White Rose Maths
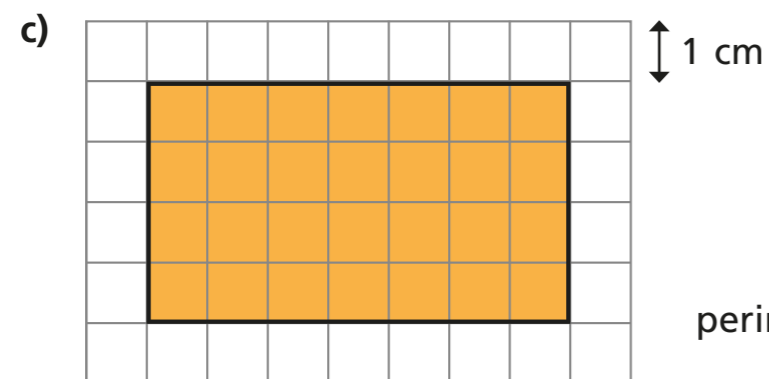
1. Work out the perimeter of each rectangle.

a)

perimeter = $12\,cm$

b)

perimeter = $22\,cm$

c)

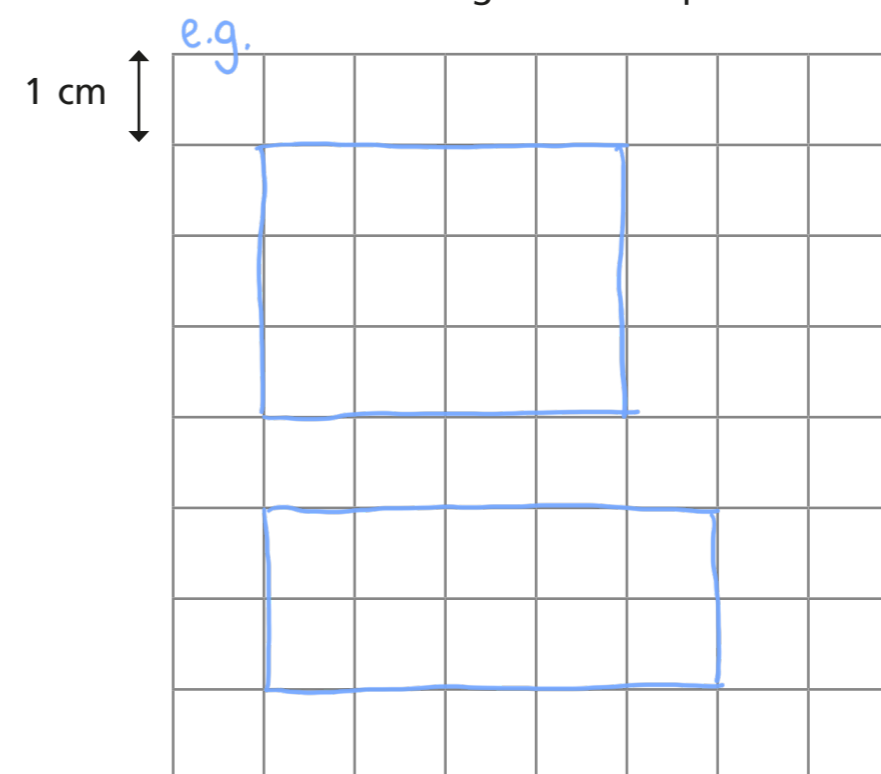perimeter = $22\,cm$

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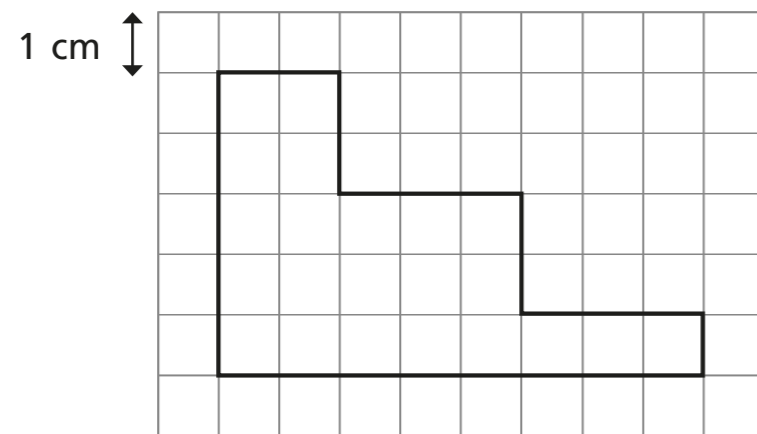
A   B

