



Lesson 1 - We are practising our written methods




Lesson 2 WALT: solve multi-step problems




Lesson 3

Lesson 4

Lesson 5

Number Families 

Factors & Multiples 

WEEK 14 - MATHS



Marking Priority

Best work to indepth
mark



Lesson 1:

We are showing the elves how to use our written methods of calculation.

Father Christmas is trying to teach his elves written methods of calculation.

He needs a fantastic example of addition, subtraction, multiplication and division to help them along.



1. Choose the level of question to answer.
2. Answer in your book, then check your answer is correct.
3. CHOOSE ONE EXAMPLE OF EACH CALCULATION and write your written method up as clearly and neatly as possible in the correct section on the paper provided.

First - we need to practice.



Addition

Column Method

Use squared paper to write the numbers in columns.

$$\begin{array}{r} 76 \\ + 47 \\ \hline 123 \end{array}$$

Don't forget to start with the units

6 + 7 is 13

Write the ten under the Tens column.

$$76 + 47 = 123$$

When I'm ready, I can do it this way!



Subtraction

Compact Decomposition

$$\begin{array}{r} 324 \\ - 169 \\ \hline 155 \end{array}$$

$$324 - 169 = 155$$

To subtract 9 from 4, I need to exchange a ten to make 10 + 4 = 14. Then I can subtract. I start by doing 14 - 9 = 5, 110 - 60 = 50 and 200 - 100 = 100



- 1) $423 + 156$
- 2) $302 + 158$
- 3) $432 + 122$
- 4) $545 + 235$

- 1) $624 - 156$
- 2) $387 - 257$
- 3) $442 - 122$
- 4) $655 - 235$

- 1) $589 + 113$
- 2) $675 + 382$
- 3) $456 + 123$
- 4) $151 + 239$

- 1) $582 - 113$
- 2) $675 - 387$
- 3) $456 + 173$
- 4) $951 + 259$

- 1) $2568 + 6541$
- 2) $5438 + 4597$
- 3) $6213 + 7513$
- 4) $12365 + 6245$

- 1) $8452 - 1821$
- 2) $7005 - 2883$
- 3) $4012 - 2299$
- 4) $7856 - 3214$

Multiplication

Compact long multiplication

$$\begin{array}{r}
 56 \\
 \times 27 \\
 \hline
 392 \quad (56 \times 7) \\
 + 1120 \quad (56 \times 20) \\
 \hline
 1512
 \end{array}$$

Start with 56 x 7 and do 6 x 7 first.

56 x 27 = 1512

- 1) 25×12
- 2) 42×23
- 3) 156×4
- 4) 234×5

- 1) 125×24
- 2) 406×22
- 3) 714×13
- 4) 469×21

- 1) 125×45
- 2) 846×56
- 3) 812×98
- 4) 507×34

Plenary

Self Evaluation

Pop a star by the calculation
that you would like to focus
on improving next year - 2021!

Lesson 2: WALT solve multi-step problems

At the start of December, there were 543 toy cars in Santa's workshop.

During December,

- 217 more cars were made
- 622 toy cars were given as presents.

What could the question be?

What information do you know.

What do we need to do?

- 1)
- 2)

Show
your
method

A large grid for showing the method, with a smaller box inside for the final answer.

2 marks

WALT solve multi-step problems

Choose from
the categories...

- 1) addition
and subtraction
- 2) multiplication
and division
- 3) all 4 operations

What could
the question
be?

What
information
do you know?

What operation
will you do?

WALT solve multi-step problems

Christmas Activities - Lessons 3, 4 and 5



- 1) Factors and multiples
- 2) Number bonds/fact families



ACTIVITY 1

Factors and Multiples Chain Game

Play as a class.



What's the longest chain you can make?

ACTIVITY 2

Play with a partner

Factors and Multiples Game

Rules

- You will need 2 different coloured pencils and the 100 square below.
- Player 1 colours in a number less than 50.
- Player 2 has to colour in a number which is a factor or a multiple of the first number.
- Player 1 now has to colour a number which is a factor or a multiple of the number player 2 coloured in.
- Play continues until one player cannot go!

| | | | | | | | | | |
|----|----|----|----|----|----|----|----|----|-----|
| 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 |
| 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 |
| 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 |
| 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 |
| 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 |
| 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 |
| 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 |
| 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 |

twinkl

twinkl.co.uk

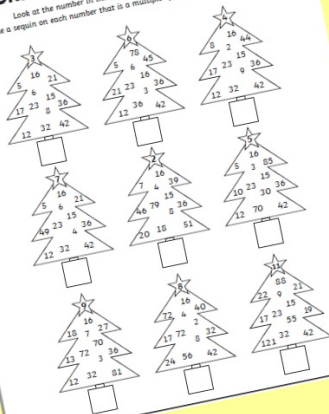


Factors and Multiples

ACTIVITY 3

Christmas Tree Multiples

Look at the number in the star on top of the Christmas tree.
Glue a sequin on each number that is a multiple of the number in the star.



Common Factors



What did one snowman say to the other?

What is the common factor for each of the three numbers by each letter? Write the matching letter on the blank above the answer.

- | | | | |
|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|
| <input type="checkbox"/> A 42, 56, 98 | <input type="checkbox"/> B 16, 72, 80 | <input type="checkbox"/> U 24, 78, 90 | <input type="checkbox"/> T 49, 56, 77 |
| <input type="checkbox"/> D 15, 39, 65 | <input type="checkbox"/> Y 32, 48, 64 | <input type="checkbox"/> M 24, 48, 87 | <input type="checkbox"/> C 22, 66, 77 |
| <input type="checkbox"/> S 21, 32, 36 | <input type="checkbox"/> R 32, 44, 78 | <input type="checkbox"/> L 36, 76, 96 | <input type="checkbox"/> O 30, 45, 70 |

1 3 8 4 6 11 14 2 5 7 1

ACTIVITY 4

Number Bonds and Families

ACTIVITY 5

NUMBER BONDS TO 12 SHEET 1

Fill in the missing numbers to make 12.

