14

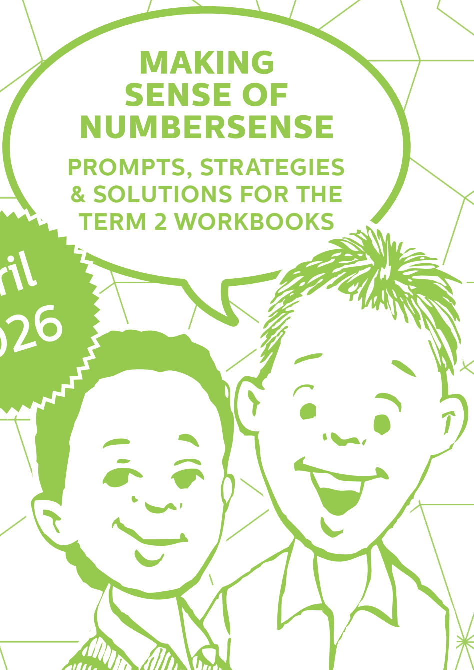
NumberSense

PROMPTS, STRATEGIES & SOLUTIONS

English

Teacher's Guide

April 2026



1. a. Three children share 4 chocolate bars equally. How much chocolate will each child get?

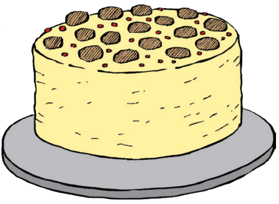
How many chocolater bars do you have left? What did you do?

I had 1 bar left. I cut it into 3 pieces because their are 3 people.

b. Three children share 5 chocolate bars equally. How much chocolate will each child get?

I had 2 bars left. I cut them both into 3 pieces. Each person gets $1\frac{2}{3}$

2. Help Sara work out what she needs to bake four cakes.

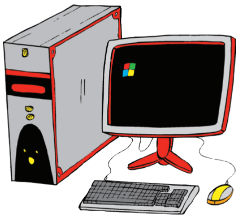


What did you have to do to make 4 cakes?

Multiply all the ingredients by 4.

1 cake	4 cakes
1 egg	4 eggs
2 cups flour	8 cups
$\frac{1}{4}$ teaspoon salt	1 teaspoon
2 teaspoons baking powder	8 teaspoons
$\frac{1}{2}$ cup oil	2 cups
$1\frac{1}{2}$ cups milk	6 cups
$1\frac{1}{2}$ cups sugar	6 cups

3. Lorna wants to buy a computer that costs R6 000. She already has R4 500. How much more money does she need?

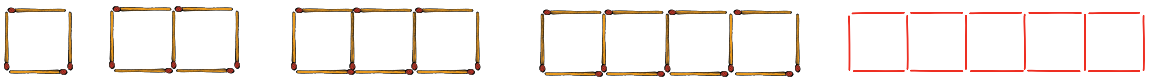


4. Grandmother has R6 000. She wants to share it equally among her 3 grandchildren. How much money will each grandchild get?

5. Eddie needs to buy 2 new tyres for his scooter. Each tyre costs R600. How much will the 2 tyres cost?

Notes

1. Ben makes pictures with matches like this. The first 4 pictures make a pattern.



[1]
Knowledge

a. Draw the fifth picture.

b. Complete the table for the number of matches in each picture.

+ 6 pics

+ 6 pics

Picture number	1	2	3	4	5	6	12	13	14	20
Number of matches	4	7	10	13	16	19	37	40	43	61

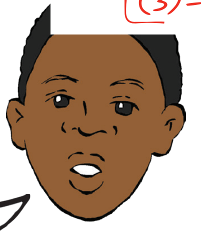
+ 3 + 3 +(6 × 3) +(6 × 3)

c.

[8] (5)=Knowledge
(3)=Application

Ben is calculating the number of matches needed for each picture.

For picture 1, I need 1 times 3 plus 1, and 1 × 3 + 1 is 4.
For picture 2, I need 2 times 3 plus 1, and 2 × 3 + 1 is 7.



Use Ben's method to calculate the number of matches needed.

Picture 1 1 × 3 + 1 = 4

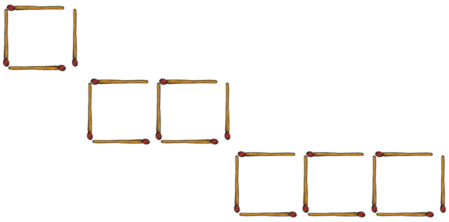
Picture 2 2 × 3 + 1 = 7

Picture 3 3 × 3 + 1 = 10

Picture 4 4 × 3 + 1 = 13

Picture 6 6 × 3 + 1 = 19

Picture 12 12 × 3 + 1 = 61



[4]
Knowledge

d. Ben has 91 matches. How many squares can he make?