↕ 1 cm   ↕ 1 cm
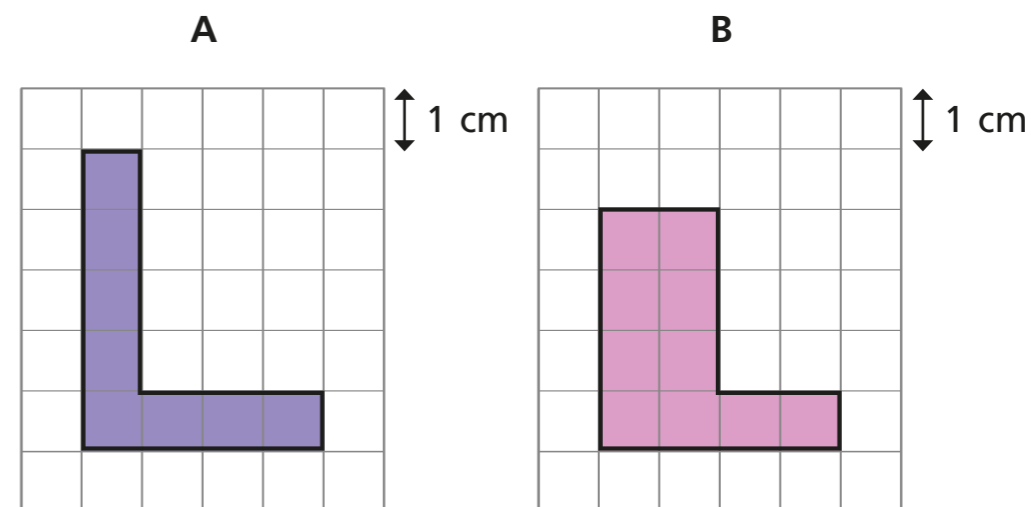
Shape _A_ has the greatest perimeter.

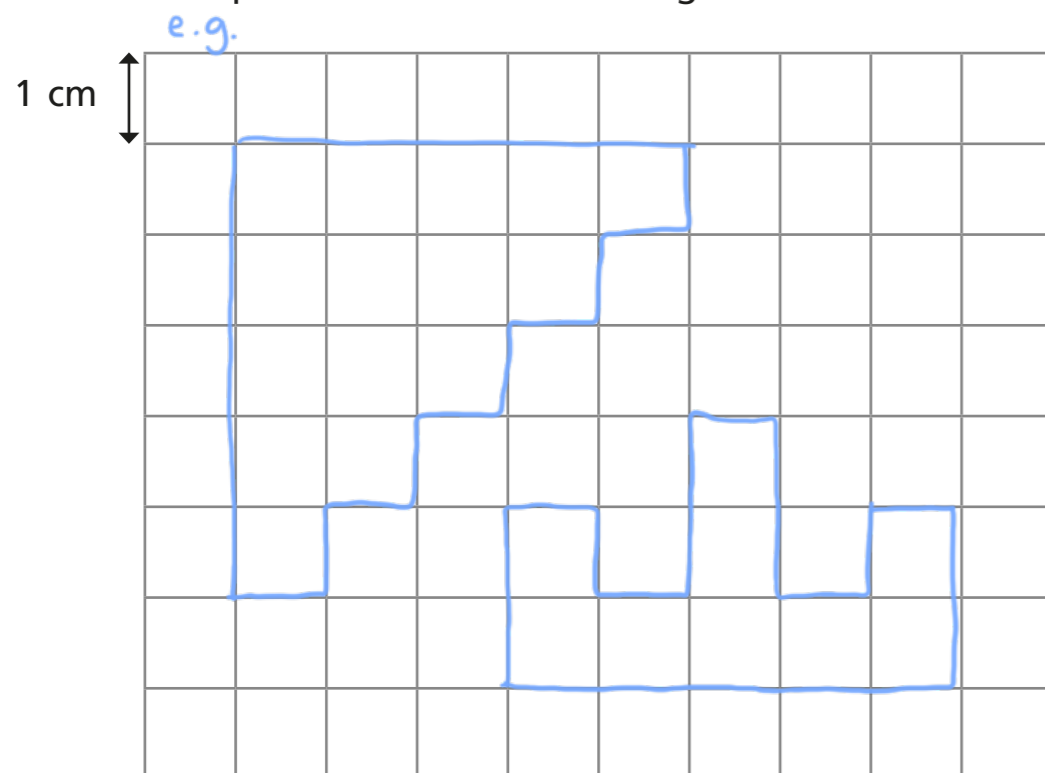3. Draw two different rectangles with a perimeter of 14 cm.

e.g.

1 cm ↕

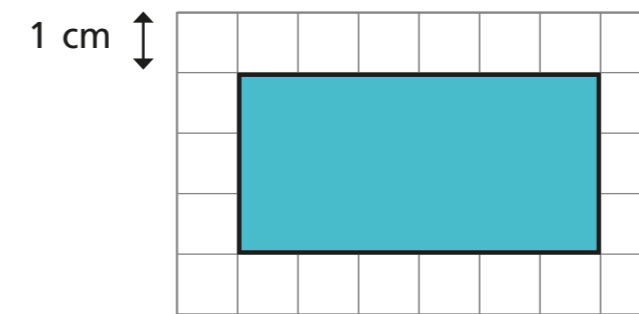**4** Work out the perimeter of the shape.

