Group B – Maths
W/b 01.02.21

MONDAY - Can I solve problems involving units of length?

1. Match **two** lengths to each object in the table below.

75mm 27mm 2700mm 2.7m 2.7km

2700m 1.27m 7.5m 127cm 2.7cm

	Object	1st unit	2nd unit
a	The length of a paper clip		
b	The height of a young student		
c	The length of a finger		
d	The height of a ceiling		
e	The length of a street		

2. Circle any of the following that **do not** describe the length of a 3.05m room.

305cm 3m 5cm 3m 50cm 3050mm 350cm

3.

This is the Peel P50—the smallest production car ever made. Production started and ended in the 1960s. They are very rare, and can sell at auction for more than $100 000!

The Peel P50 is 1.34 m long, 1.2 m high and only 0.99 m wide.

a Write your height in cm. _____

b What is the difference between your height and the height of the P50? _____

c Write the width of the P50 using a different unit of length. _____

d What is something in your room that is about the same as the length of the P50 car? _____

4.

In 2012 an even smaller car was built by Austin Coulson from Phoenix, Arizona, USA. It is allowed on the roads, but it cannot be called a production car because only one was ever made. The car is 7.53 cm shorter and 56.5 cm lower than the P50. (It has no roof, of course!) It is also an amazing 33.59 cm narrower than the tiny Peel P50.

a What are the dimensions of Austin Coulson's car? _____

b With your teacher's permission, search online for "Smallest car, Austin Coulson, 2012" to have a look at the car.

c What is something in a home or a classroom that is about the size of the smallest car? _____

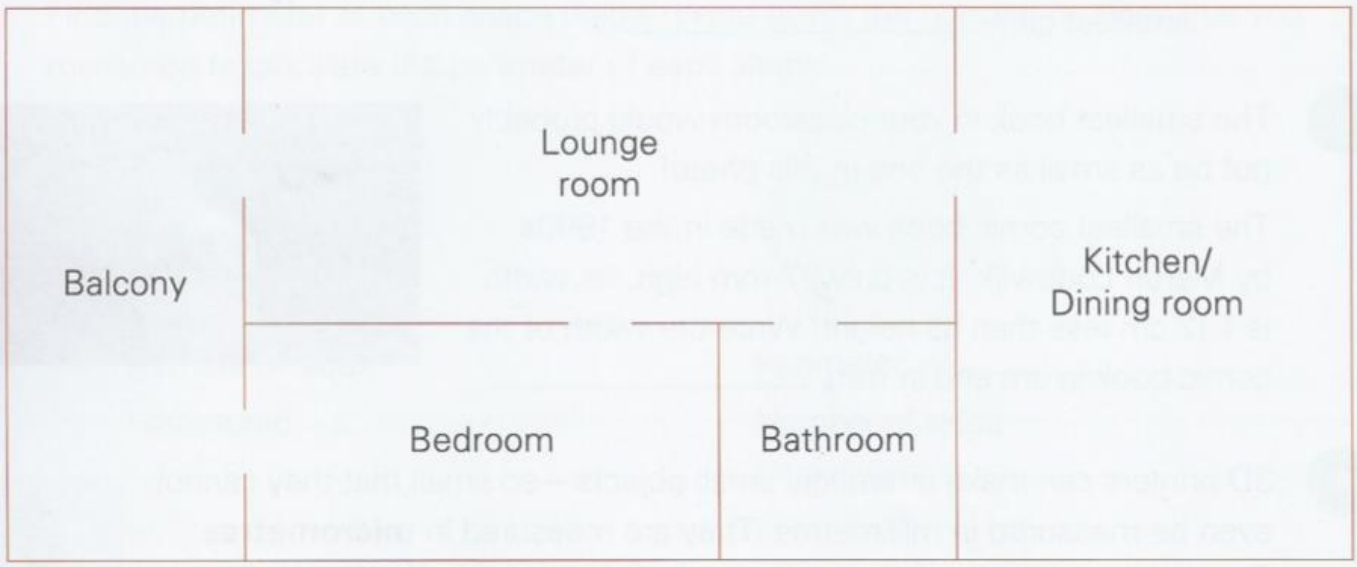
5.