91 − 1 ⇒ 90 ÷ 3 ⇒ 30 squares

[2]
Application

e. How many squares can he make if he has 302 matches? How many matches will he have left over?

100 × 3 + 1 = 301
100 squares
with 1 match left

302 − 1 ⇒ 301 − 1 ⇒ 300
300 ÷ 3 ⇒ 100 squares
with 1 match left

[3]
Reasoning
[18]

Things to think about

This page could be considered for an assessment to determine the following:

- *Are children able to continue the picture pattern?*
- *Are children able to complete a table that represents the picture pattern?*
- *Do children understand Ben's formula? Can they replicate Ben's formula?*
- *Are children able to determine the picture number if the number of matches is known?*

Ensure children are confident with the content on page 3 and 6, so that they can confidently link their understanding to the questions on page 7.

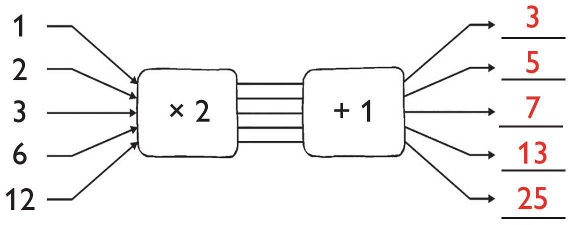
Assessment framework:	Cognitive domain						
Content area	Knowing (K)		Applying (A)		Reasoning (R)		TOTAL
Number, operations and relationships (NOR)	1a, 1b (1,2,3,4,6,7), 1c	10	1b (5,8), 1d	5	1e	3	18

Workbook 13
p.36

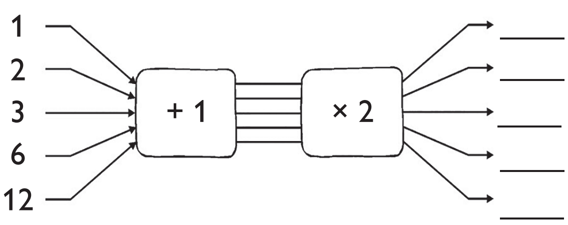
Workbook 14
pp.3 and 6

1. a. Complete the following flow diagrams.

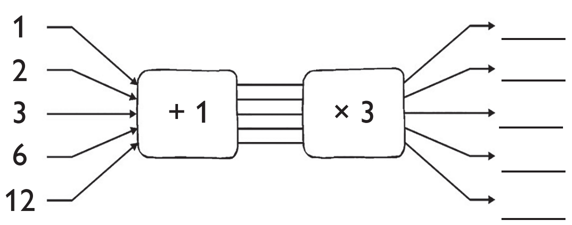
A



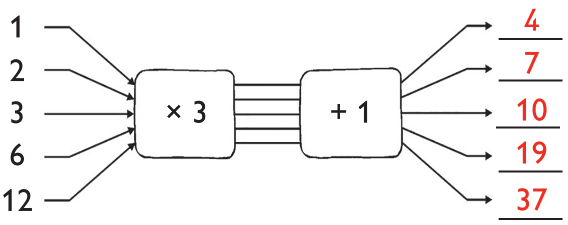
B



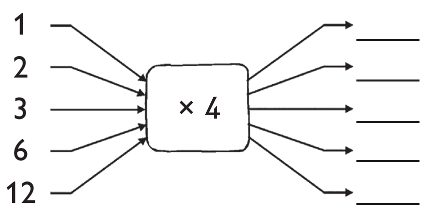
C



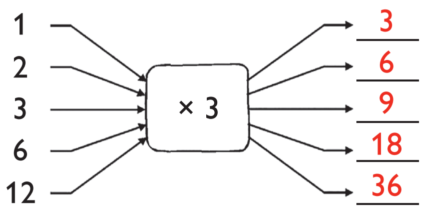
D



E

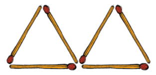


F

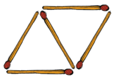


b. Which of the flow diagrams summarise the methods used by Jan, Sara and Ben? Write down the letter only.

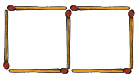
- Jan's pattern with triangles on page 3. F



- Sara's pattern with triangles on page 3. A



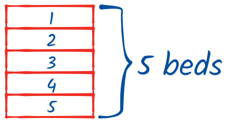
- Ben's pattern with squares on page 6. D



2. Mr Sibusa needs one fifth of a bag of fertilizer for one of the beds of plants in his vegetable garden.

? *Did you draw a picture?*
Did you make a list or a table?

a. There are 10 beds in the garden. How many bags of fertilizer does he need for all his beds?



1-fith ⟶ 1 bed
1 bag ⟶ 5 beds
2 bags ⟶ 5 beds

OR

1 bed ⟶ 1 fifth
10 beds ⟶ 10 fifths
⟶ 2 bags

b. He has 3 bags of fertilizer. How many beds will that be enough for?

