Lesson 1 – WALT calculate the area of a rectangle.

LET'S LEARN

Lesson 2 WALT calculate the area of a rectilinear shape
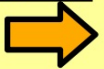
Lesson 3 WALT calculate the area of a rectilinear shape

Lesson 4 WALT calculate the area of an irregular shape.

Lesson 5 WALT calculate perimeter and area of shapes.

Recap Session (20mins) place value

Recap Session (20mins) place value

WEEK 1 - MATHS

Marking Priority
Best work to indepth mark

WALT: calculate the area of a rectangle.

What is area?

How is it different to perimeter?

Vocabulary

measure
area
length
width
centimetre (cm)
millimetre (mm)
rectilinear

1cm=10mm

Area is the space inside a closed 2D shape

WALT: calculate the area of a rectangle.

00:57 - 03:25

1 cm

☐ squares

1 cm

☐ rows

There are ☐ rows.

There are ☐ squares in each row.

There are ☐ squares altogether.

☐ × ☐ = ☐

The area of the rectangle is ☐ cm squared.

☐ cm²

Vocabulary

measure
area
length
width
centimetre (cm)
millimetre (mm)
rectilinear

1cm=10mm

Area is the space inside a closed 2D shape

WE DO

WALT: calculate the area of a rectangle.

Another example to go through: LET'S LEARN   🌐 03:32 - 04:07

1 cm

1 cm

Have a think ⏸

There are ____ rows.

There is ____ square in each row.

There are ____ squares altogether.

____ × ____ = ____

The area of the rectangle is ____ cm squared.

____ cm^2

Vocabulary

measure
area
length
width
centimetre (cm)
millimetre (mm)
rectilinear

1cm=10mm

Area is the space inside a closed 2D shape

I DO

WALT: calculate the area of a rectangle.

Another example to go through:

1 cm

1 cm

Have a think ⏸

There are ___ rows.

There is ___ square in each row.

There are ___ squares altogether.

___ × ___ = ___

The area of the rectangle is ___ cm squared.

___ cm^2

Vocabulary

measure
area
length
width
centimetre (cm)
millimetre (mm)
rectilinear

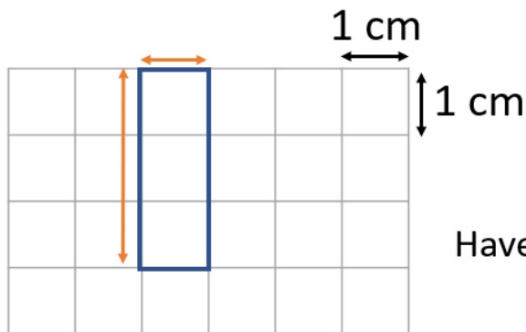1cm=10mm

Area is the space inside a closed 2D shape

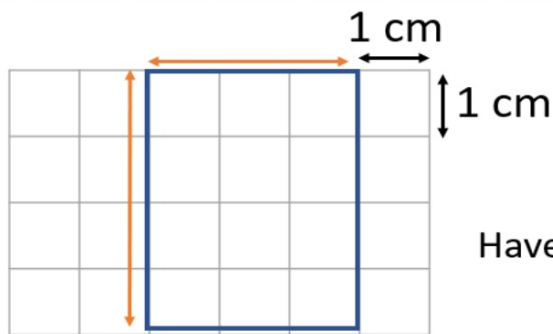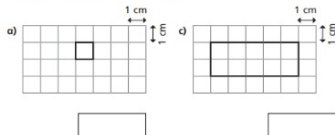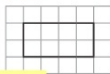**YOU DO**

Area of rectangles

1 On the grid, the area of each square is 1 cm²

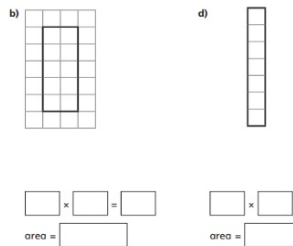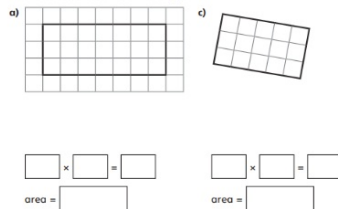Calculate the area of each rectangle.

a)

c)

b)

2 Complete the sentences to describe the rectangle.

There are ▢ rows.

Each row has ▢ squares.

There are ▢ squares altogether.

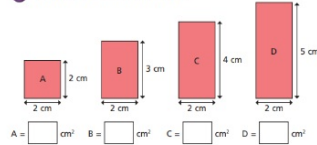**3** The area of each square is 1 cm²

Work out the area of each rectangle.

a)

c)

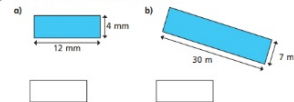▢ × ▢ = ▢

▢ × ▢ = ▢

area = ▢

area = ▢

b)

d)

▢ × ▢ = ▢

▢ × ▢ =

area = ▢

area = ▢

© White R

4 Calculate the area of the rectangles.

A 2 cm 2 cm
B 3 cm 2 cm
C 4 cm 2 cm
D 5 cm 2 cm

A = ▢ cm²   B = ▢ cm²   C = ▢ cm²   D = ▢ cm²

5 Work out the area of these rectangles.

a) 4 mm 12 mm

b) 30 m 7 m

▢   ▢

6 How many rectangles can you draw that have an area of 24 cm²?
Label the lengths. Your drawings do not have to be exact.