3D printers can make amazingly small objects—so small that they cannot even be measured in millimetres. They are measured in **micrometres**. The smallest replica guitar in the world was made using a 3D printer at a university in New York. It's a very tiny version of the guitar in this photo, but it is actually smaller than one of the full stops on this page!

The tiny model guitar is only 10 micrometres long! Find out what you can about micrometres so that you can appreciate how amazing the replica guitar is.

TUESDAY – Can I calculate the area and perimeter of compound shapes?

This is a floor plan of a housing unit. Using a scale of 1 cm: 1 m, write the area of each room.



Balcony = _____ m^2

Bedroom = _____

Bathroom = _____

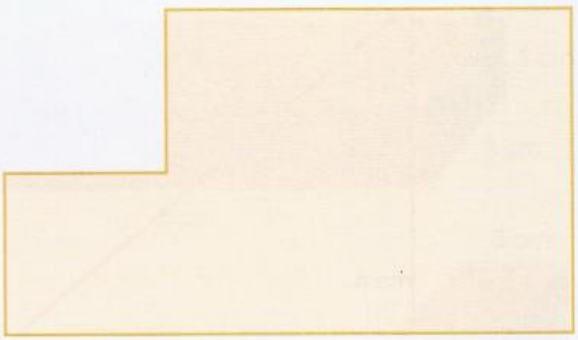
Lounge room = _____

Kitchen/Dining room = _____

Measure and then calculate the area of each shape.

a

b



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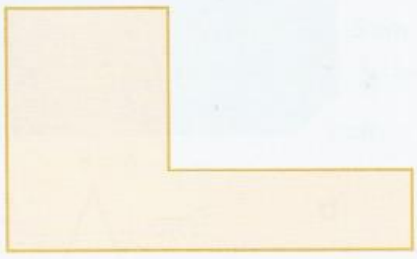

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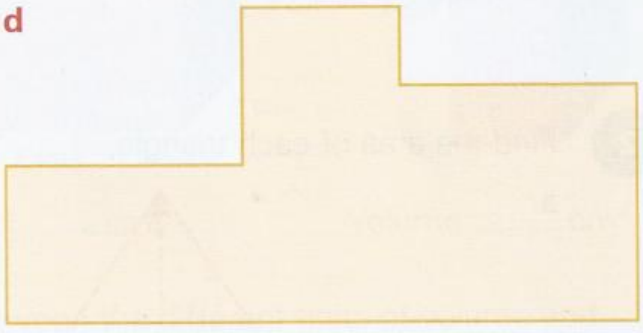


Example

16 m × 4 m

$P = 40$ m

$A = 64$ m^2

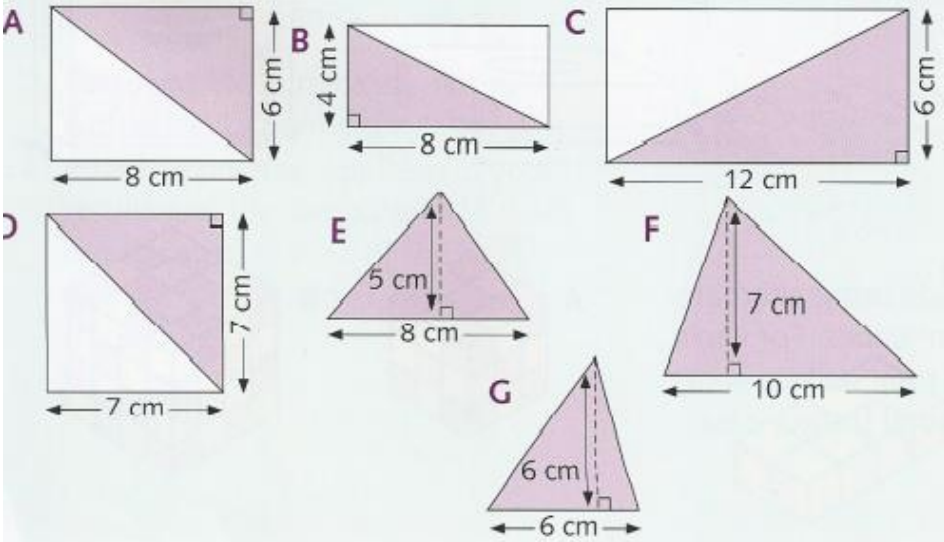
1 A farmer has 40 metres of fencing to make a rectangular enclosure in his barn for his sheep and lambs.