$\boxed{5}$ $\boxed{5}$ $\boxed{5}$ ⟶ 15 beds

OR

3 bags ⇒ 15 fifths
⇒ 15 beds

Things to think about

This page uses information from pages 3 and 6. Ensure the children have completed and discussed these pages.

Flow diagrams are a useful tool to represent a rule associated with a picture and/or number pattern. The link between flow diagram and formula was first encountered in Workbook 13 page 36. The focus of this lesson should be the link between the tables, flow diagrams and formulae of Jan, Sara and Ben's patterns.

? Look at Jan's pattern on page 3. Which flow diagram would you use to summarise Jan's pattern? Why do you say so?

I think it is flow diagram F, because the numbers in the table and the numbers in the flow diagram are the same.

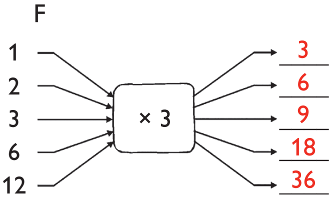
b. Complete the table for the number of matches in each picture.

dbl

+7 pics

Picture number	1	2	3	4	5	6	12	13	20
Number of matches	3	6	9	12	15	18	36	39	60

+ 3 + 3 + 3 dbl +(7 × 3)



? Look at Sara's pattern on page 3. Which flow diagram would you use to summarise Sara's pattern? Why do you say so?

I think it is flow diagram A, because the numbers in the table and the numbers in the flow diagram are the same.

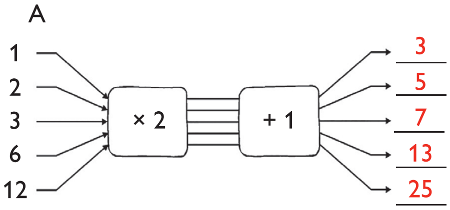
b. Complete the table for the number of matches in each picture.

+ 6 pics

+7 pics

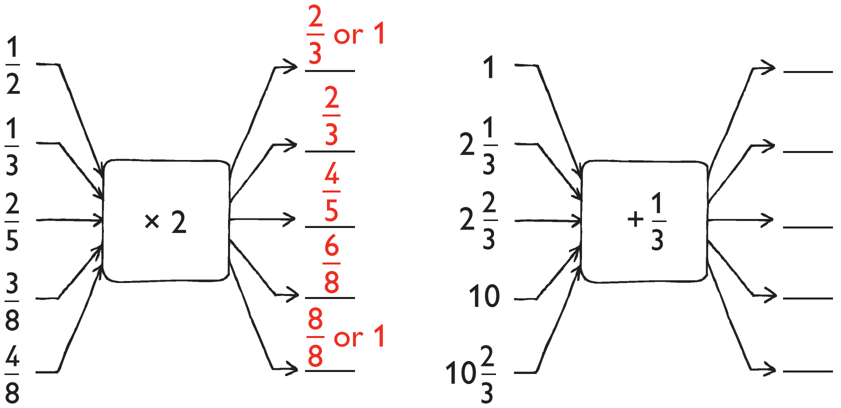
Picture number	1	2	3	4	5	6	12	13	20
Number of matches	3	5	7	9	11	13	25	27	41

+ 2 + 2 + 2 +(6 × 2) +(7 × 2)

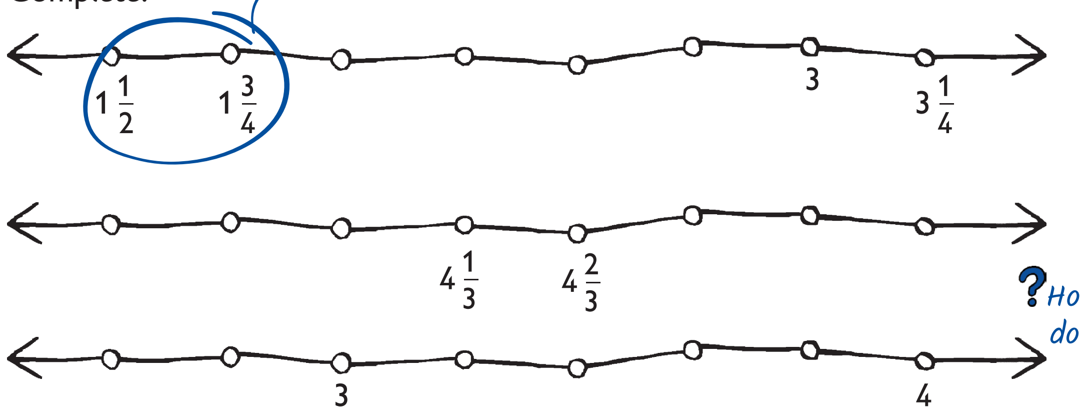


I think it is flow diagram A, because the rule of the flow diagram is the same as Sara's formula. Picture number × 2 + 1 = number of matches.

