>
<td>600</td>
</tr>
<tr>
<td>80 x 500 =</td>
<td>40000</td>
</tr>
<tr>
<td>80 x 60 =</td>
<td>4800</td>
</tr>
<tr>
<td>40 x 800 =</td>
<td>32000</td>
</tr>
<tr>
<td>80 x 110 =</td>
<td>8800</td>
</tr>
<tr>
<td>800 x 70 =</td>
<td>56000</td>
</tr>
<tr>
<td>90 x 80 =</td>
<td>7200</td>
</tr>
<tr>
<td>700 x 120 =</td>
<td>84000</td>
</tr>
<tr>
<td>2 000 x 7 =</td>
<td>14000</td>
</tr>
<tr>
<td>80 x 900 =</td>
<td>72000</td>
</tr>
<tr>
<td>400 x 40 =</td>
<td>16000</td>
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<tr>
<td>500 x 60 =</td>
<td>30000</td>
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<tr>
<td>900 x 120 =</td>
<td>108000</td>
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<tr>
<td>500 x 60 =</td>
<td>30000</td>
</tr>
<tr>
<td>70 x 700 =</td>
<td>49000</td>
</tr>
</tbody>
</table>

1. What is the value of X?
   a. $8000 + 3000 = X + 8000$
   $X = 6000$
   b. $4000 \times X = 9000 \times 4000$
   $X = 22500000$
   c. $(1000 + 7000) + 50 = 1000 + (7000 + X)$
   $X = 650$
   d. $(4000 \times 200) \times 100 = 4000 \times (200 \times X)$
   $X = 500$
   e. $(9000 + 500) \times 10 = 9000 \times X + 500 \times X$
   $X = 1050$

2. Calculate the following: $a = 2000$
   a. $a + 100000 = 100000 + a$
      $a = 100000$
   b. $a \times 50 = 50 \times a$
      $a = 100000$
   c. $(a + 90000) + 100000 = a + (90000 + 100000)$
      $a = 200000$
   d. $(a \times 60) \times 3 = a \times (60 \times 3)$
      $a = 120000$
   e. $(a + 40) \times 5 = (a \times 5) + (40 \times 5)$
      $a = 20000$

3. Calculate the following:
   a. $a = 500$
      $b = 300$
      $c = 20$
      $x = 700$
      $y = 100$
      $z = 40$
   a. $a + b = b + a$
      $= 500 + 300 = 300 + 500$
   b. $a \times b = b \times a$
      $= 500 \times 300 = 300 \times 500$
   c. $(a + b) + c = a + (b + c)$
      $= (500 + 300) + 20 = 500 + (300 + 20)$
   d. $(a \times b) \times c = a \times (b \times c)$
      $= (500 \times 300) \times 20 = 500 \times (300 \times 20)$
   e. $(a + b) \times c = (a \times c) + (b \times c)$
      $= (500 + 300) \times 20 = (500 \times 20) + (300 \times 20)$

4. Calculate the following:
   a. $x + y = y + x$
      $= 700 + 100 = 100 + 700$
   b. $y \times z = z \times y$
      $= 100 \times 40 = 40 \times 100$
   c. $(x + y) + z = x + (y + z)$
      $= 800 + 700 = 800 + (700 + 100)$
   d. $(x \times y) \times z = x \times (y \times z)$
      $= 400 \times 100 \times 70 = 400 \times (100 \times 70)$
   e. $(x + y) \times z = (x \times z) + (y \times z)$
      $= 800 \times 70 = 800 \times 70 + 100 \times 70$

Solve the Sudoku puzzle:

<table>
<thead>
<tr>
<th>5</th>
<th>4</th>
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<th>9</th>
<th>1</th>
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<td>9</td>
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</tbody>
</table>

Terms 4

5. 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
1. In the first example above, the shape is reflected over a vertical line of reflection. Describe the lines of reflection in the following diagram.

a. __________________________________________________________________________

b. __________________________________________________________________________

c. __________________________________________________________________________

d. Describe the reflection between the dark yellow and the light blue shape. Draw the line of reflection.