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|----|----|----|
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|----|----|----|

Fill in the missing facts

| | | |
|-------------------------------|-------------------------------|------------------------------|
| $8 + \underline{\quad} = 12$ | $10 + \underline{\quad} = 12$ | $6 + \underline{\quad} = 12$ |
| $4 + \underline{\quad} = 12$ | $7 + \underline{\quad} = 12$ | $8 + \underline{\quad} = 12$ |
| $11 + \underline{\quad} = 12$ | $5 + \underline{\quad} = 12$ | $2 + \underline{\quad} = 12$ |

Fill in the missing facts

| | |
|-----------------------------|------------------------------|
| 12 is 1 more than 11 | 12 is <u> </u> more than 10 |
| 12 is <u> </u> more than 9 | 12 is <u> </u> more than 8 |
| 12 is <u> </u> more than 7 | 12 is <u> </u> more than 6 |
| 12 is <u> </u> more than 5 | 12 is <u> </u> more than 4 |
| 12 is <u> </u> more than 3 | 12 is <u> </u> more than 2 |
| 12 is <u> </u> more than 1 | 12 is <u> </u> more than 0 |

Join up the pairs of numbers that add up to 12

| | | | | | |
|----|---|---|----|---|---|
| 10 | 6 | 6 | 11 | 1 | 3 |
| 2 | 5 | 7 | 4 | 8 | 9 |

ACTIVITY 6

1000

400

1000

100

1000

900

1000

800

1000

500

1000

200

1000

100

800

Number bonds to 1000

- $\underline{\quad} + 801 = 1000$
- $906 + \underline{\quad} = 1000$
- $66 + \underline{\quad} = 1000$
- $\underline{\quad} + 902 = 1000$
- $\underline{\quad} + 22 = 1000$
- $69 + \underline{\quad} = 1000$
- $364 + \underline{\quad} = 1000$
- $\underline{\quad} + 298 = 1000$
- $\underline{\quad} + 830 = 1000$
- $72 + \underline{\quad} = 1000$
- $582 + \underline{\quad} = 1000$
- $\underline{\quad} + 415 = 1000$
- $\underline{\quad} + 758 = 1000$
- $65 + \underline{\quad} = 1000$
- $500 + \underline{\quad} = 1000$
- $\underline{\quad} + 120 = 1000$

ACTIVITY 7

Missing number bond to 100

| | | |
|----|----|----|
| 50 | 25 | 60 |
| 72 | 13 | 36 |

ACTIVITY 8

Using Number Bonds



Eloise Elf is struggling to work out the following calculation.

Add 297 and 60.

ACTIVITY 9

Mrs Claus is trying to help her:

$$297 + 60 = 300 + 57$$

She says the answer is this:

$$297 + 60 = 357$$



Write down what Mrs Claus could say to Eloise Elf to help her understand. Think of more examples to help her understand. Can you use diagrams or place value counters to help you explain?

Number bonds and families

Your challenge is to arrange these triangles to make one big triangle, so the numbers that touch add up to 10.

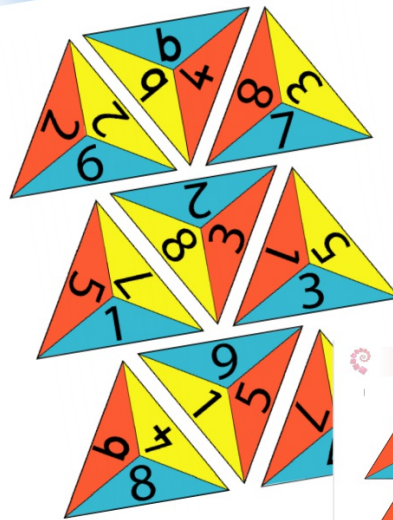
** How many solutions can you find?

** How will you know that you have found ALL the solutions?

** Repeat but can you make 8, 9 or 11?

ACTIVITY 10

One Big Triangle



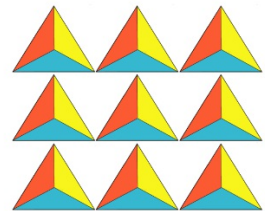
<http://rich.maths.org/102>
© University of Cambridge

Hit the button



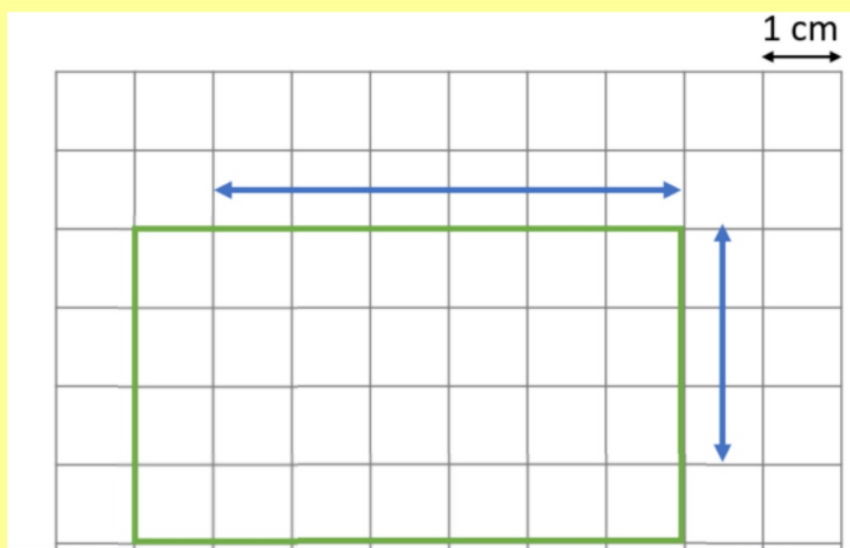
ACTIVITY 11

One Big Triangle Blank Cards



Create your own:
number bonds
to 20, 50, 100

Calculate the perimeter.