1. Complete.



2. Complete.



? What is the diffrence here?

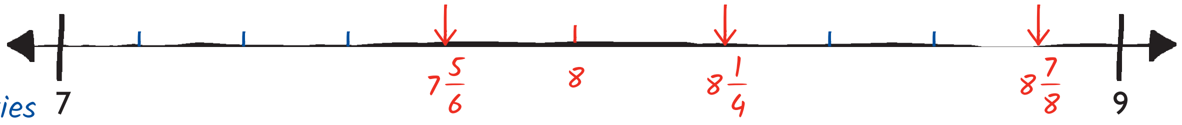
? How did you do this?

3. Approximately where would you put these numbers on this number line?

$8\frac{1}{4}$ $7\frac{5}{6}$ $8\frac{7}{8}$

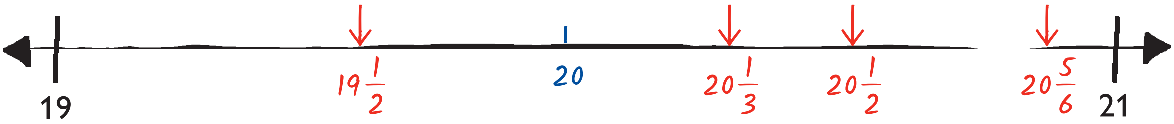
? Compare your number lines with your friend.

Discuss similarities and differences



4. Approximately where would you put these numbers on this number line?

$20\frac{1}{3}$ $19\frac{1}{2}$ $20\frac{5}{6}$ $20\frac{1}{2}$



5. Ben always saves a quarter of the money he earns for looking after his sister's baby. Yesterday he saved R15. How much did he earn?

Things to think about

Question 3

Conceptually, placing the fractions on a number line could be challenging for some children. Be patient – the children will have more opportunities to practice this skill (Workbook 15 p. 13, Workbook 17 p. 24).

Scaffolding idea

To support children with this activity, teachers could:

- Remind the children of what they did when they were expected to place whole numbers on the number line. (Workbook 14 page. 9)
- Prepare a parallel problem that makes the activity simpler by considering one type of fraction for each number line. Then discuss what would happen if all the fractions were placed on one number line.

a) Approximately, where would you put these numbers on this number line?

$8 \quad 8\frac{1}{3} \quad 7\frac{2}{3}$

b) Approximately, where would you put these numbers on this number line?

$8 \quad 8\frac{3}{4} \quad 7\frac{2}{4}$

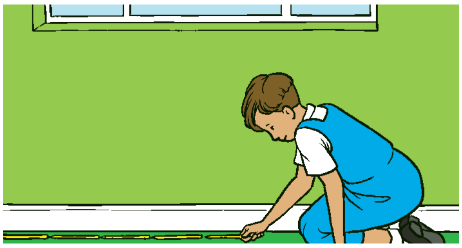
c) Approximately, where would you put these numbers on this number line?

$8 \quad 7\frac{2}{6} \quad 8\frac{5}{6}$

? How would place all the fractions in the above number lines, on one number line?

Workbook 11
pp.57; 59

Luthando measured the length of the classroom using matchsticks. He says that the classroom is 120 matchsticks long.



Mia measured the length of the classroom using her pencil. She says that the classroom is 24 of her pencils long.

? *What do we know based on on Luthando, Mia and Kabelo's observation.*

Kabelo measured the length of the classroom using a stick. He says that the classroom is 12 sticks long.

We know that 120 matchsticks = 24 pencils = 12 sticks.

If I halve each, then 60 matchsticks = 12 pencils = 6 sticks, then I can see 10 matchsticks = 12 pencils = 1 stick.

1. Based on Luthando, Mia and Kabelo's observation, complete the table.

×10

10 ×5 2 dbl 1

	Matchstick	Pencil	Sticks
Stick	20	4	2
Table	30	6	3
Story book	5	1	$\frac{1}{2}$
Book bag	10	2	1
Height of door	40	8	4
Length of carpet	15	3	$1\frac{1}{2}$

÷5 halve

×5 dbl

Because I halve then
120 → 60w
24 → 12
12 → 6
Then I can see that
10 : 2 : 1

2. Which object, the matchstick, the pencil or the stick would you use to measure:

? *Explain why you chose which object to measure with.*

a. the height of a can of cooldrink?

b. the length of a bedroom?

c. the width of a cereal box?

d. the height of a tree?

e. the height of a chair?

f. the length of a bath?