2. The blue shape in second example in the introduction was rotated 90° clockwise. Describe the following rotations:

a. __________________________________________________________________________

b. __________________________________________________________________________

c. __________________________________________________________________________

3. The orange shape in the third example in the introduction is translated one block to the left and one block up. Look at the diagram in question 2 and describe the translation of the following:

a. The dark blue shape to the light green shape.

b. Translate the light blue shape 4 blocks down and 3 blocks to the left. Make a drawing.

4. Look at the diagram in question 2 and describe the following:

a. The light green shape was reflected and translated to the dark yellow shape.

b. The dark yellow shape was reflected and translated to the light blue shape.

Pentominoes and other shapes

a. Can you work out why the set of twelve shapes are called called pentominoes?

b. Why can't I use the diagram on the right to describe translation, reflection and rotation?
1. Draw the reflection line for each pair.
   a. 
   b. 
   c. 
   d. 

2. Draw the reflection image for each.
   a. 
   b. 
   c. 

3. Draw the reflection of each figure, then write the coordinate of each new figure.
   a. Triangle: (2,6); (2,1); (7,1)
   b. Triangle: (5,8); (1,5); (5,2)

An art pattern
Identify the reflections in this pattern.
Why do we say the line of reflection is like looking in a mirror?

Remember previously we learned about the line of symmetry.

1. Look at these images. Label the “line of reflection” or the “line of symmetry”.

   a.  
   b.  
   c.  
   d.  
   e.  
   f.

2. We can have a horizontal reflection or a vertical reflection. Look at the examples and then answer the questions.

   Horizontal reflection (flips across)  
   Vertical reflection (flips up/down)

3. Draw four figures, two showing horizontal reflection and two showing vertical reflection.

   a.  
   b.  
   c.  
   d.  
   e.  
   f.

4. My computer and flip

   a. You are busy drawing a picture with a computer. You want to make a mirror image of your picture. You look at this menu on the computer. Explain what the bottom two instructions mean.
   b. You can make a drawing while you explain it.
1. What happens to the arrow? Make use of fractions to explain your answer.

2. Draw a \( \frac{1}{4} \) turn for each image.

   a.

   b.

   c.

3. Draw a \( \frac{1}{2} \) turn for each image.

   a.

   b.

   c.

4. Draw a \( \frac{3}{4} \) turn for the figure:

   Triangle: (2, 6); (2, 1); (7, 1)

   a. Write down the new coordinates.

   b. Draw a \( \frac{1}{2} \) turn image of the figure:

5. Geometric patterns

   Describe each rotation.

   a.

   b.

   c.

   d.

   e.

   f.

   g.

   h.

   i.

   j.

   k.

   l.

   m.

   n.

   o.

   p.

   q.

   r.

   s.

   t.

   u.

   v.

   w.

   x.

   y.

   z.
1. Complete the sentences.

- The triangle slides \( \boxed{2 \text{ down, 4 right}} \) blocks down and \( \boxed{4 \text{ right}} \) blocks to the right.
- The square slides \( \boxed{5 \text{ left, 2 up}} \) blocks down and \( \boxed{2 \text{ left}} \) blocks to the left.
- The hexagon slides \( \boxed{5 \text{ left, 2 up}} \) blocks down and \( \boxed{2 \text{ up}} \) blocks to the left.

2. Draw the slide image of each figure.

- a. 2 down, 4 right
- b. 5 left, 2 up

3. Plot the given points, then connect the points in order. Draw each slide, then give the coordinates of the slide image.

- a. (2,4); (2,2); (4,2) Slide 4 right, 4 up
- b. (9,9); (6,8); (6,5); (9,5) Slide 3 down and 2 left

Create a dance.

Create your own dance moves using sliding.
Say if the shape has been flipped, turned or slid.

1. Here is a combination of motions. Describe it.
   a. Use the dotted shapes, arrows and colours to help you.
      The first move is a __________, then it is a ________________, and lastly it is a __________.

   b. Use the dotted shapes and arrows to help you.

   c. Use the dotted shapes to help you. Draw your own arrows to show the motion.