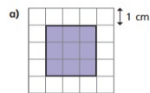


YOU DO

Perimeter on a grid



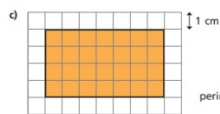
- 1 Work out the perimeter of each rectangle.



perimeter =

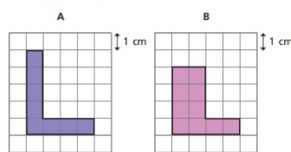


perimeter =



perimeter =

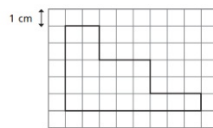
- 2 Which of the hexagons has the greatest perimeter?
Show all your workings.



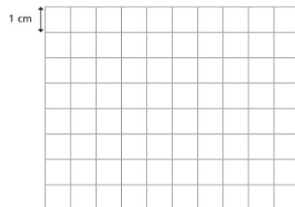
Shape ____ has the greatest perimeter.

- 3 Draw two different rectangles with a perimeter of 14 cm.

- 4 Work out the perimeter of the shape.

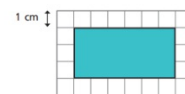


- 5 Draw two shapes with a perimeter of 20 cm.
Your shapes should **not** be rectangles.



Reason: 1b, 2, 5,7

- 6 Work out the perimeter of the rectangle.



- 7 A shape is drawn on a square grid.
Part of the shape is hidden.



What could the perimeter of the shape be?

Is there more than one answer?

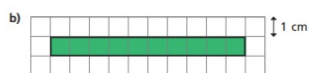
Perimeter on a grid



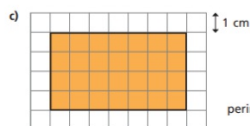
1 Work out the perimeter of each rectangle.



perimeter = 12 cm

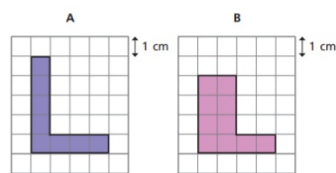


perimeter = 22 cm



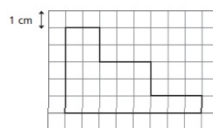
perimeter = 22 cm

2 Which of the hexagons has the greatest perimeter?
Show all your workings.



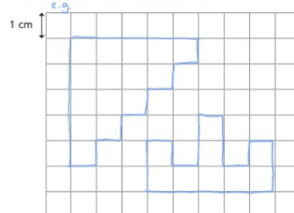
Shape A has the greatest perimeter.

4 Work out the perimeter of the shape.

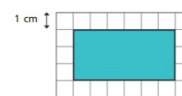


26 cm

5 Draw two shapes with a perimeter of 20 cm.
Your shapes should **not** be rectangles.



6 Work out the perimeter of the rectangle.



18 cm

7 A shape is drawn on a square grid.
Part of the shape is hidden.



What could the perimeter of the shape be?

e.g. 25 cm

Is there more than one answer?

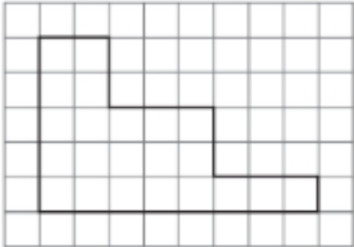
ANSWERS



Plenary

4 Work out the perimeter of the shape.

1 cm



How do you work it out?

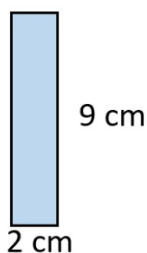


Lesson 3

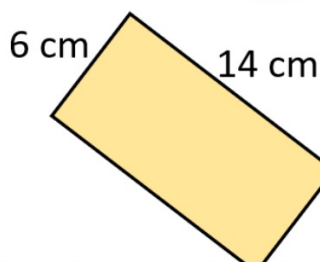
WALT: calculate the perimeter of rectangles

Mega Challenge

1)



2)



Have a think

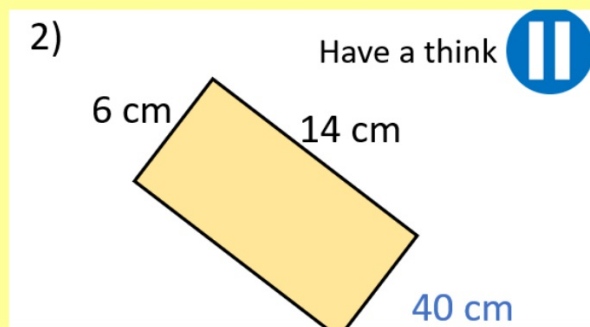
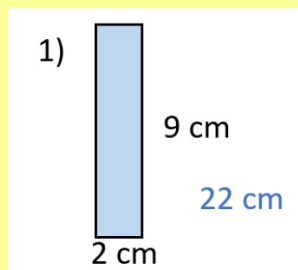


Vocabulary

factors
multiples
prime number
composite numbers
length
width

Perimeter is the
length around a
closed 2D shape

WALT: calculate the perimeter of rectangles



If you correctly answered all of the mega challenge question, move on to the class questions.