a List all the possible measurements for his rectangular enclosure in whole metres.

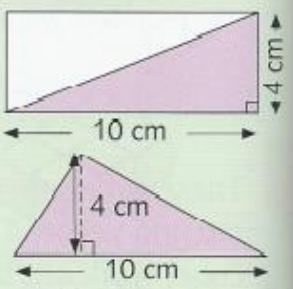
b Which measurements will give the largest area for the sheep and lambs?

WEDNESDAY – Can I calculate the area of triangles and parallelograms?

1 Calculate the area of each purple triangle using the rule $A = \frac{1}{2}bh$.



Example



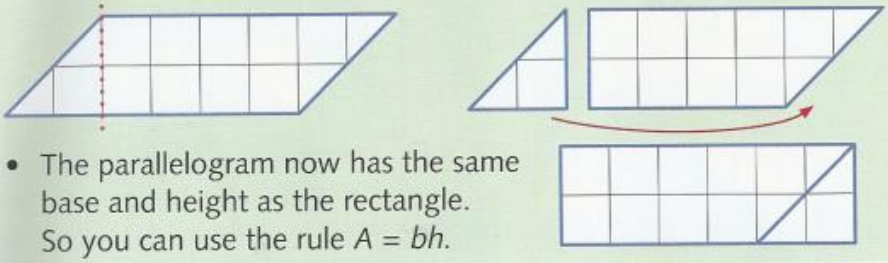
$A = \frac{1}{2}(10 \times 4)\ cm^2$

$= 20\ cm^2$

Rule

Finding the area of parallelograms:

- Cut a right-angled triangle from one end of the parallelogram.
- Slide the triangle to the other side of the parallelogram to make a rectangle.



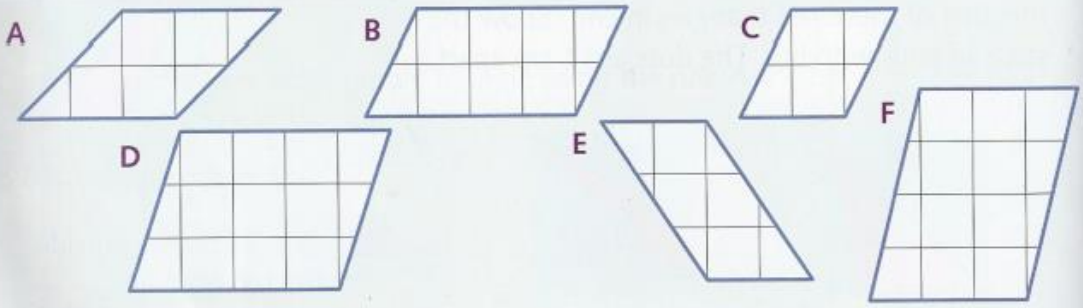
- The parallelogram now has the same base and height as the rectangle. So you can use the rule $A = bh$.