2. Flip, slide and turn the shapes.
   a. 
   b. 

I am an architect.

Trace these blocks on cardboard and cut them out.

Play in pairs.
Each player chooses a shape and traces around it.
Player 2 turns away, and then player 1 flips, slides or turns his or her shape and traces it again.
Player 2 now tries to identify the movement of the traced shape.
If she or he identifies the movement correctly he or she gets 1 point.
Repeat with player 1 turning away.
The first person to get 5 points is the winner.
1. During your answer the questions do it practically with your tangram pieces.

a. Describe the transformations used to create a rectangle from a square.

Step 1

Step 2

b. Describe the transformations used to create a parallelogram from a trapezium.

Step 1

Step 2

Step 3

c. Describe the transformations used to create a trapezium from a triangle.

Step 1

Step 2

Step 3

d. Describe the transformations used to create a triangle from a square.

Step 1

Step 2

Step 3

e. Describe the transformation used to create a square using a triangle.

Step 1

Step 2

Step 3

f. Compare the trapezium in b. with the trapezium in c.

---

Pentominoes and other shapes

Describe this pattern using transformations below. Draw a picture to illustrate each transformation.

Rotation

Translations

Reflection
Position on a map grid

Did you ever see something like this?
What is it?
How do you use it?

1. How quick can you do this? Colour in the coordinates. What does it spell?

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
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<th>G</th>
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<th>I</th>
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</tbody>
</table>

a. A1, A2, A3, A4, B1, C1, C2, C3, C4, D1, E1, E2, E3 and E4.
b. H1, H2, H3, H4, I1, J1, K1, K2, K3, K4, I3 and J3.
c. A6, B6, C6, B7, B8, B9, and B10.
d. E6, E7, E8, G7, G8, G9, and G10.
e. I6, I7, I8, J6, K6, K7, K8, K9, I10, J10 en K10.

2. Where are the shapes?

- a. square B2
- b. rectangle
- c. triangle
- d. circle
- e. pentagon
- f. hexagon
- g. octagon
- h. trapezium
- i. parallelogram

3. Describe the route above.
Start at the red square move 8 grid blocks east,

Play battleships …

How to play using cut-out 7:
- First decide where to place your own fleet of ships within your grid. A fleet is made up of the ships shown to the right of the grid. Each ship is drawn vertically or horizontally (not diagonally). Your ships cannot occupy the same square (i.e. they cannot overlap).
- To place a ship, check how many boxes are covered by the ship (shown to the right of your grid) and then write the first letter of the name of the ship in the boxes it covers. For example, a Cruiser covers three boxes so you would pick any three adjacent boxes and put the letter C in each box. Keep your fleet location secret from your opponent! When each player has marked their fleet on their grid, begin play.
- Take turns to “shoot” at your opponents’ fleet by calling out the number of a certain box by its grid location (e.g. “B4” or “D1”). Your opponent must say whether the shot is a “miss” or a “hit”, and, if it is a “hit”, what type of ship it is. If you hit your opponent’s ship it is sunk. You can keep track of what you have shot on your lower grid, and the ships you have sunk by crossing off the ships at the bottom right of your card.
- Play continues until one player wins by successfully sinking the whole of the other player’s fleet.
1. Make a dot on:
   a. 3 and 4
   b. 2 and 5
   c. 1 and 3
   d. 4 and 2

2. Make dots on:
   a. 2 and 1, 4 and 3, 1 and 4
   b. 1 and 2, 1 and 5, 5 and 2, 5 and 5
   c. Combine the dots. What shape does it form?
   d. Combine the dots. What shape does it form?

3. Write down the co-ordinates for the shapes below and join the dots to form the shape.

Be an artist
Draw your own grid.
Make dots on it.
Join the dots to form a picture.
Write down the co-ordinates.
1. What do you notice when you look at these pictures?

2. What do you notice when you look at the photograph and the drawing?

3. Find more photographs in magazines like the ones in question 2.
4. Put the pictures in the correct order, from furthest to closest.