Compare your answers with a partner.

7 These shapes all have the same area. Shape
Work out the missing lengths.

A 6 cm
B 9 cm
C 3 cm
▢ cm

8 A rectangle has an area of 96 cm²
The length of the rectangle is 4 cm longer th
Work out the length and width of the recta

length = ▢   width = ▢

R

Reason: 5,6,7

Vocabulary

measure
area
length
width
centimetre (cm)
millimetre (mm)
rectilinear

1cm=10mm

Area is the space inside a closed 2D shape

Can you use the key vocabulary in your reasoning?

Area of rectangles

1 On the grid, the area of each square is 1 cm²

Calculate the area of each rectangle.

a)

1 cm

$\boxed{1 \text{ cm}^2}$

b)

1 cm

$\boxed{5 \text{ cm}^2}$

c)

1 cm

$\boxed{10 \text{ cm}^2}$

2 Complete the sentences to describe the rectangle.

There are $\boxed{2}$ rows.

Each row has $\boxed{4}$ squares.

There are $\boxed{8}$ squares altogether.

$\boxed{2} \times \boxed{4} = \boxed{8}$

3 The area of each square is 1 cm²

Work out the area of each rectangle.

a)

c)

$\boxed{3} \times \boxed{7} = \boxed{21}$

area = $\boxed{21 \text{ cm}^2}$

$\boxed{3} \times \boxed{5} = \boxed{15}$

area = $\boxed{15 \text{ cm}^2}$

b)

d)

4 Calculate the area of the rectangles.

A — 2 cm, 2 cm

B — 3 cm, 2 cm

C — 4 cm, 2 cm

D — 5 cm, 2 cm

A = $\boxed{4}$ cm²   B = $\boxed{6}$ cm²   C = $\boxed{8}$ cm²   D = $\boxed{10}$ cm²

5 Work out the area of these rectangles.

a) 4 mm, 12 mm

$\boxed{48 \text{ mm}^2}$

b) 30 m, 7 m

$\boxed{210 \text{ m}^2}$

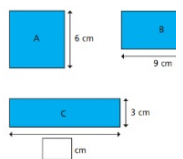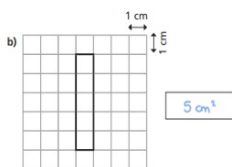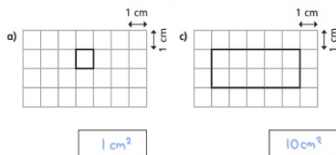**6** How many rectangles can you draw that have an area of 24 cm²?
Label the lengths. Your drawings do not have to be exact.

1cm — 24cm
2cm — 12cm
3cm — 8cm
6cm — 4cm
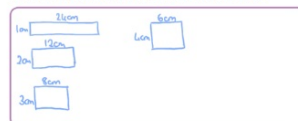
Compare your answers with a partner.

7 These shapes all have the same area. Shape A is a square.
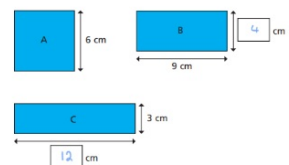Work out the missing lengths.

A — 6 cm

B — $\boxed{4}$ cm, 9 cm

C — 3 cm, $\boxed{12}$ cm

8 A rectangle has an area of 96 cm²
The length of the rectangle is 4 cm longer than the width.
Work out the length and width of the rectangle.

length = $\boxed{12 \text{ cm}}$ width = $\boxed{8 \text{ cm}}$

ANSWERS

Plenary

All squares are rectangles, but not all rectangles are squares.

White Rose Maths

Discuss

WALT: calculate the area of a rectilinear shape

LET'S LEARN

00:57 - 03:44

A

6 cm

B   2 cm

8 cm

5 cm
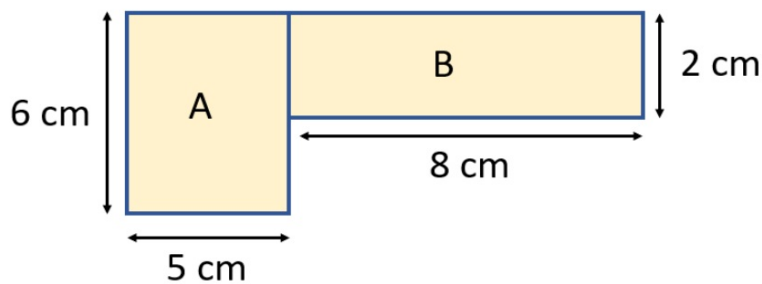
A

B

Vocabulary

measure
area
length
width
centimetre (cm)
millimetre (mm)
rectilinear

1cm=10mm

Area is the space inside a closed 2D shape

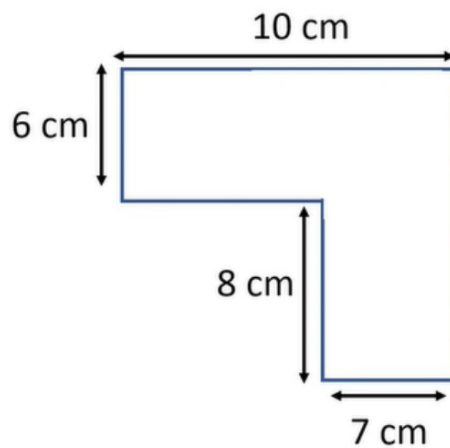# WALT: calculate the area of a rectilinear shape

LET'S LEARN

04:24 - 05:26

Step 1: Break your shape into two rectangles

Step 2: Work out the area of rectangle 1 and 2.