1 cm ↕

26 cm

5 Draw two shapes with a perimeter of 20 cm.

Your shapes should **not** be rectangles.

e.g.
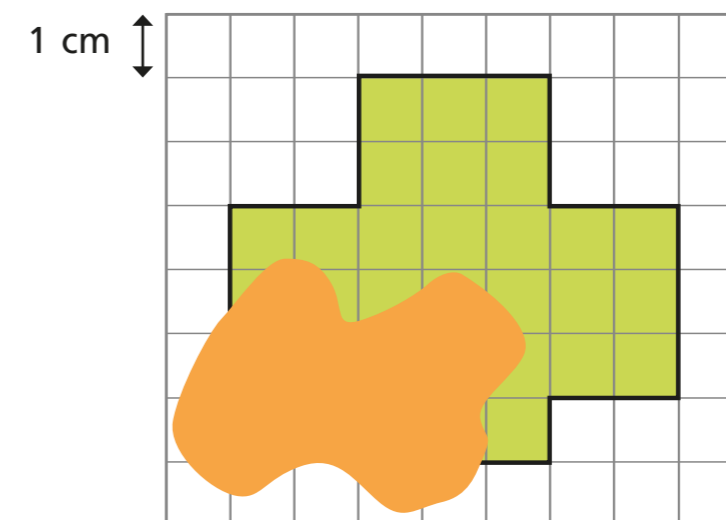
1 cm ↕

6 Work out the perimeter of the rectangle.

1 cm ↕

18cm

7 A shape is drawn on a square grid.

Part of the shape is hidden.

1 cm ↕

What could the perimeter of the shape be?
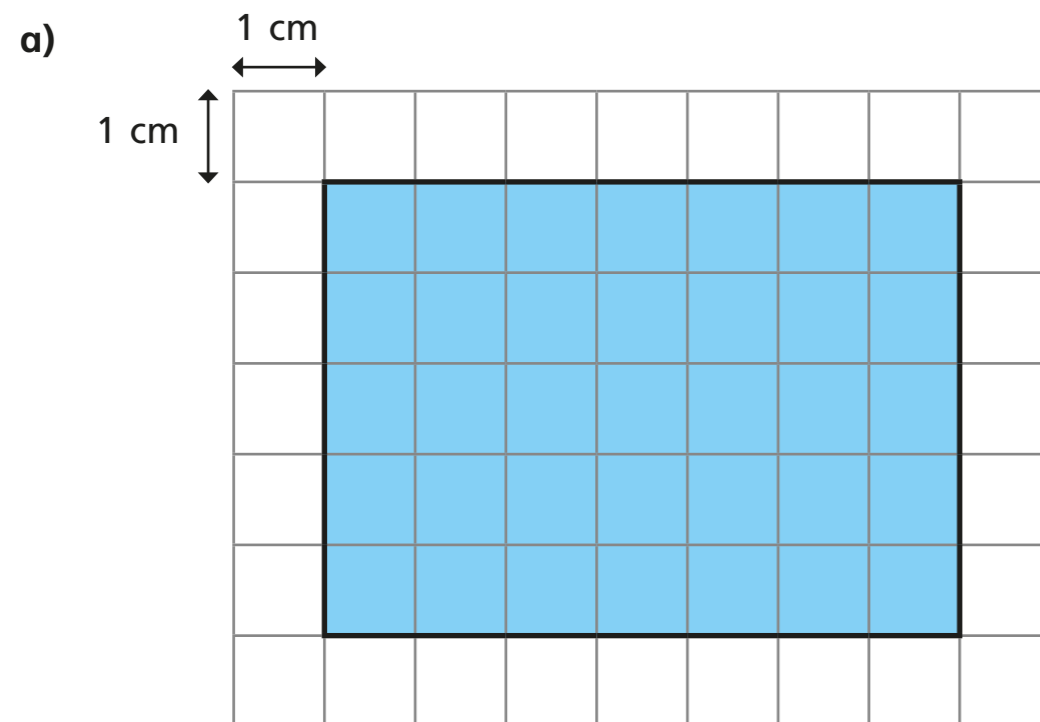
e.g.   *25 cm*
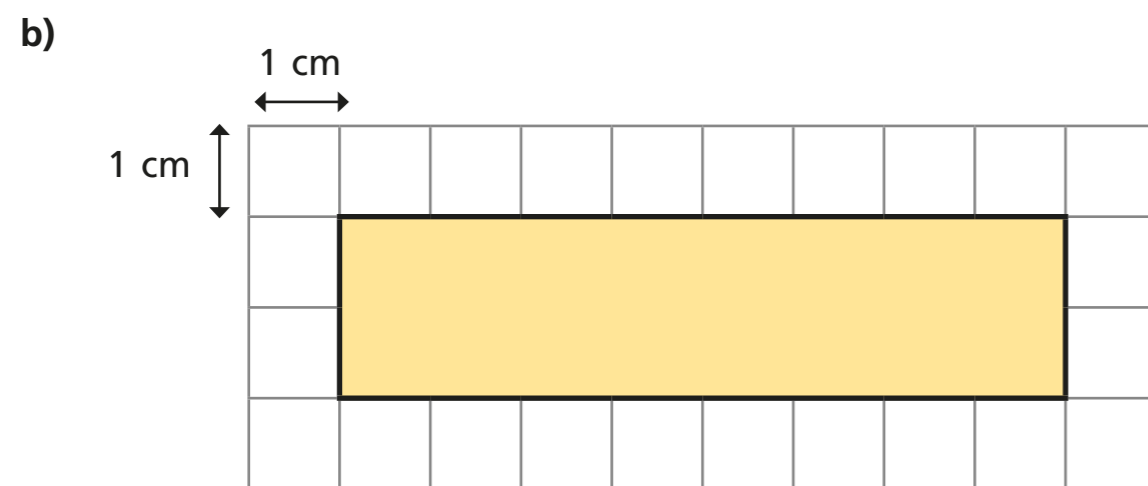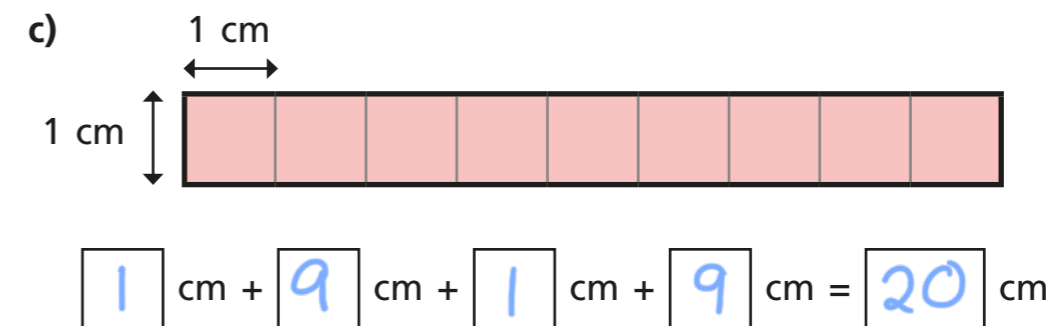
Is there more than one answer?