5. Look at the picture and answer the questions below.

Vanishing point

a. What happens to your view of the boy?

b. What do you think vanishing point means?

Draw perspective lines and put the dogs between the lines as they would look if they were getting further away.
Outcomes of two dice

Draw and make.
Draw these two nets on thick paper or cardboard, cut, fold and stick together with sticky tape.

3
5 1 2 6
5 1 2 6
4

1. Roll one die 100 times. Make use of tallies to record your answers.

<table>
<thead>
<tr>
<th>Number on the die</th>
<th>Times landed on the number</th>
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<tbody>
<tr>
<td>1</td>
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<tr>
<td>5</td>
<td></td>
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<tr>
<td>6</td>
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</tbody>
</table>

2. Compare your answers with those of your friend. Are they the same? Why?

3. Rolling a 3 on a die has a probability of 1 out of 6.
   We can write it as \( \frac{1}{6} \).
   a. What is the probability of rolling a 1?
   b. What is the probability of rolling a 2?
   c. What is the probability of rolling a 4?
   d. What is the probability of rolling a 5?
   e. What is the probability of rolling a 6?

4. Roll two dice 100 times. Make use of tallies to record your answers.

<table>
<thead>
<tr>
<th>Number on the dice</th>
<th>Times landed on the number</th>
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<tr>
<td>6</td>
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</tbody>
</table>

5. What will happen if you use 3 dice? What is the probability of rolling a:
   a. 1?
   b. 2?
   c. 3?
   d. 4?
   e. 5?
   f. 6?

6. a. If you use a dice like this and all the numbers are multiples of 100, what will the other numbers be?
   b. What would the probability be to land on each number?

Dice fun
If you use a dice like this what is the probability of rolling a 1 or a 3?
You need to prepare.
You need to make a set of 10 cards using card board or paper. Each card should be 4 cm by 4 cm.

Cut out the ten cards and place it in the bag or box.

1. Draw a card from the bag and record it below. Place the card back into the bag. Do this 100 times.

<table>
<thead>
<tr>
<th>Number on the card</th>
<th>Times the number was drawn</th>
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<tbody>
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</table>

2. Compare your answers with those of your friend. Are they the same? Why?

3. Drawing a number 5 card from the bag has a probability of 1 out of 10. We can write it as \( \frac{1}{10} \).

What is the probability drawing card 1\( \square \), card 2\( \square \), card 3\( \square \), card 4\( \square \), card 5\( \square \), card 6\( \square \), card 7\( \square \), card 8\( \square \), card 9\( \square \), and card 10\( \square \)?

4. Draw two cards from the bag and record it below. Place the cards back into the bag. Do this 100 times.

<table>
<thead>
<tr>
<th>Number on the card</th>
<th>Times the number was drawn</th>
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<tbody>
<tr>
<td>1</td>
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<td>10</td>
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</table>

5. What will happen if I draw 3 cards at a time? What is the probability of drawing:

- card 1\( \square \), card 2\( \square \), card 3\( \square \)
- card 4\( \square \), card 5\( \square \), card 6\( \square \)
- card 7\( \square \), card 8\( \square \), card 9\( \square \)
- card 10\( \square \), card 1\( \square \), card 2\( \square \)
<table>
<thead>
<tr>
<th>Increase</th>
<th>Subtract</th>
<th>Multiply</th>
<th>Minus</th>
<th>Sum</th>
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</thead>
<tbody>
<tr>
<td>+ - x +</td>
<td>+ - x +</td>
<td>+ - x +</td>
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<td>+ - x +</td>
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<td>Times</td>
<td>Add</td>
<td>Divided by</td>
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<td>+ - x +</td>
<td>+ - x +</td>
<td>+ - x +</td>
<td>+ - x +</td>
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<td>And</td>
<td>Groups of</td>
<td>Plus</td>
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<td>+ - x +</td>
<td>+ - x +</td>
<td>+ - x +</td>
<td>+ - x +</td>
<td>+ - x +</td>
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<td>Divide</td>
<td>Lots of</td>
<td>Difference</td>
<td>Divisible</td>
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<td>+ - x +</td>
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