Step 3: Add both the areas together

10 cm

6 cm

8 cm

7 cm

Vocabulary

measure
area
length
width
centimetre (cm)
millimetre (mm)
rectilinear

1cm=10mm

Area is the space inside a closed 2D shape

WE DO

WALT: calculate the area of a rectilinear shape

Step 1: Break your shape into two rectangles

Step 2: Work out the area of rectangle 1 and 2.

Step 3: Add both the areas together

a)

12 cm

4 cm

b)

8 cm

3 cm

Vocabulary

measure
area
length
width
centimetre (cm)
millimetre (mm)
rectilinear

1cm=10mm
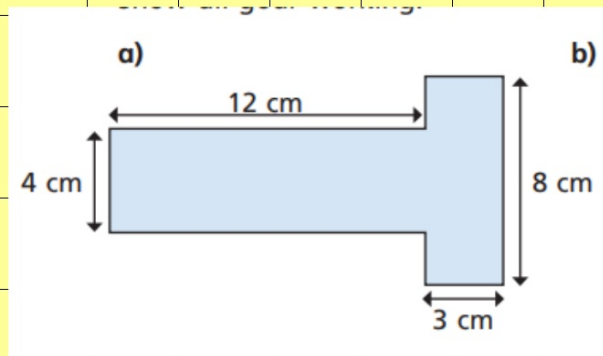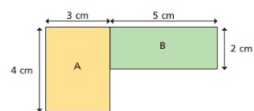
Area is the space inside a closed 2D shape

YOU DO

1 On the grid, the area of each square is 1 cm²
Calculate the area of each shape.
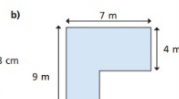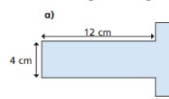
a)

c)

b)

2

3 cm   5 cm
B   2 cm
4 cm   A
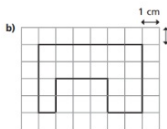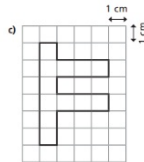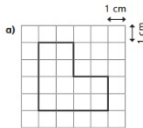
a) Work out the area of rectangle A

area =

b) Work out the area of rectangle B

area =

c) Work out the area of the compound shape.
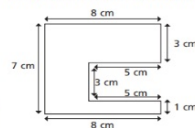
area =

Talk about it with your partner.

3 Work out the area of each of the following shapes.
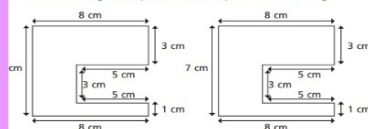Show all your working.

a)
12 cm
4 cm   8 cm

b)
7 m
4 m
9 m

4 Calculate the area of the compound shapes.
a) Mark on the shape how you partitioned it.

8 cm
3 cm
7 cm   5 cm
3 cm
5 cm
1 cm
8 cm

b) Show how you can partition the shape in two other ways.

8 cm
3 cm
cm   5 cm
3 cm
5 cm
1 cm
8 cm

8 cm
3 cm
7 cm   5 cm
3 cm
5 cm
1 cm
8 cm

c) Alex has calculated the area of the same shape below.

8 × 7 = 56
5 × 3 = 15
56 − 15 = 41 cm²

Explain the method Alex has used.

_____
_____

5 Calculate the area of these compound shapes.

a)
7 cm   7 cm
10 cm
4 cm
25 cm

b)
14 mm
18 mm   6 mm
5 mm   5 mm

6 The area of this shape is 83 cm²
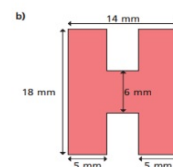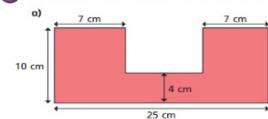Work out the perimeter of the shape.

12 cm
7 cm
4 cm

R

Reason: 1b, 2, 5,7

Vocabulary

measure
area
length
width
centimetre (cm)
millimetre (mm)
rectilinear

1cm=10mm

Area is the space inside a closed 2D shape

Can you use the key vocabulary in your reasoning?

ANSWERS

1 On the grid, the area of each square is 1 cm²

Calculate the area of each shape.

a)

12 cm²

c)

12 cm²

b)

18 cm²

2

3 cm   5 cm

A   B   2 cm

4 cm
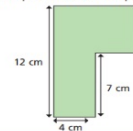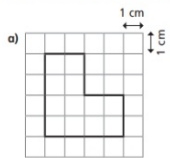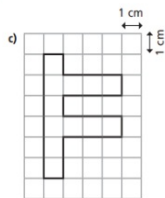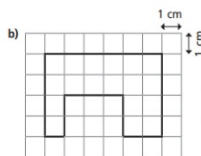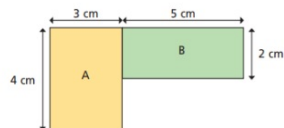
a) Work out the area of rectangle A

area = 12 cm²

b) Work out the area of rectangle B

area = 10 cm²

c) Work out the area of the compound shape.

area = 22 cm²

Talk about it with your partner.

4 Calculate the area of the compound shapes.
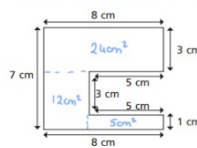
a) Mark on the shape how you partitioned it.