Perimeter of a rectangle
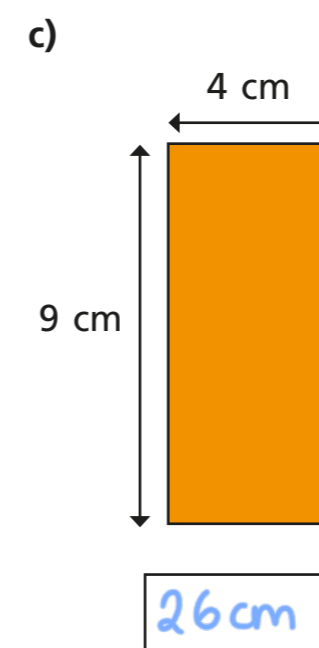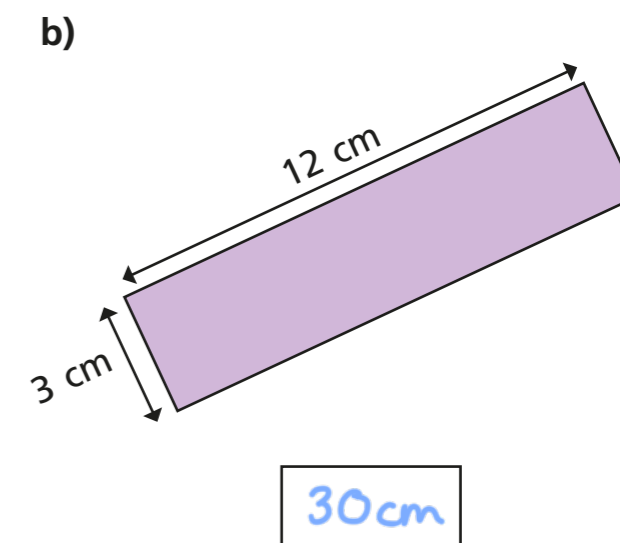
1 Work out the perimeter of each rectangle.

a)

1 cm

1 cm

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

b)

1 cm

1 cm

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

c)

1 cm

1 cm

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

2 Work out the perimeter of the rectangles.

a)

7 cm

4 cm   4 cm

7 cm

$\boxed{22cm}$

b)