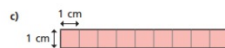
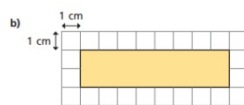
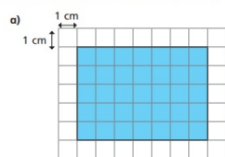
If you did not answer all the mega challenge correctly, stay with me to learn more.

Class questions - see next slide!

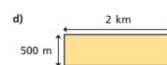
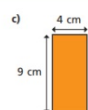
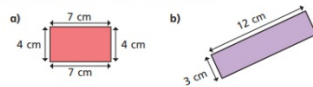
REASON AND PEER MARK FOR EVERY QUESTION!

Perimeter of a rectangle

1 Work out the perimeter of each rectangle.



2 Work out the perimeter of the rectangles.



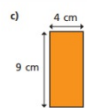
3 Tommy is working out the perimeter of some rectangles.



Reason: 2, 4

RR: 4

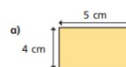
Perimeter of a rectangle



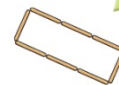
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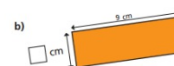
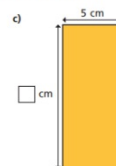
Use Tommy's method to find the perimeter of these rectangles.



4 Each lolly stick is 8 cm long.
Find the perimeter of the shape.



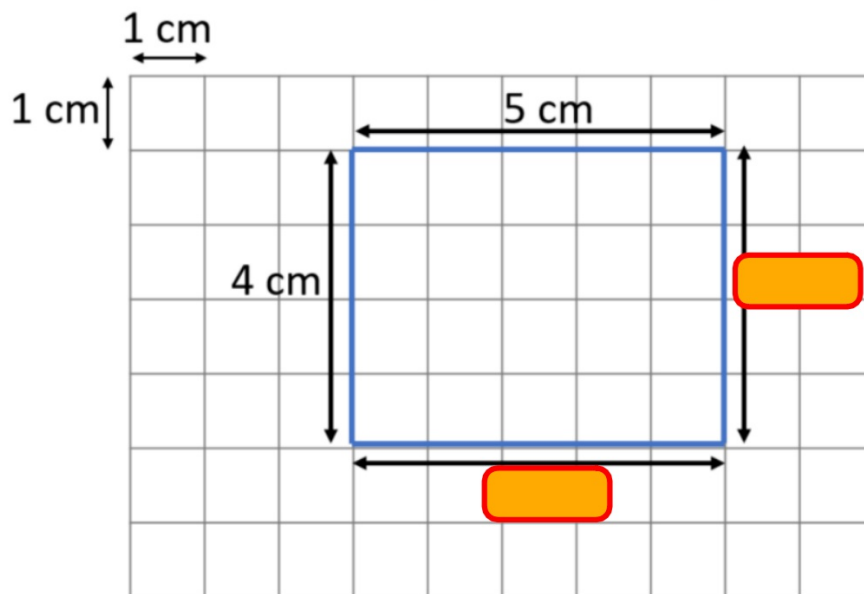
5 Each of these rectangles has a perimeter of 24 cm.
Work out the missing lengths and label the diagrams.



What do you notice?
Find any other rectangles that have the same perimeter.

Everyone must get to number four so we can reason it together.

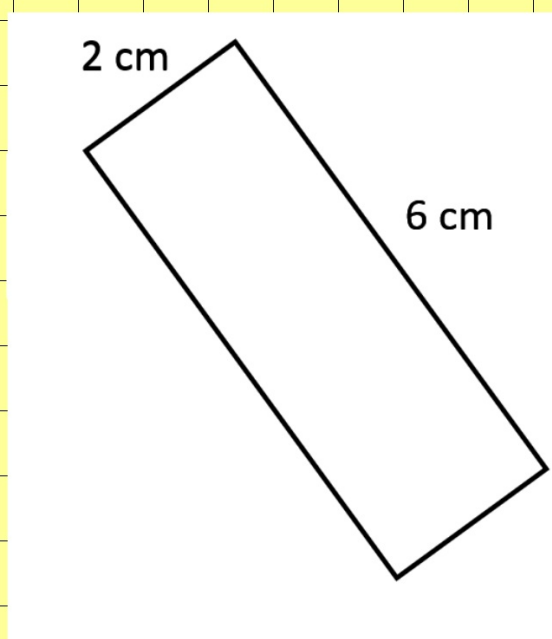
WALT: calculate the perimeter of rectangles



$$\boxed{} + \boxed{} + \boxed{} + \boxed{} = \boxed{}$$

I DO

Calculate the perimeter



WE DO

Calculate the perimeter

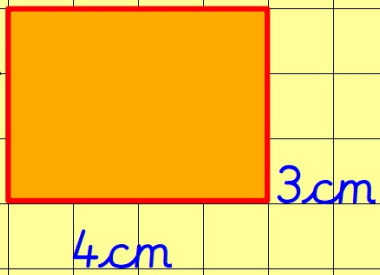
1)



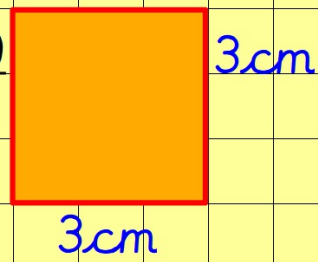
2)



3)



4)