8 cm

24 cm²   3 cm

7 cm

12 cm²   5 cm

3 cm

5 cm

5 cm²   1 cm

8 cm

41 cm²

b) Show how you can partition the shape in two other ways.

8 cm   8 cm

3 cm   3 cm

7 cm   5 cm   7 cm   5 cm

3 cm   3 cm

5 cm   1 cm   5 cm   1 cm

8 cm   8 cm
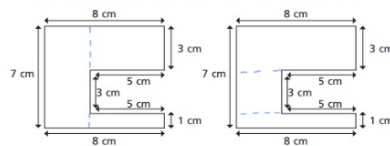
c) Alex has calculated the area of the same shape below.

8 × 7 = 56

5 × 3 = 15

56 − 15 = 41 cm²

Explain the method Alex has used.

She has found the area of the larger rectangle and subtracted the area of the 'missing' rectangle.

5 Calculate the area of these compound shapes.

a)

7 cm   7 cm

10 cm

4 cm

25 cm

184 cm²

b)

14 mm

18 mm   6 mm

5 mm   5 mm
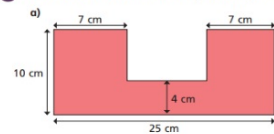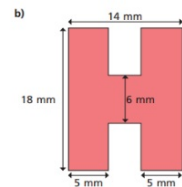
204 mm²

5 The area of this shape is 83 cm²

Work out the perimeter of the shape.

12 cm

7 cm

4 cm
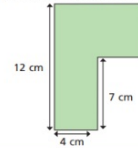
46 cm

Plenary

To calculate the area of a compound shape, you can just multiply the lengths given, then add the answers.

E.g.

9 cm

2 cm

4 cm

5 cm
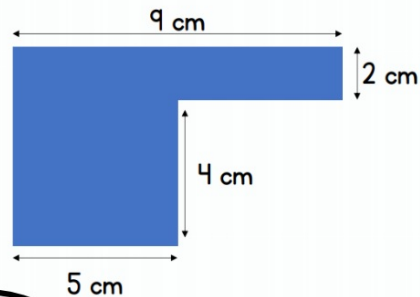
$9 \times 2 = 18$

$4 \times 5 = 20$

$18 + 20 = 38$

$\text{Area} = 38 \text{ cm}^2$

White Rose Maths

Discuss

WALT: calculate the area of a

Challenge:
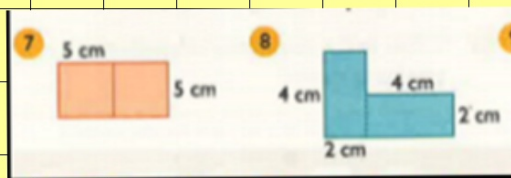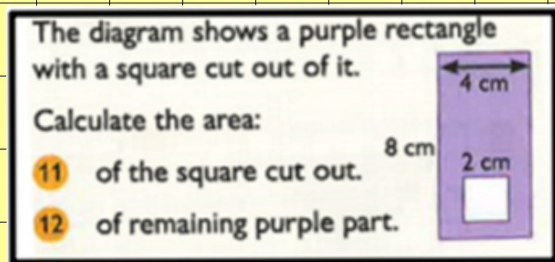
| 7 | 5 cm |
| 5 cm |

| 8 | 4 cm | 4 cm | 2 cm | 2 cm |

Mega Challenge:

The diagram shows a purple rectangle with a square cut out of it.

Calculate the area:

8 cm   4 cm   2 cm

11 of the square cut out.

12 of remaining purple part.

<u>WALT: calculate the area of a</u>

<u>7: 50cm^2</u>   <u>8: 16cm^2</u>

<u>11: 4cm^2</u>
<u>12: 28cm^2</u>

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

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

Class questions - see next slide!

REASON AND PEER MARK FOR EVERY QUESTION!

Work out the area of these shapes:

1. 4 cm, 10 cm (blue); 9 cm, 7 cm (teal); 12 cm, 5 cm (purple)

2. Copy and complete this table showing the measurements of rectangles.

Length	Width	Area
6 cm	4 cm	
8 cm	5 cm	
11 m		33 m²
9 m		54 m²
	8 cm	96 cm²
	10 cm	400 cm²
15 m		30 m²
	7 m	56 m²

3. A square and rectangle are shown below. Which shape has the largest area?

A 8 m ; B 9 m, 11 m

Look at the rectangle below. What is the length of side a?
3 cm, Area = 6 cm²

4. For each rectangle, identify the missing side:
1 cm ; Area 40 cm², 5 cm ; Area 27 cm², 7 cm
12 cm ; Area 60 cm², 7 cm ; Area 96 cm², 8 cm

5. True or False?
If you cut off a piece from a shape, you reduce its area and perimeter.
Draw 2 examples to prove your thinking.

6. 6.8cm, A, 3.4cm ; C 19.1cm ; 7.75cm², B ; Or
Approximate the area of each shape and then order from largest to smallest.

7. This rectangle has an area of 72 cm².
6 cm
What is the perimeter of the rectangle?

8. The diagram shows a purple rectangle with a square cut out of it.
4 cm, 8 cm, 2 cm
Calculate the area:
11. of the square cut out.
12. of remaining purple part.

9. Each orange square has an area of 4 cm².
Calculate the total orange area.
Calculate the blue area.
Calculate the green area.
What is the total area of the whole shape?