$A = bh$

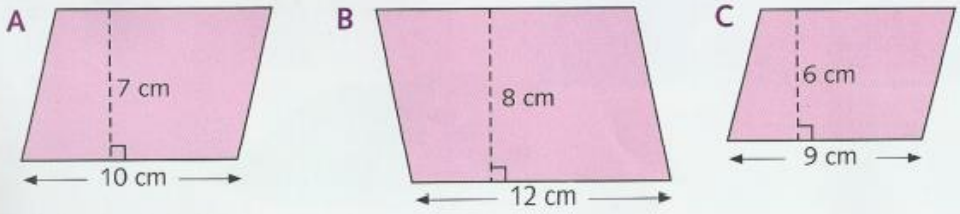
$= (6 \times 2)\ cm^2$

$= 12\ cm^2$

Challenge 1 Find the area of each parallelogram in cm^2. Each grid square is 1 cm across.



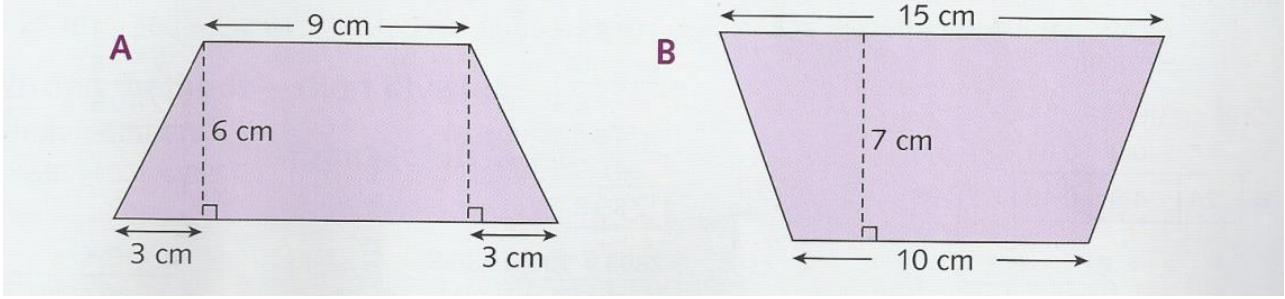
Challenge 2 **1** Calculate the area of each parallelogram using the rule $A = bh$.



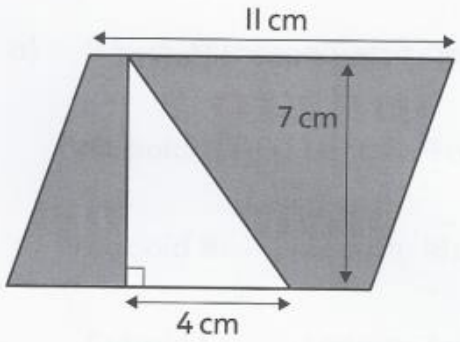
THURSDAY – Can I apply my knowledge of area and perimeter to reasoning and problem solving questions?

1.

Use what you know about finding the area of a parallelogram to find the area of each isosceles trapezium.



2.



The area of a triangle is $\frac{1}{2}$ base × height.

The area of a parallelogram is base × height.

a) What is the area of the shaded part of this shape?

b) The area of a parallelogram is 54 cm². If its base is 9 cm what is its height?

c) The area of a triangle is 40 cm². If its height is 10 cm what is its base?

Y6 Checkpoint 14

Champions' Challenge

1) Peter says that if you double the length and width of a rectangle you will double its area. Is he right?

_____

How can you explain your answer?

2) Give some examples to show if he is right or wrong.

Friday – Can I develop my Arithmetic and Reasoning skills?

Complete the Week 5 Arithmetic Test, which can be found in the Lockdown Home Learning section of the Valley website. Please complete this test before the session on Friday.

In the session, we will be looking at this problem together – you do not need to know the answers before the session.