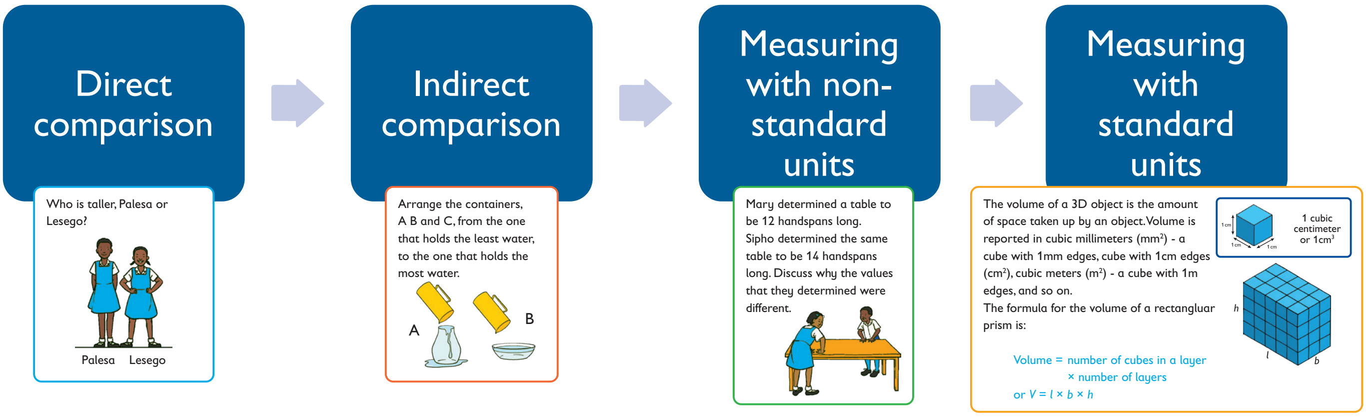
Things to think about

Measurement is one of the most practical topics in the mathematics curriculum. Measurement involves assigning a numerical value to an attribute to enable comparison, ordering, and calculation. The attribute that is the focus of the next couple of pages is length.

There are three key aspects to measuring:

- knowing what attribute is being measured (in this case length).
- being able to describe the attribute that is being measured (e.g. how do you describe how long or short something is?).
- the ability to use the appropriate measuring instrument(s) to measure the attribute (e.g. how do you use a ruler, measuring tape or trundle wheel?).

There are typically four key developmental stages in learning to measure. It is important that learners experience each of these stages rather than simply learning how to use a measuring instrument and performing calculations. These stages are:



Direct comparison

Who is taller, Palesa or Lesego?

Indirect comparison

Arrange the containers, A B and C, from the one that holds the least water, to the one that holds the most water.

Measuring with non-standard units

Mary determined a table to be 12 handspans long. Sipho determined the same table to be 14 handspans long. Discuss why the values that they determined were different.

Measuring with standard units

The volume of a 3D object is the amount of space taken up by an object. Volume is reported in cubic millimeters (mm^2) - a cube with 1mm edges, cube with 1cm edges (cm^2), cubic meters (m^2) - a cube with 1m edges, and so on.
The formula for the volume of a rectangluar prism is:

Volume = number of cubes in a layer × number of layers

or $V = l \times b \times h$

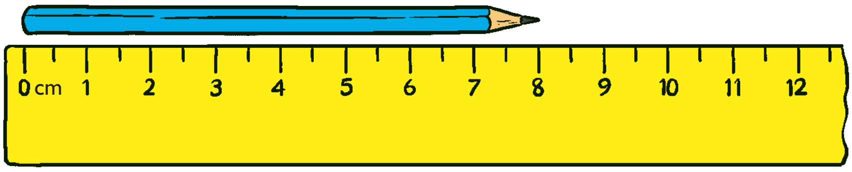
In the Foundation phase the NumberSense Programme initiates the developmental trajectory for developing measuring skills. This journey is then continued in the Intermediate phase. On page 56, the children are measuring using non-standard units (matchsticks, pencils and sticks).

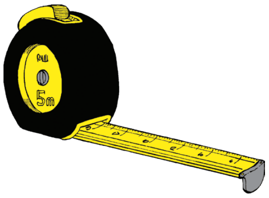
> Learning to measure using non-standard units is important because in doing so learners are learning what it means to measure. They are learning to select a unit and to determine how many of those units are needed to describe the attribute of the object being measured. Measuring with non-standard units also develops the awareness for the need to be able to convert between units. The inefficiencies associated with using non-standard units paves the way for the introduction of more standardised units and measuring instruments in upcoming pages.

1. When Daniel, Liam and Katlego use their pencils to measure the length of their classroom, they each get a different value. Why? Explain.

They might have different size pencils

To avoid the confusion that Daniel, Liam and Katlego had, we use standard units. A standard unit for measuring length is centimetres (cm). We use rulers and tape measures to measure in centimetres.