9. Each orange square has an area of 24 cm².
Calculate the total orange area.
Calculate the blue area.
Calculate the green area.
What is the total area

Work out the area of these shapes:
1. 7. 5 cm, 5 cm ; 8. 4 cm, 4 cm, 2 cm ; 9. 9 cm, 3 cm, 3 cm, 7 cm

2. Work out the area of the shapes below:
7. 3 m, 3 m, 3 m, 6 m ; 8. 4 m, 1 m, 3 m, 1 m, 1 m

3. Calculate the area.
13m, 300cm, 12m, 4m ; 7cm, 80mm, 6cm, 150mm

4. Calculate the area of these symmetrical shapes.
700cm, 1200cm, 4m, 3m (C) ; 4m, 9 m, 3m, 17m (H)

5. Which of the shapes below has the smaller area?
A: 3 cm, 2 cm, 6 cm ; B: 2 cm, 2 cm, 6 cm, 5 cm

6. Harleen measures her laptop screen and a piece of paper. What is the difference between their areas?
paper 25 cm, 20 cm ; laptop 30 cm, 25 cm

7. Jack has a shape with an area of 34 cm².
2cm, 5cm, 8cm, 6cm, 4cm, 2cm
Draw 3 possible compound shapes that have an area of 34 cm².

8. How many different ways can you split this shape to find the area?
Add more values and work out the area.

Dive Deeper
Draw it
Explain it
Make a mistake
Tell a Maths story
Prove it

IXL
R 8-10

Vocabulary
measure
area
length
width
centimetre (cm)
millimetre (mm)
rectilinear

1cm=10mm

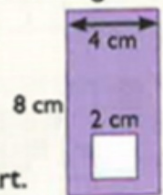Area is the space inside a closed 2D shape

R

WALT: calculate the area of a

a)

8 cm

8 cm

12 cm

5 cm

30 cm

I DO

WALT: calculate the area of a

20mm

24mm

7mm

8mm   8mm

WE DO

Where would we draw our lines to break up our shape?

8 cm

7 cm

3 cm

5 cm

3 cm

5 cm

1 cm

8 cm

YOU DO

Answers

Sheet 1 (left page)
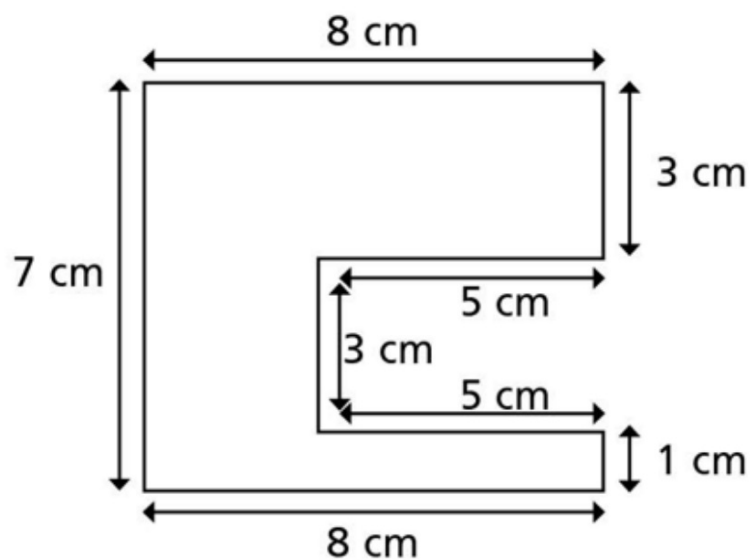
Work out the area of these shapes:

4 cm, 10 cm → **40cm²**
9 cm, 7 cm → **63cm²**
12 cm, 5 cm → **60cm²**

Copy and complete this table showing the measurements of rectangles.

Length	Width	Area
6 cm	4 cm	**24cm²**
8 cm	5 cm	**40cm²**
11 m	**3m**	33 m²
9 m	**6m**	54 m²
12cm	8 cm	96 cm²
40cm	10 cm	400 cm²
15 m	**2m**	30 m²
8m	7 m	56 m²

A square and rectangle are shown below. Which shape has the largest area?

A: 9 m, B: 8 m × 11 m → **B 88m²**

Look at the rectangle below. What is the length of side a?
3 cm, Area = 6 cm² → **2cm**

For each rectangle, identify the missing side:
3) **8**cm, Area 40 cm², 5 cm
5) 9 cm, Area 27 cm², **3**cm
4) 12 cm, Area 60 cm², **5**cm
6) **12**cm, Area 96 cm², 8 cm

True or False?
If you cut off a piece from a shape, you reduce its area and perimeter.
Draw 2 examples to prove your thinking. → **True**

Answer: A = 3cm
× 7cm = 2·cm²
B = 8cm × 8cm = 64cm²
C = 3cm × 19cm = 57cm²
Order: B, C, A

Approximate the area of each shape and then order from largest to smallest.

This rectangle has an area of 72 cm².
12cm, 6 cm
What is the perimeter of the rectangle? → **36cm**

The diagram shows a purple rectangle with a square cut out of it.
Calculate the area: → **4cm²**
11) of the square cut out. 8 cm
12) of remaining purple part. → **32 - 4 = 28cm²**

Each orange square has an area of □ cm².
Calculate the total orange area.
Calculate the blue area.
Calculate the green area.
What is the total area of the whole shape?