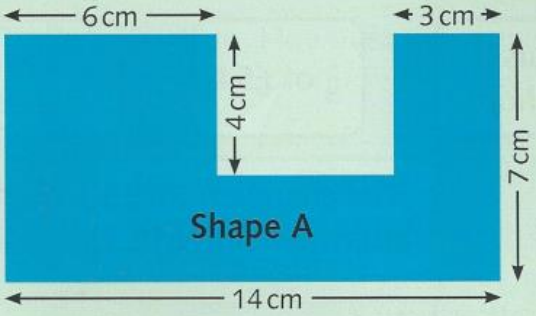
What's the method?

Area and perimeter

Reasoning mathematically

Challenge

Eve, Sofia and David each worked out the correct area of Shape A. On the right are the calculations that the pupils did to work out the shape's area.



You will need:
- squared paper
- ruler

Eve

$(6 \times 7) + (5 \times 3) + (3 \times 7)$
$= 42 + 15 + 21$
$= 78\,cm^2$

Sofia

$(6 \times 4) + (3 \times 4) + (14 \times 3)$
$= 24 + 12 + 42$
$= 78\,cm^2$

David

$(14 \times 7) - (5 \times 4)$
$= 98 - 20$
$= 78\,cm^2$

Explain how each pupil worked out the area.

Think about ...

If necessary, use a sketch to help describe how each pupil worked out the area and perimeter.

For the second 'What if?' task, draw and label your shapes as accurately as possible.

What if?

The three pupils also calculated the perimeter of Shape A. However, they each got a different answer.

Who worked out the correct perimeter?

How did the other two pupils work out the perimeter?

Eve

$6 + 7 + 6 + 7 + 5 + 3 + 5 + 3 + 3 + 7 + 3 + 7 = 62\,cm$

David

$6 + 3 + 14 + 4 + 7 = 34\,cm$

Sofia

$6 + 4 + 5 + 4 + 3 + 7 + 14 + 7 = 50\,cm$

The area of Shape A is $78\,cm^2$. Draw a shape that also has an area of $78\,cm^2$, but where the perimeter is different from Shape A.

Now draw a shape that has the same perimeter as Shape A, but a different area.