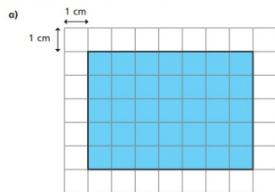


YOU DO

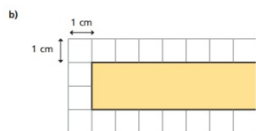
Perimeter of a rectangle

White Rose Maths

1 Work out the perimeter of each rectangle.



$$5 \text{ cm} + 7 \text{ cm} + 5 \text{ cm} + 7 \text{ cm} = 24$$

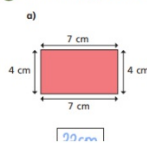


$$2 \text{ cm} + 8 \text{ cm} + 2 \text{ cm} + 8 \text{ cm} = 20$$

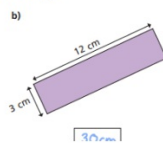


$$1 \text{ cm} + 9 \text{ cm} + 1 \text{ cm} + 9 \text{ cm} = 20 \text{ cm}$$

2 Work out the perimeter of the rectangles.

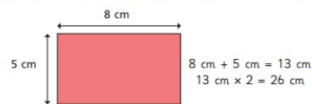


$$20 \text{ cm}$$

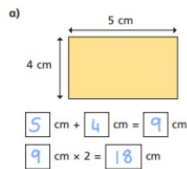


$$30 \text{ cm}$$

3 Tommy is working out the perimeter of some rectangles.

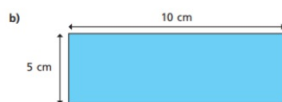


Use Tommy's method to find the perimeter of these rectangles.



$$5 \text{ cm} + 4 \text{ cm} = 9 \text{ cm}$$

$$9 \text{ cm} \times 2 = 18 \text{ cm}$$

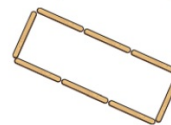


$$10 \text{ cm} + 5 \text{ cm} = 15 \text{ cm}$$

$$15 \text{ cm} \times 2 = 30 \text{ cm}$$

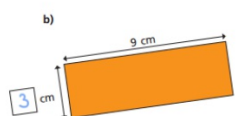
Answers

4 Each lolly stick is 8 cm long.
Find the perimeter of the shape.



$$64 \text{ cm}$$

5 Each of these rectangles has a perimeter of 24 cm.
Work out the missing lengths and label the diagrams.



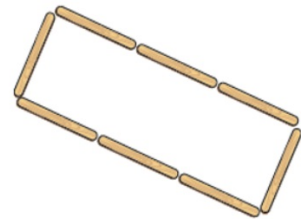
What do you notice?
Find any other rectangles that have the same perimeter.

Year 5 radical reasoning

Work it out:

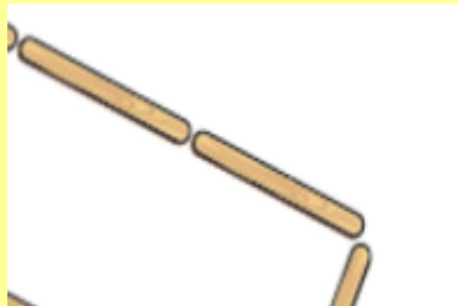
Each lolly stick is 8 cm long.

Find the perimeter of the shape.

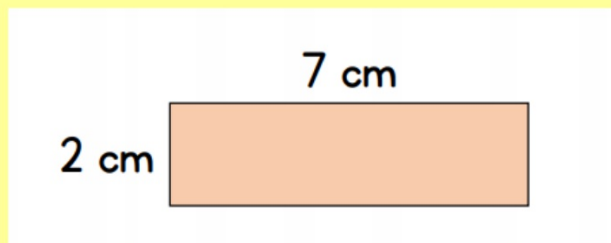


Key Vocabulary:

Explain: How did I do it and how did I know what to do?



Plenary



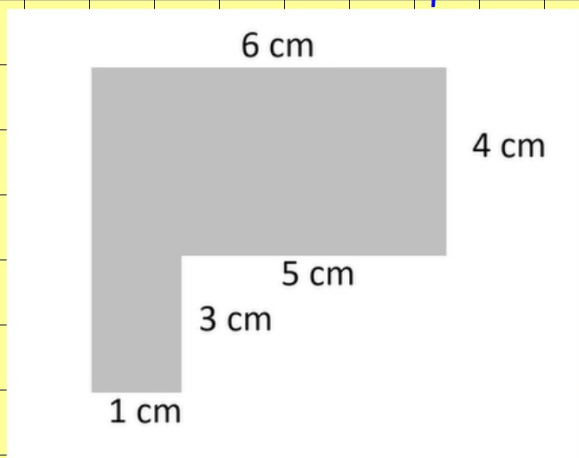
Create instructions to calculate the perimeter.

Is there more than one way?

Lesson 4 WALT: calculate the perimeter of rectilinear shapes

Mega Challenge

Calculate the perimeter of this rectilinear shape



Vocabulary

measure

perimeter

length

width

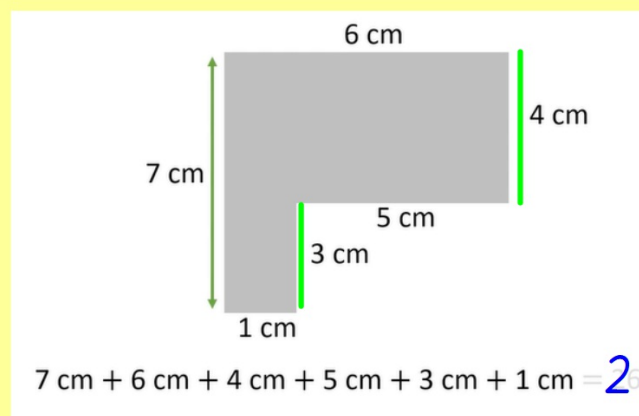
centimetre (cm)

millimetre (mm)

rectilinear

Perimeter is the length around a closed 2D shape

WALT: calculate the perimeter of rectilinear shapes



If you correctly answered all of the mega challenge question, move on to the class questions.