Answer: Orange = **8** cm²
Blue = **12**cm²
Green = **4** cm²
Total = **24** cm²

Each orange square has an area of 24 cm².
Calculate the total orange area.
Calculate the blue area.
Calculate the green area.
What is the total area of the whole shape?

Answer: Orange = 48cm²
Blue = 72cm²
Green = 24cm²
Total = 144cm²

Sheet 2 (right page)

1 Work out the area of these shapes:
7) 5 cm, 5 cm → **50cm²**
8) 4 cm, 4 cm, 2 cm, 2 cm → **16cm²**
9) 9 cm, 3 cm, 3 cm, 7 cm → **48cm²**

2 Work out the area of the shapes below:
7) 3 m, 3 m, 3 m, 6 m → **27m²**
8) 4 m, 1 m, 3 m, 1 m, 1 m → **18m²**

3 Calculate the area.
15m, 300cm, 12m, 4m → **75m²**
7cm, 6cm, 80mm, 150cm → **92cm²**

4 Calculate the area of these symmetrical shapes.
700cm, 1200cm → **60m²**
4m, 3m, 17m → **154m²**

5 Which of the shapes below has the smaller area?
A: 3 cm, 3 cm, 2 cm, 6 cm
B: 2 cm, 2 cm, 6 cm, 5 cm → **A=24cm²**

6 Harleen measures her laptop screen and a piece of paper. What is the difference between their areas?
paper 25 cm, 20 cm; laptop 30 cm, 25 cm → **750-500=250cm²**

7 Jack has a shape with an area of 34 cm².
Draw 3 possible compound shapes that have an area of 34 cm².

8 How many different ways can you split this shape to find the area?
Add more values and work out the area.

Dive Deeper
Draw it
Explain it
Make a mistake
Tell a Maths story
Prove it

IXL R 8-10

Plenary:

WALT calculate the area of an irregular shape.

LET'S LEARN ➤

🌐 00:57 - 03:44

Teacher: video explains the method.

Vocabulary

measure
area
length
width
centimetre (cm)
millimetre (mm)
rectilinear
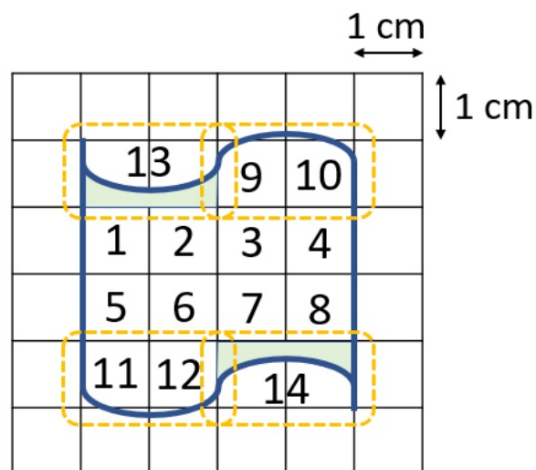
1cm=10mm

Area is the space inside a closed 2D shape

What does estimate mean?

What is the area of this shape?
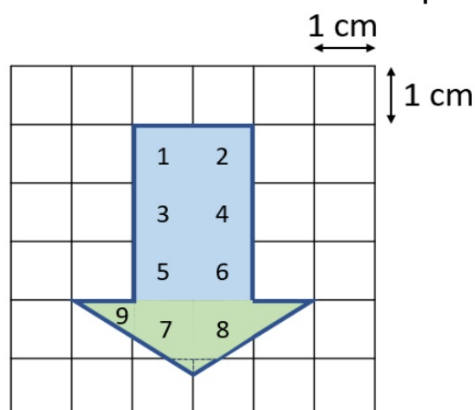
1 cm ↔

1 cm ↕

1	2
3	4
5	6
9 7	8

Estimate the area of this shape.

WALT calculate the area of an irregular shape.

LET'S LEARN ➡️ 🌐 00:57 - 03:44

1 cm

1 cm

13	9	10
1	2	3	4
5	6	7	8
11	12	14

Estimate the area of this shape.

Area of irregular shapes

1 On the grid, the area of each square is 1 cm²

Estimate the area of each shape.

a)

b)

2 Mo draws two shapes on a cm² grid.

Estimate the area of each shape.

a)

b)
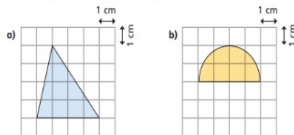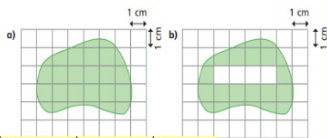
3 a) On the grid below, draw around your closed hand and estimate the area.
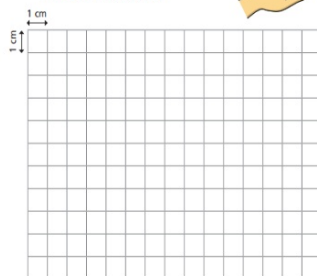
b) On the grid below, draw around your open hand and estimate the area.
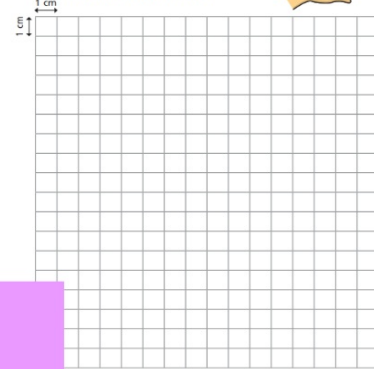
Compare your estimates for a) and b). Do you notice anything?