12 cm

3 cm

$\boxed{30cm}$

c)

4 cm

9 cm

$\boxed{26cm}$

d)

2 km

500 m

$\boxed{5km}$

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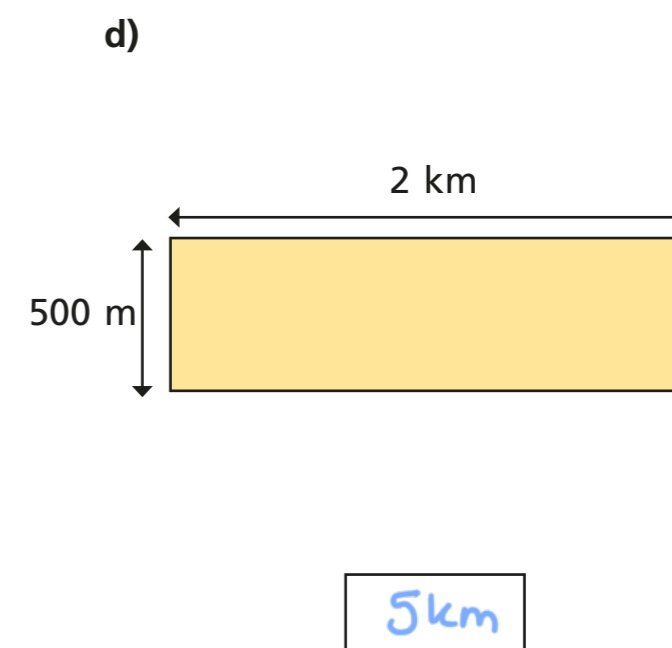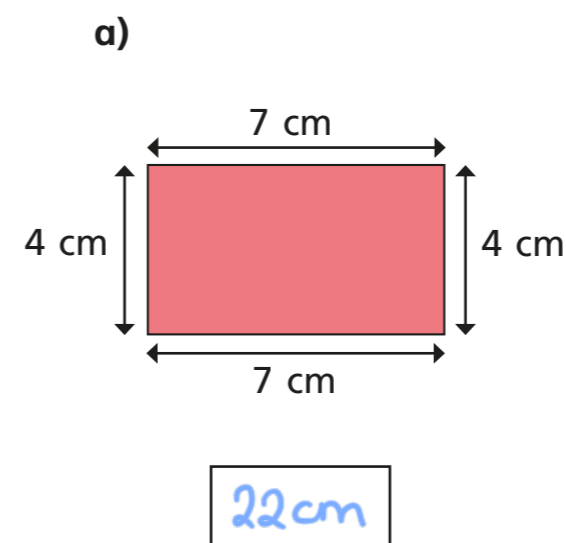
3 Tommy is working out the perimeter of some rectangles.

8 cm

5 cm

8 cm + 5 cm = 13 cm
13 cm × 2 = 26 cm
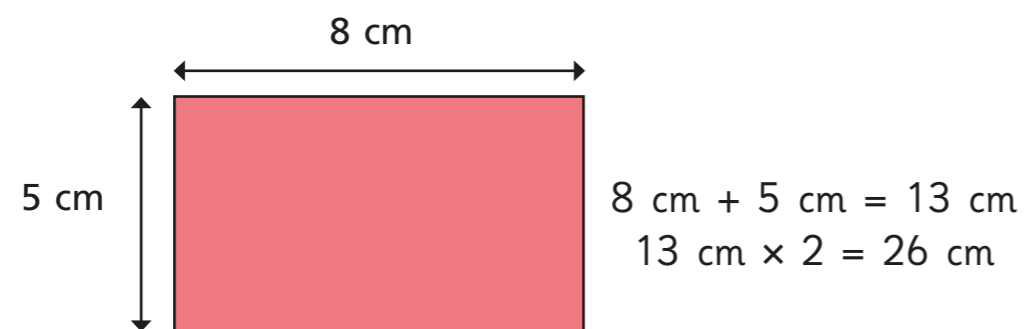
Use Tommy's method to find the perimeter of these rectangles.

a)

5 cm

4 cm
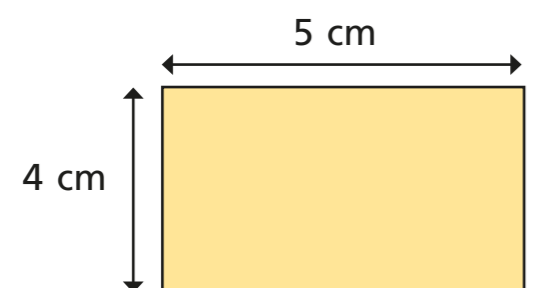
5 cm + 4 cm = 9 cm

9 cm × 2 = 18 cm

b)