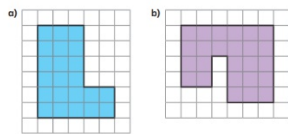
If you did not answer all the mega challenge correctly, stay with me to learn more.

Class questions - see next slide!

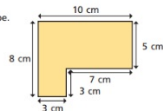
REASON AND PEER MARK FOR EVERY QUESTION!

Perimeter of rectilinear shapes

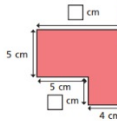
- 1 The length of each square on the grid is 1 cm.
Work out the perimeter of the shapes.



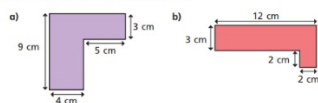
- 2 Work out the perimeter of the shape.



- 3 a) Work out the missing lengths.
b) What is the perimeter of the shape?



- 4 Work out the perimeter of each shape.



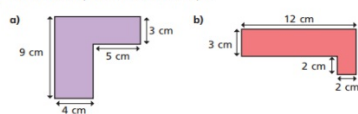
- 5 Mo puts two 5 cm by 3 cm rectangles next to each other.



- a) Is Mo correct?
Work out the perimeter of the larger rectangle to check your answer.

Perimeter of rectilinear shapes

- 4 Work out the perimeter of each shape.

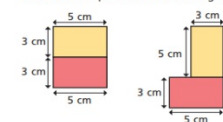


- 5 Mo puts two 5 cm by 3 cm rectangles next to each other.



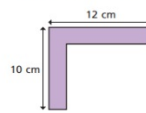
- a) Is Mo correct?
Work out the perimeter of the larger rectangle to check your answer.

- b) Mo puts the rectangles together in different ways.
Work out the perimeter of each large shape.



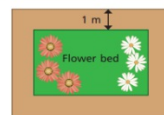
*Do it!
Reason it!
Peer Mark it!*

- 6 Dani thinks there isn't enough information to work out the perimeter of the shape.



- Is Dani correct?
Explain your answer.

- 7 A rectangular flower bed is 5 m long and 3 m wide.
The path around the flower bed is 1 m wide.

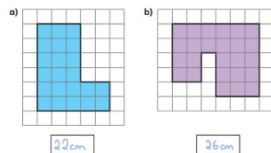


- a) What is the perimeter of the flower bed?
b) What is the perimeter of the outside of the path?

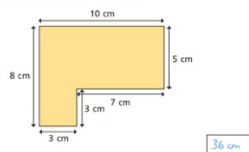
ANSWERS

Perimeter of rectilinear shapes

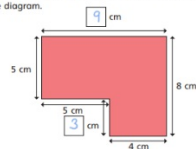
- 1 The length of each square on the grid is 1 cm. Work out the perimeter of the shapes.



- 2 Work out the perimeter of the shape.



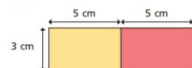
- 3 a) Work out the missing lengths and label them on the diagram.



- b) What is the perimeter of the shape?

34 cm

- 5 Mo puts two 5 cm by 3 cm rectangles next to each other.



The perimeter of each small rectangle is 16 cm, so the perimeter of my larger rectangle must be $2 \times 16 \text{ cm} = 32 \text{ cm}$.

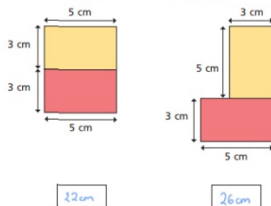
- a) Is Mo correct? No

Work out the perimeter of the larger rectangle to check your answer.

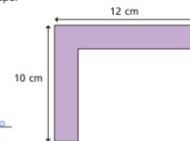
26 cm

- b) Mo puts the rectangles together in different ways.

Work out the perimeter of each large shape.

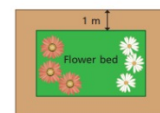


- 6 Dani thinks there isn't enough information to work out the perimeter of the shape.



Is Dani correct? No
Explain your answer.

- 7 A rectangular flower bed is 5 m long and 3 m wide. The path around the flower bed is 1 m wide.



- a) What is the perimeter of the flower bed?

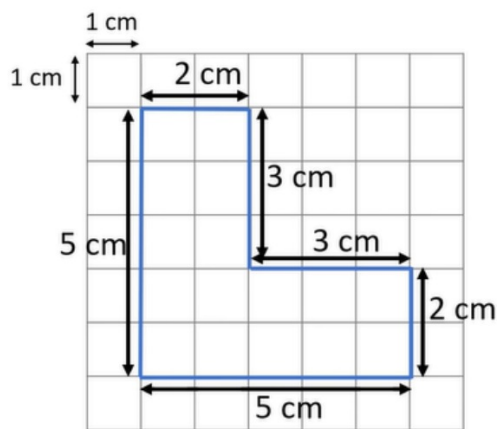
16 cm

- b) What is the perimeter of the outside of the path?