4 Here is the outline of two islands.

Each square represents 1 km² of land.

Which island has the greater area and how much greater is it?

A

B

5 This is the outline of a large forest area.

Estimate the area of the forest.

Do it!
Reason it!
Peer Mark it!
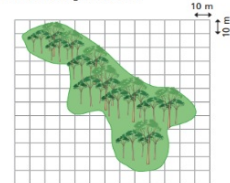
Vocabulary

measure
area
length
width
centimetre (cm)
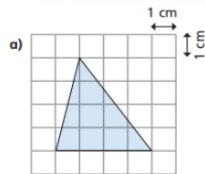millimetre (mm)
rectilinear

1cm=10mm

Area is the space inside a closed 2D shape

Can you use the key vocabulary in your reasoning?

ANSWERS

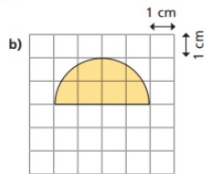## Area of irregular shapes

1 On the grid, the area of each square is 1 cm²

Estimate the area of each shape.

a)

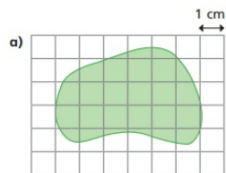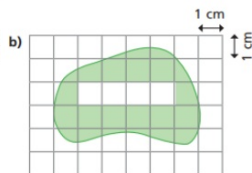1 cm ↔   1 cm ↕

8 cm²

b)

1 cm ↔   1 cm ↕

6 cm²

2 Mo draws two shapes on a cm² grid.

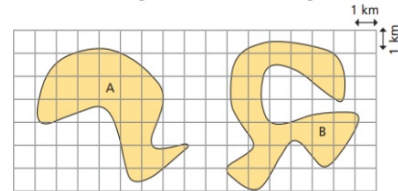Estimate the area of each shape.
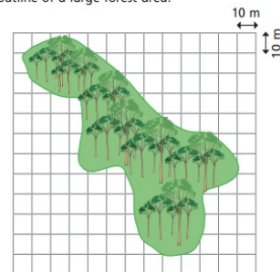
a)

1 cm ↔   1 cm ↕

20 cm²

b)

1 cm ↔   1 cm ↕

16 cm²

How did you estimate the area of b)?

Talk about it with your partner.

4 Here is the outline of two islands.

Each square represents 1 km² of land.

Which island has the greater area and how much greater is it?

1 km ↔   1 km ↕

A

B

B has a greater area by approximately 2 km²

5 This is the outline of a large forest area.

10 m ↔   10 m ↕
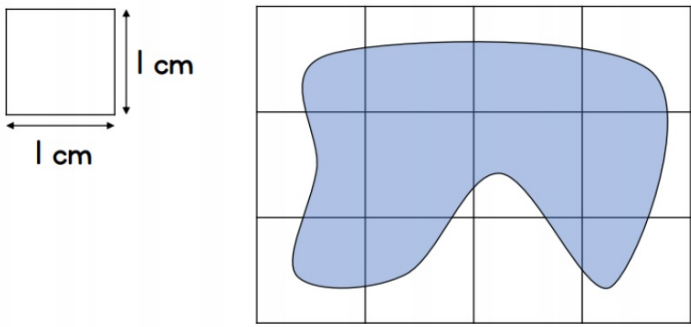
Estimate the area of the forest.

4600 m²

Plenary

1 cm

1 cm

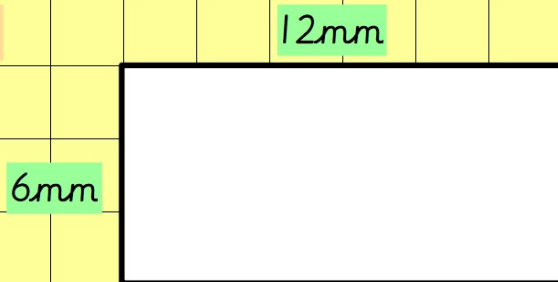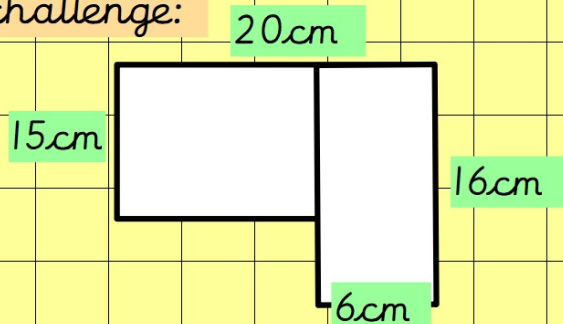The area of the blue shape is approximately 12 cm², because it is in 12 squares.