10 cm

5 cm
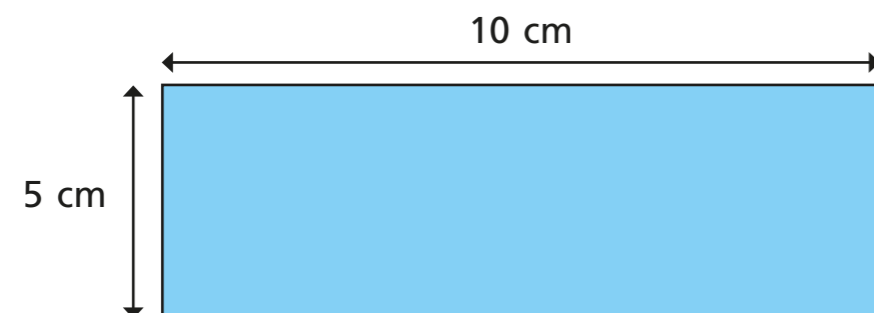
10 cm + 5 cm = 15 cm

15 cm × 2 = 30 cm

4 Each lolly stick is 8 cm long.

Find the perimeter of the shape.
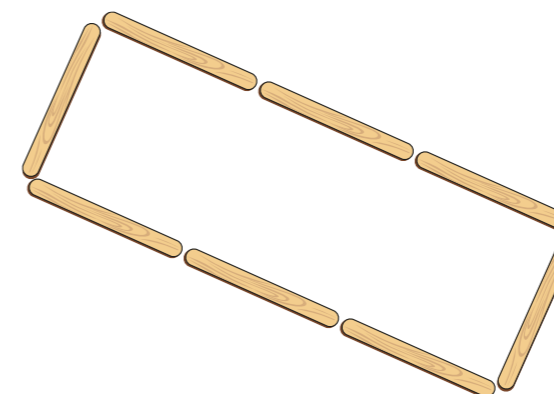
64cm

5 Each of these rectangles has a perimeter of 24 cm.

Work out the missing lengths and label the diagrams.

a)

10 cm

2 cm

c)

5 cm

7 cm

b)

9 cm

3 cm
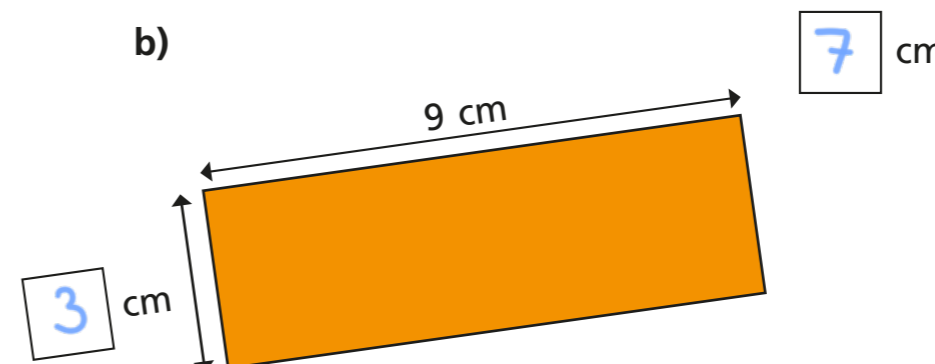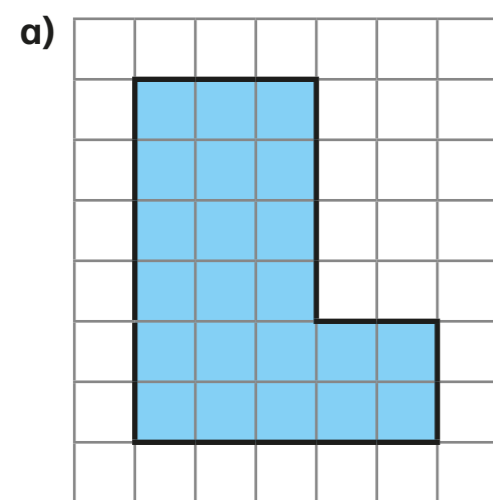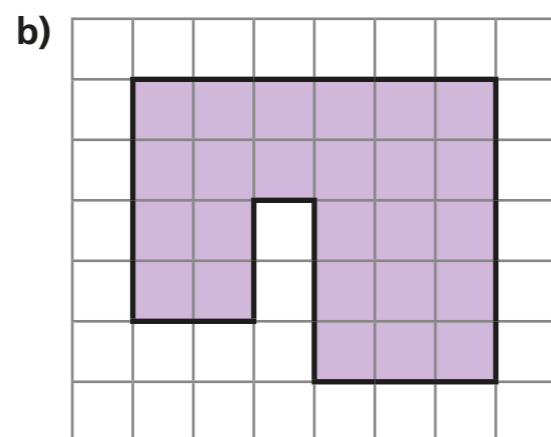
What do you notice?

Find any other rectangles that have the same perimeter.