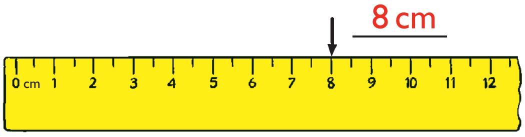




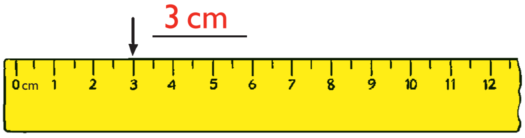
The length of this pencil is 8 cm.

2. What length is shown on each ruler or measuring tape in centimetres?

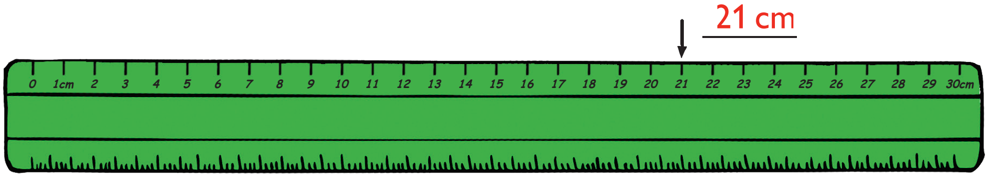
8 cm



3 cm

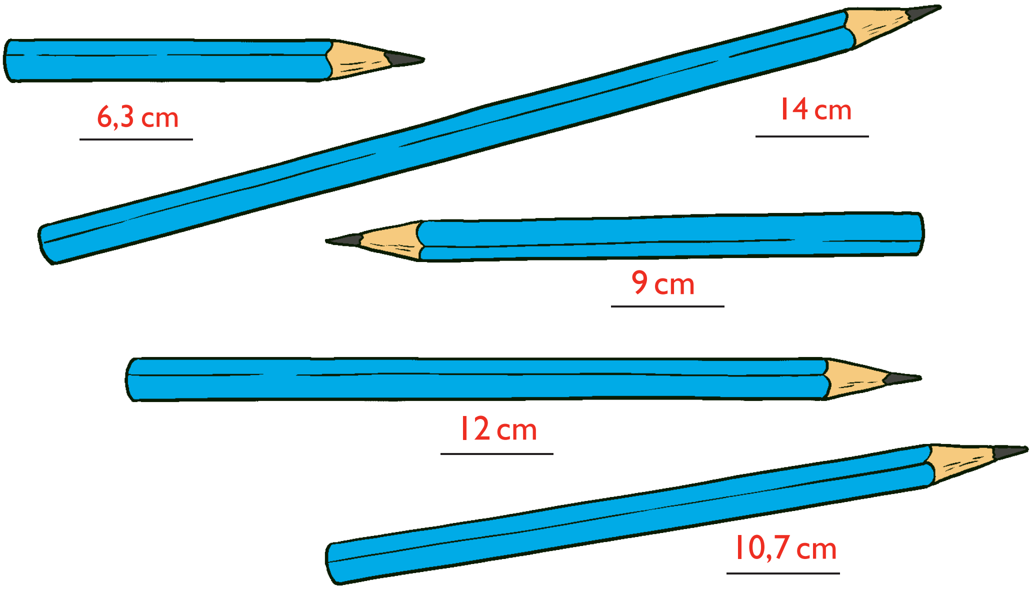


21 cm



36 cm

3. Use a ruler to measure the length of the pencils in centimetres.



6,3 cm

14 cm

9 cm

12 cm

10,7 cm

Starter activity:

- *Divide the class into small groups. Provide each group with either a 15cm ruler, a 30cm ruler, a metre stick or a measuring tape.*
- *Ask each group to determine the lengths, in cm, of a list of items they can find in the classroom or on the school grounds. Examples include:*
    - *The width of the classroom*
    - *The width of the corridor*
    - *The width and length of a brick*
    - *The width and length of a book*
    - *The length of a teaspoon*
- *Each group completes a table on newsprint that can be displayed during reflection.*
- *Teacher uses the newsprint data to compare answers. Some questions to consider:*
    - *Why do you think these answers are so different?*
    - *Which measurement do you think is most accurate for the width of the classroom? Why do you say so?*
    - *Which instrument will be best to use if you want to measure_______________________________?*

This page could be used to assess whether the children have grasped the work covered on pages 56-61.

1. What instrument (ruler; measuring tape; trundle wheel; car's odometer) would you use to determine each length/distance? What units would you report the length/distance in (mm; cm; m; km)? Complete the table.