Discuss

WALT calculate perimeter and area

Can you find the area AND the perimeter of these shapes:

Challenge:

12mm

6mm

Mega challenge:

20cm

15cm

16cm

6cm

Vocabulary

measure
area
length
width
centimetre (cm)
millimetre (mm)
rectilinear

`1cm=10mm`

Area is the
space inside a
closed 2D shape
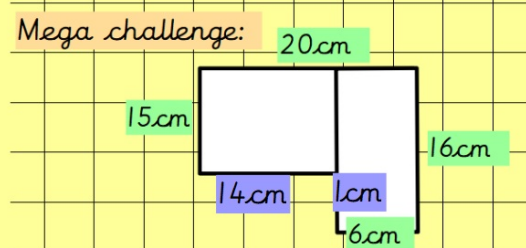
WALT calculate perimeter and area

Challenge:

12mm

6mm
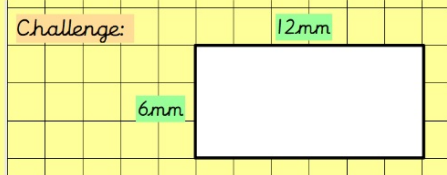
Area: 6X12=72mm

Perimeter: 6+6+12+12=36mm

Mega challenge:

20cm

15cm

14cm   1cm

16cm

6cm

Area: 16X6=96cm

15cmX14cm = 210cm

210+96= 306cm

Perimeter: 15+20+16+6+1+14=72cm

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

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

Class questions – see next slide!

REASON AND PEER MARK FOR EVERY QUESTION!
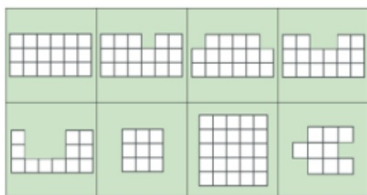
Area and Perimeter

Age 7 to 11 ★

What can you say about these two shapes?

What is the area of each one? What is the perimeter of each one?

What can you say about the shapes below?

You can print out a set of shapes and cut them into separate cards. These cards have the coloured background.

Can you draw a shape in which the area is numerically equal to its perimeter? And another?
Can you draw a shape in which the perimeter is numerically twice the area?
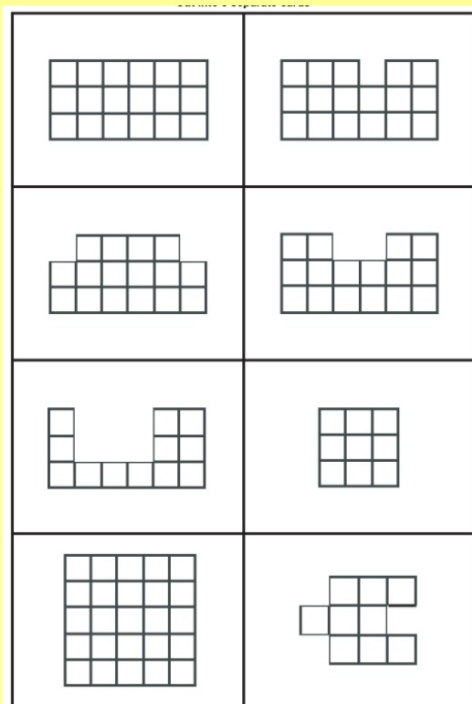Can you draw a shape in which the area is numerically twice the perimeter?
Can you make the area of your shape go up but the perimeter go down?
Can you make the perimeter of your shape go up but the area go down?

Can you draw some shapes that have the same area but different perimeters?
Can you draw some shapes that have the same perimeter but different areas?

Plenary

Numerically Equal

Age 7 to 11 ★★

I want to draw a square in which the perimeter is numerically equal to the area.

Of course, the perimeter will be measured in units of length, for example, centimetres (cm) while the area will be measured in square units, for example, square centimetres (cm^2).

What size square will I need to draw?

What about drawing a rectangle that is twice as long as it is wide which still has a perimeter numerically equal to its area?

Key Facts

10 lots of 1 is �

10 lots of 10 is ▬

10 lots of ▬ is 1000

Recap Session (20mins)
Place Value

I DO

WE DO

YOU DO

Write down the number represented with Base 10 in each case.

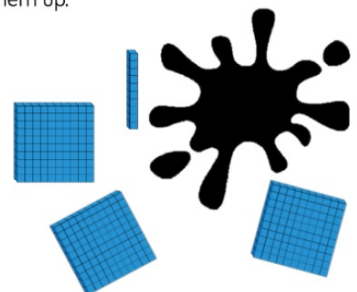| Representation	Number

Challenge

Teddy has used Base 10 to represent the number 420. He has covered some of them up.

Work out the amount he has covered up.

How many different ways can you make the missing amount using Base 10?

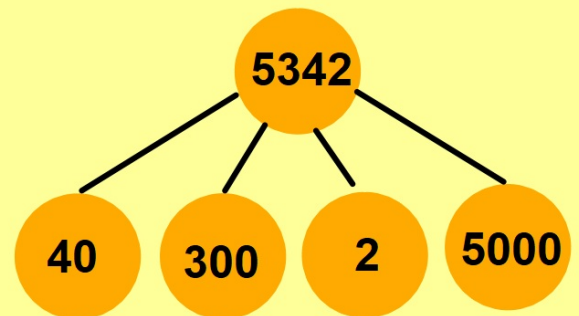Recap Session (20mins)
Place Value

🌐 Place Value Chart Game

🌐 Who Wants to be a Hundredaire?

Recap Session (20mins)
Place Value

What is the value of these numbers?
How do you know?

100	1000	10	1
100	1000	10	1
100	1000	10	
100		10	
100			

5342
40   300   2   5000

Sometimes the order will be jumbled up - but the value of the thousands, hundreds, tens and ones remains the same.

Useful vocab: standard partitioning, non-standard partitioning, combine uni
f ones, tens and hundreds, compose, decompose

Recap Session (20mins)
Place Value

I DO

WE DO

YOU DO

Recap Session (20mins)
Measurements

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