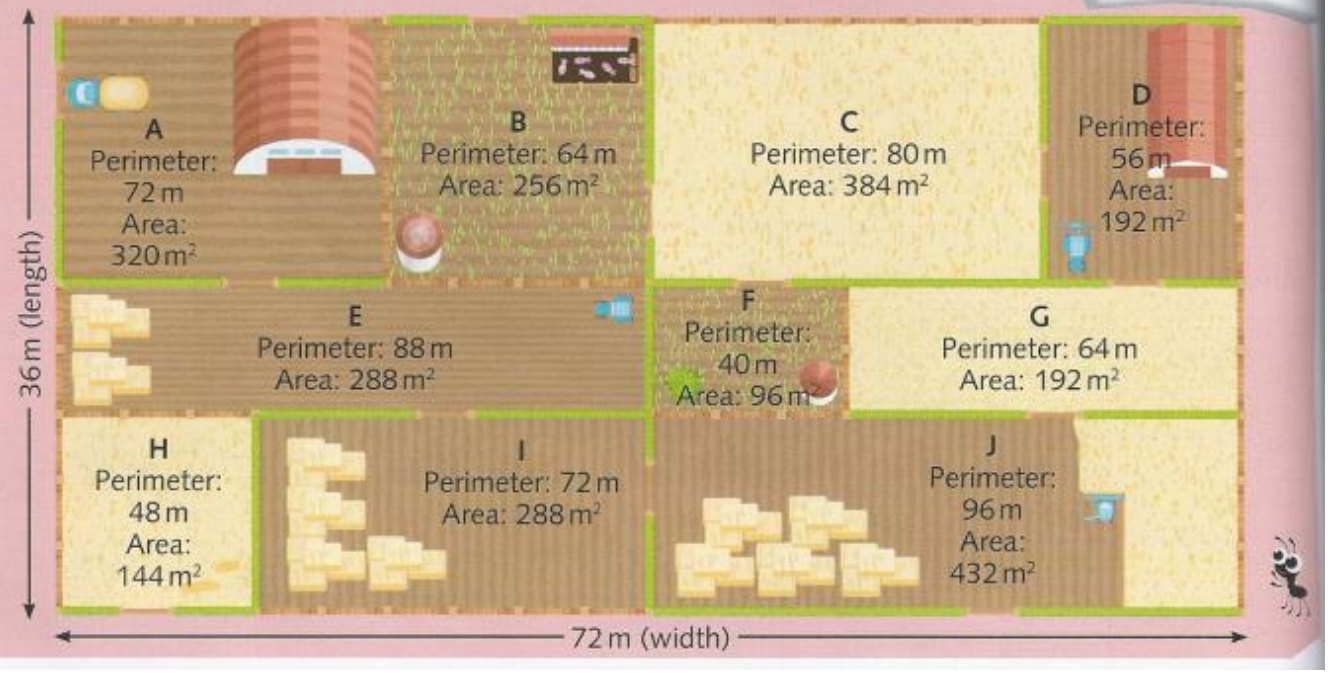
OPTIONAL EXTRA WEEKLY CHALLENGE

Challenge

You will need:
- squared paper
- ruler

A farmer calculated the perimeter and area of all the fields on his farm.

Use this information to work out the dimensions of each field.



Think about ...

Fields B and H are square fields.

The combined widths of fields A and B are the same as the combined widths of fields C and D.

The combined widths of fields A and B are the same width as field E, and the same width as the combined widths of fields H and I.

What if?

Given the total area of the farm and the same number of fields, what other sizes could the fields be?

Use squared paper to show the dimensions of each field on the farm.

Answers- Monday-Thurs

MONDAY

1
a – paperclip – 27mm & 2.7cm
b - young student – 127cm & 1.27m
c - finger – 75mm & 7.5cm
d – ceiling – 2700mm & 2.7m
e – street – 2700m & 2.7km

2.
3m 50cm & 350cm

3.
Answers dependent on your height & room
c. 990mm / 99cm

4.
a. 1m 26.47cm / 63.5 cm / 65.41 cm

TUESDAY

Balcony = 21.9 m2
Bedroom = 19.22m2 Lounge = 39.06m2
Bathroom = 9.61 m2 Kitchen / dining = 37.96m2

Measure and then calculate the area and perimeter of each shape.
a. A = 16.4 cm2 P = 19.4cm
b. A= 28.27cm2 P = 23.8 cm
c. A = 10.56cm2 P = 17.2cm
d. A = 25.67cm2 P= 25.2cm

Farmers field
a.
19 x 1 18 x 2 17 x 3 16 x 4 15 x 5
14 x 6 13 x 7 12 x 8 11 x 9
b. 11 x 9 = 99m2

WEDNESDAY
1 – Triangles
A = 23 cm2 B = 18cm2 C= 36cm2 D = 24.5cm2
E= 20cm2 F = 35cm2 G = 18cm2

Parallelograms
Ch 1
A = 6cm2 B = 8cm2 C = 4cm2 D = 12cm2
E = 6cm2 F = 12cm2

Ch2
A = 70cm2 B= 96 cm2 C= 54cm2

THURSDAY

1. A = 72cm2 B= 87.5 cm2
2. A) = 63cm2 B) 6cm c) 8cm

Champions Challenge

1 – False

You would need to multiply your answer by 4 as if you only doubled the length OR the width you would double the area.

2.

Sides 2 x 3 = 6 sides 4 x 6 = 24

Sides 1 x 4 = 4 side 2 x 8 = 16

Sides 2 x 5 = 10 sides 4 x 10 = 40

OPTIONAL EXTRA WEEKLY CHALLENGE:

A- 16m x 20m	B – 16m x 16m	C- 16m x 24m	D – 16m x 12m	E – 8m x 36m
F – 8m x 12m	G – 8m x 24m	H- 12m x 12m	I – 12m x 24m	J – 12m x 36m