24 cm



(01:00 - 02:00)



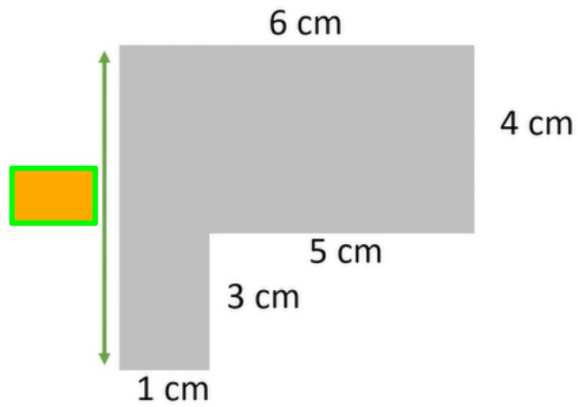
$$2\text{ cm} + 3\text{ cm} + 3\text{ cm} + 2\text{ cm} + 5\text{ cm} + 5\text{ cm} = 20\text{ cm}$$

I DO

Rectilinear
- made up of 2 or more
rectangles



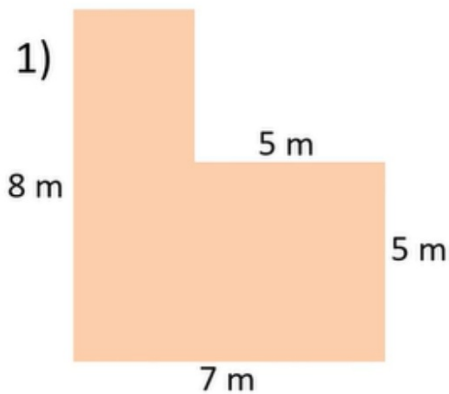
(02:00 - 02:50)



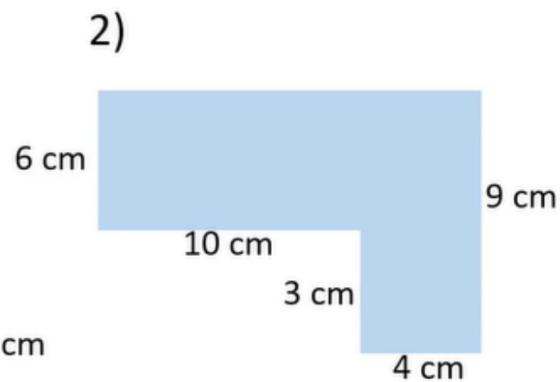
$$7 \text{ cm} + 6 \text{ cm} + 4 \text{ cm} + 5 \text{ cm} + 3 \text{ cm} + 1 \text{ cm} = 26 \text{ cm}$$

WE DO

Calculate the perimeter of these rectilinear shapes.
(HINT: watch out for missing values)



Have a think

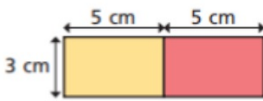


(04.29 - 06:00)

YOU DO

Plenary

Mo puts two 5 cm by 3 cm rectangles next to each other.



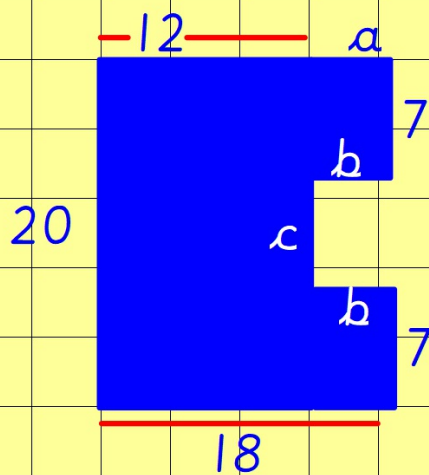
The perimeter of each small rectangle is 16 cm, so the perimeter of my larger rectangle must be $2 \times 16 \text{ cm} = 32 \text{ cm}$.

*Mo is not correct.
Why not?*



Lesson 5

WALT: calculate the perimeter



Vocabulary

measure

perimeter

length

width

centimetre (cm)

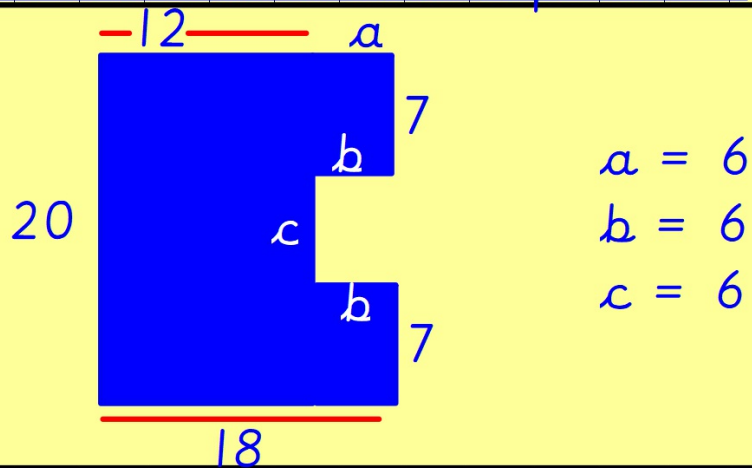
millimetre (mm)

rectilinear

What is the value of the missing sides - a , b and c ?

Perimeter is the length around a closed 2D shape

WALT: calculate the perimeter



If you correctly answered all of the mega challenge question, move on to the class questions.

If you did not answer all the mega challenge correctly, stay with me to learn more.

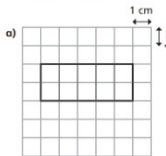
Class questions - see next slide!

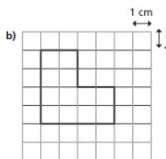
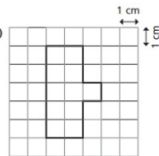
REASON AND PEER MARK FOR EVERY QUESTION!

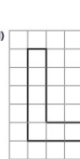
Calculate perimeter



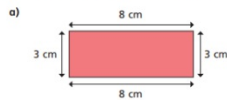
1 Calculate the perimeter of each shape.

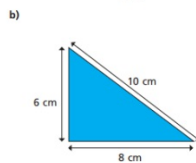






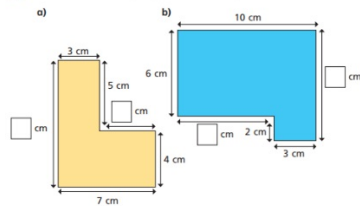
2 Calculate the perimeter of these shapes.