	Instrument	Unit
The distance around the soccer field	trundle wheel	m
The length of your arm from shoulder to wrist	measuring tape	cm
The distance from your home to school	car's odometer	km
The length of a sewing needle	ruler	mm
The width of a pencil sharpener	ruler	mm
The length of a pencil box	ruler	cm
The distance from one town to the next	car's odometer	km

(14)

2. Complete.

a. 5 000 m = 5 km

b 500 m = $\frac{1}{2}$ km

c. 5 000 cm = 50 m

d. 500 cm = 5 m

e. 50 cm = $\frac{1}{2}$ m

f. 2 000 m = 200 000 cm

g. 200 mm = 20 cm

h 20 mm = 2 cm

i. 2 mm = 0,2 cm

j. 25 mm = $2\frac{1}{2}$ cm

(10)

3. It typically takes between 10 and 15 minutes to walk one kilometre. Walking 3 times around a rugby or soccer field is roughly the same as walking one kilometre. Wendy wants to walk 5 km.

a. How many times must Wendy walk around a rugby or soccer field?

3 × 5 = 15 times

b. Estimate how long it will take Wendy.

15 × 10   to   15 × 15

= 15 times ($2\frac{1}{2}$ hr)   = 225 min ($3\frac{3}{4}$ hr)

(2)

4. Solly uses 90 cm of thin wire to make a small wire toy.

a. How many metres of wire does he need for 10 toys?

90cm × 10 = 900cm

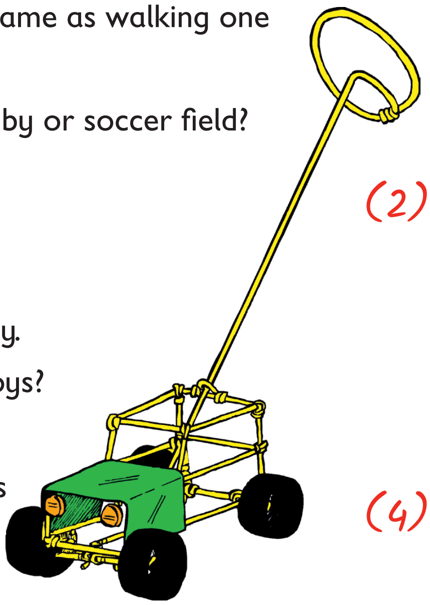
He will need 9m of wire.

b Solly buys 12 metres of thin wire. How many toys can he make? How much wire is left over?

900cm + (300cm) = 1 200cm

↙ ↓ ↓ ↘

90 90 90 30 That means 13 toys and 30cm left.



(4)

[30]

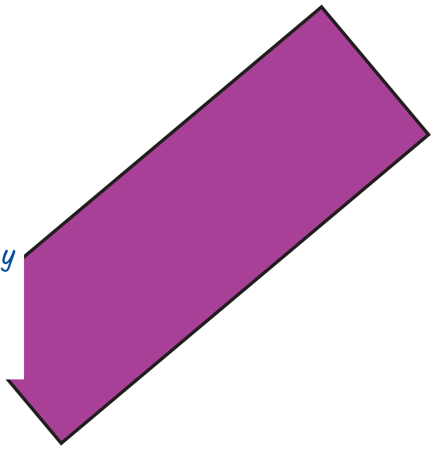
The distance around the outside of a shape is called the shape's *perimeter*.

1. Use your ruler to measure the perimeter of each shape. Give your answer in millimetres, and centimetres and millimetres.

?Why do you think we do not all have the same answer?

Teachers must account for human error when the children measure. Talk about accuracy and what acceptable error entails.

a.



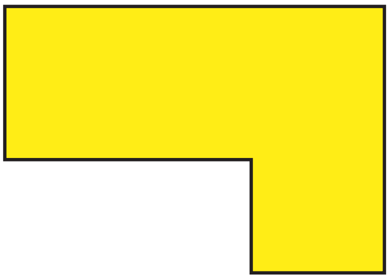
_______ mm = _______ cm + _______ mm

b.

When we measure, sometimes we make small errors.

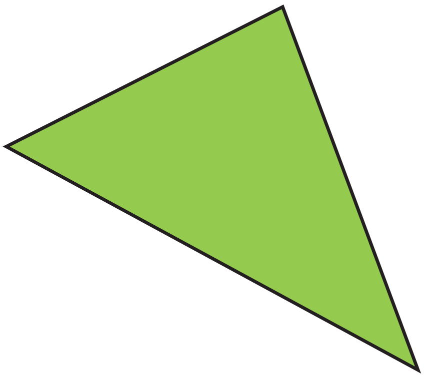
_______ mm = _______ cm + _______ mm

c.