Perimeter of rectilinear shapes

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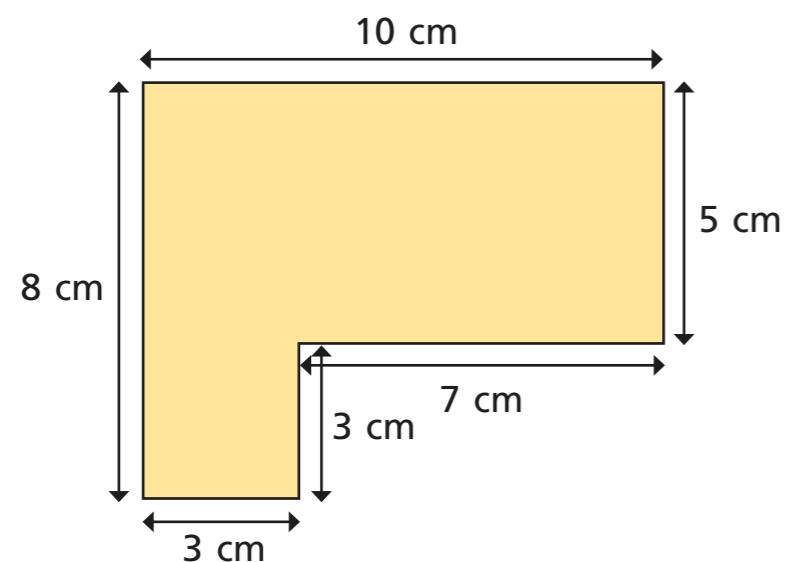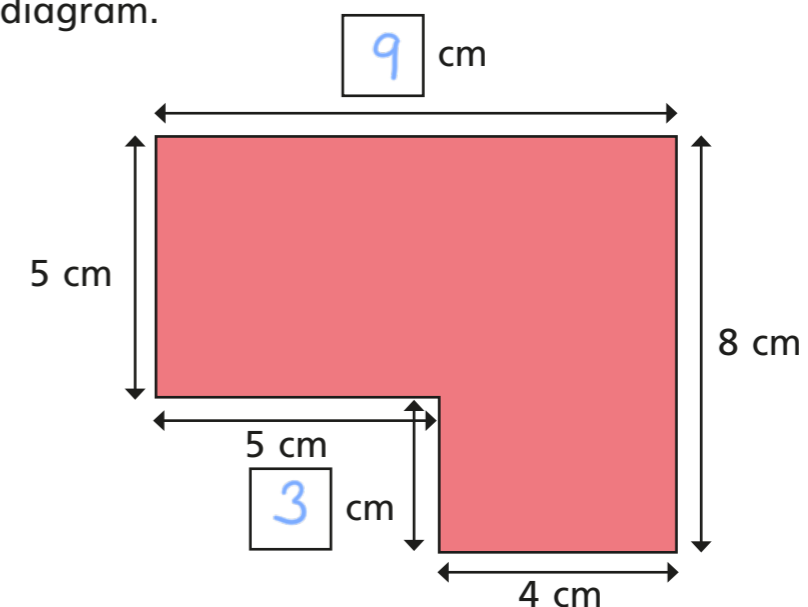
Work out the perimeter of the shapes.

a)

22cm

b)

26cm

2 Work out the perimeter of the shape.

10 cm

8 cm

5 cm

7 cm

3 cm

3 cm

36 cm

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

9 cm

5 cm

8 cm

5 cm

3 cm

4 cm

b) What is the perimeter of the shape?

36cm

4 Work out the perimeter of each shape.

a)

3 cm

9 cm

5 cm

4 cm

36cm

b)

12 cm

3 cm

2 cm
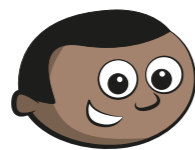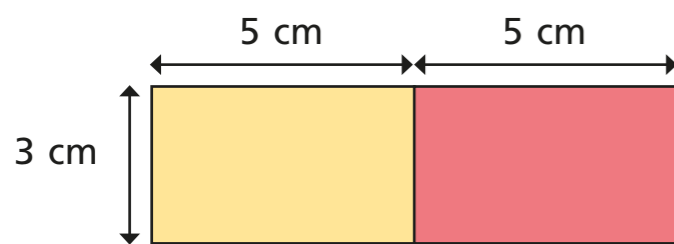
2 cm