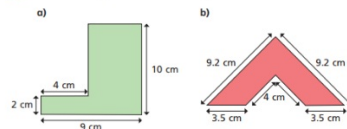
Reason: 2, 5, 6, 7

4 Work out the missing lengths on these shapes.

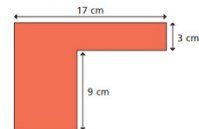


Discuss with a partner how you worked them out.

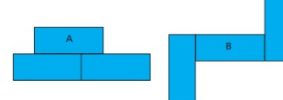
5 Calculate the perimeter of these shapes.



6 Mo thinks that there is not enough information to calculate the perimeter of the shape. Is he correct? How do you know?



7 Rosie is making shapes made up of 3 rectangles. Each rectangle has a length of 10 cm and a width of 4 cm. She makes these 2 shapes.

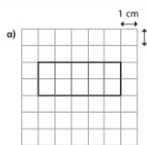


- a) Which shape has the greatest perimeter? _____
- b) What other shapes can you make with 3 rectangles? What is the perimeter of the shapes?

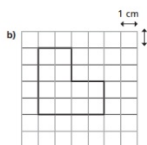
Calculate perimeter



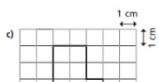
1 Calculate the perimeter of each shape.



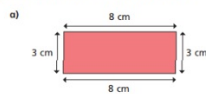
14 cm



16 cm



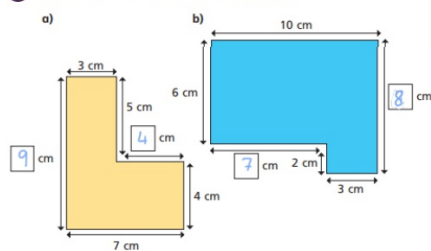
2 Calculate the perimeter of these shapes.



22 cm

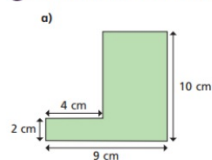


4 Work out the missing lengths on these shapes.

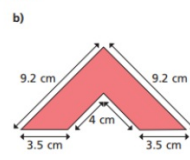


Discuss with a partner how you worked them out.

5 Calculate the perimeter of these shapes.



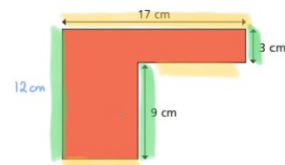
38 cm



33.4 cm

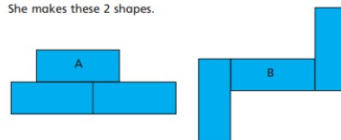
ANSWERS

6 Mo thinks that there is not enough information to calculate the perimeter of the shape. Is he correct? How do you know?



No. The perimeter is 58 cm.

7 Rosie is making shapes made up of 3 rectangles. Each rectangle has a length of 10 cm and a width of 4 cm. She makes these 2 shapes.



a) Which shape has the greatest perimeter? B
b) What other shapes can you make with 3 rectangles? What is the perimeter of the shapes?



Plenary

rectilinear

True or False ?

Calculate perimeter

To calculate the perimeter of a compound shape, just add all of the lengths given.

White Rose Maths

Recap Session (20mins)

Measurement - cm, m

The key thing to remember with measurements is that:

$$1\text{m} = 100\text{ cm}$$

Recap Session (20mins)
Measurements

2/3

I DO

| cm | m and cm |
|--------|---------------|
| 310 cm | 3 m and 10 cm |
| 320 cm | m and cm |

WE DO

| |
|--|
| |
|--|

YOU DO

| |
|--|
| |
|--|

Remember: $1\text{m} = 100\text{cm}$

therefore $2\text{m} = 200\text{cm}$

and $500\text{cm} = 5\text{m}$

Recap Session (20mins) 

Measurements

3/3

How long will it take you to find the pairs?

Recap Session (20mins)
Measurements- mm to cm

1/2

When using millimetres and centimetres to measure length, you need to know this:

$$10\text{mm} = 1\text{cm}$$

$$\text{therefore } 20\text{mm} = 2\text{ cm}$$

$$\text{and } 50\text{cm} = 5\text{ mm}$$

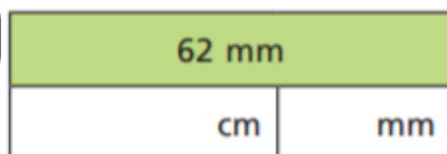
Recap Session (20mins)

2/3

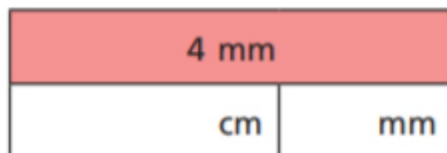
Measurements - mm and cm

Complete the bar models.

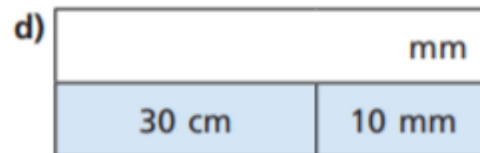
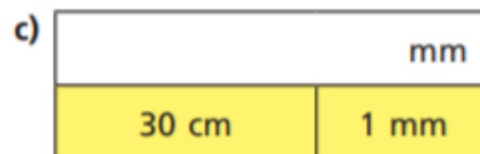
I DO



WE DO



YOU DO



Recap Session (20mins)
Measurements

3/3



Match the mm and cm

200mm

21mm

20mm

112mm

10mm

201mm

22mm

120mm

210mm

102mm

20cm 1mm

11cm 2mm

21cm

10cm 2 mm

12cm

20cm

2cm

2cm 1mm

1cm

2cm 2mm