_______ mm = _______ cm + _______ mm

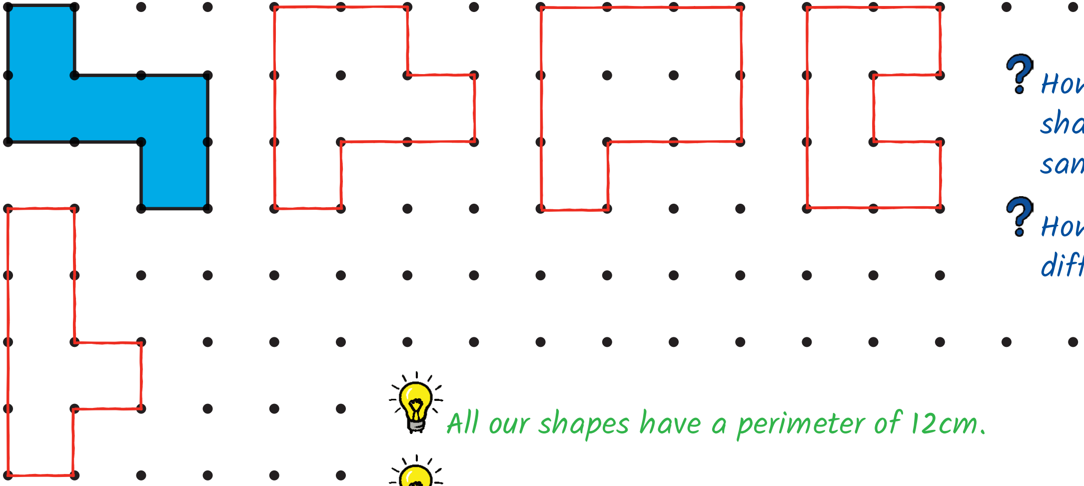
d.



_______ mm = _______ cm + _______ mm

2. This shape has a perimeter of 12 cm. Draw at least three more different shapes with a perimeter of 12 cm.

Compare your shapes with the person sitting next to you.



?How are your shapes the same?

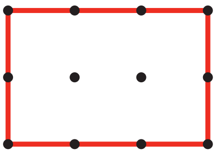
?How are they different?

All our shapes have a perimeter of 12cm.

Some of my shapes look different to my friends' but, if I turn them, or I flip them, then they are the same.

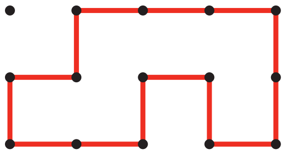
The purpose of this page is for the children to notice that a diagonal on the grid is not exactly 1 unit.

1. Order the shapes from the shape with the shortest perimeter to the shape with the longest perimeter. D ; A ; C ; B



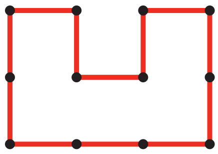
A

P = 10 units



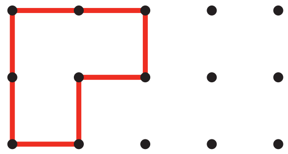
B

P = 14 units



C

P = 12 units

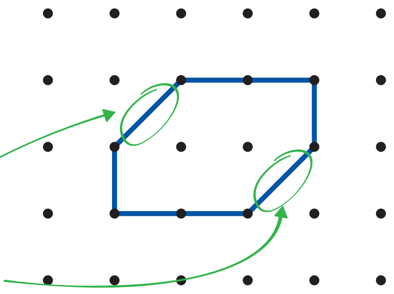


D

P = 8 units

2. Diana calculated the perimeter of this shape like this.

2 + 1 + 1 + 2 + 1 + 1 = 8 units



Explain why Diana is not correct.

Diana assumed the diagonal lines to equal 1 unit, when we can see by looking at it that it looks like more than 1 unit, but less than 2.

Without using a ruler complete for the shape:

8 cm < perimeter of shape < 10 cm

Thinking of the diagonal as 1 cm means the perimeter will be at least 8cm (the shortest possibility).

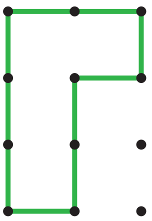
Explain how you did this.

I can do the same for the largest possibility by taking the diagonal to equal 2cm.

3. Arrange the shape with the shortest perimeter to the shape with the longest perimeter. A ; D ; B ; C

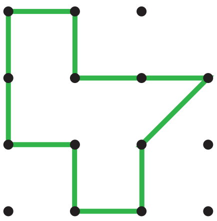
Explain how you did this.

? How did you compare these shapes if the diagonals are not equal to 1 unit?



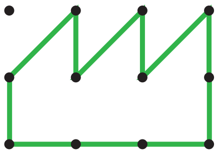
A

P = 10 units



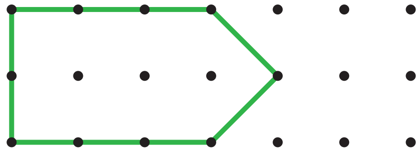
B

P ⇒ 10 + 1
⇒ 11 plus a little extra



C

P ⇒ 8 + 3
⇒ 11 plus extra (3 times)



D

P ⇒ 8 + 2
⇒ 10 plus a little extra

I thought of the diagonal as 1 + a little (or as 2 − a little).