34cm

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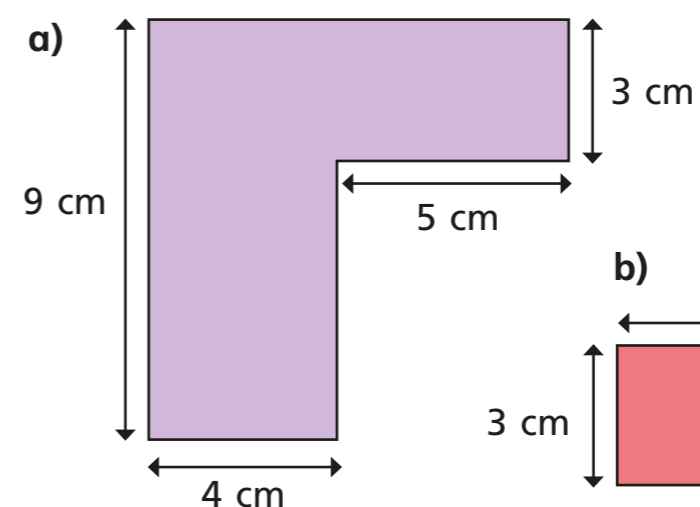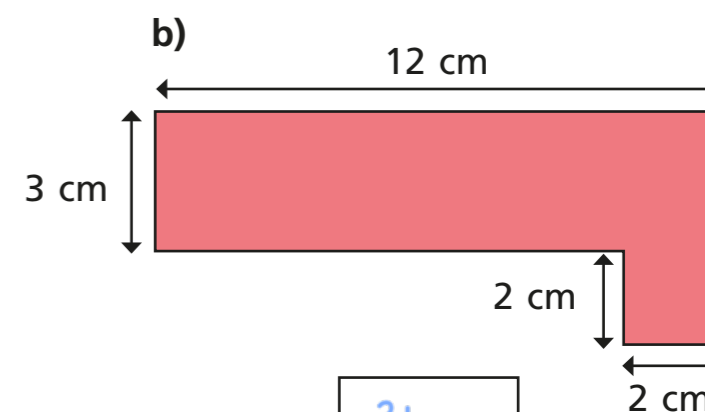
5 Mo puts two 5 cm by 3 cm rectangles next to each other.

5 cm   5 cm

3 cm

The perimeter of each small rectangle is 16 cm, so the perimeter of my larger rectangle must be 2 × 16 cm = 32 cm.
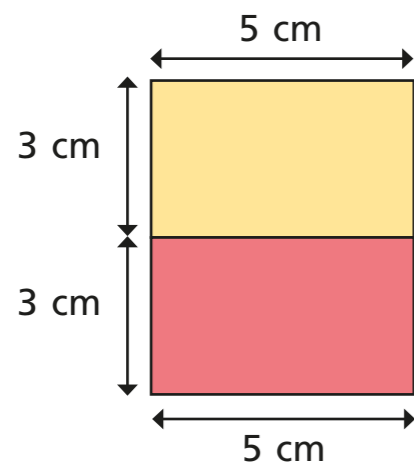
a) Is Mo correct? __No__

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

26 cm

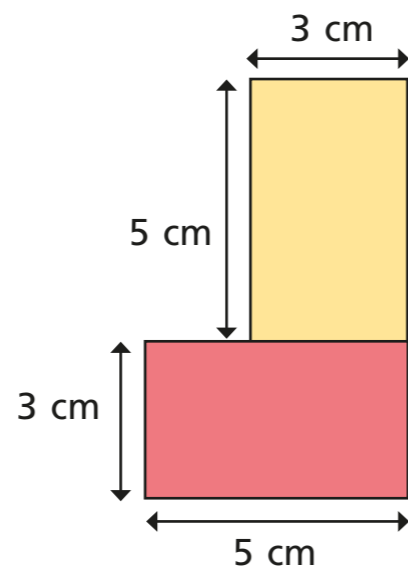**b)** Mo puts the rectangles together in different ways.
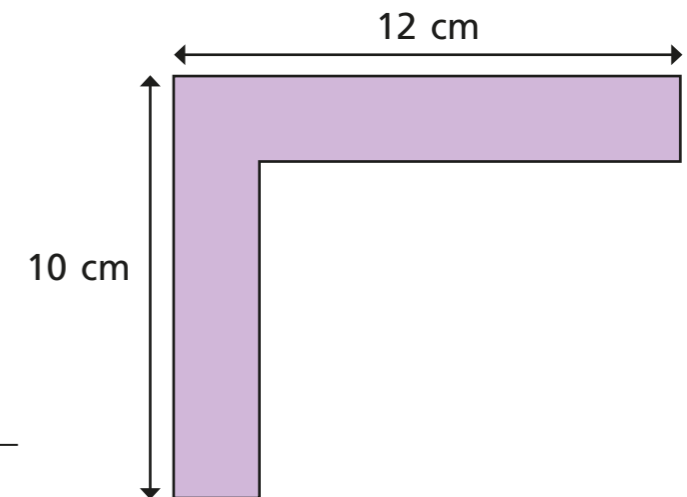
Work out the perimeter of each large shape.

5 cm

3 cm

3 cm

5 cm

22 cm

3 cm

5 cm

3 cm

5 cm
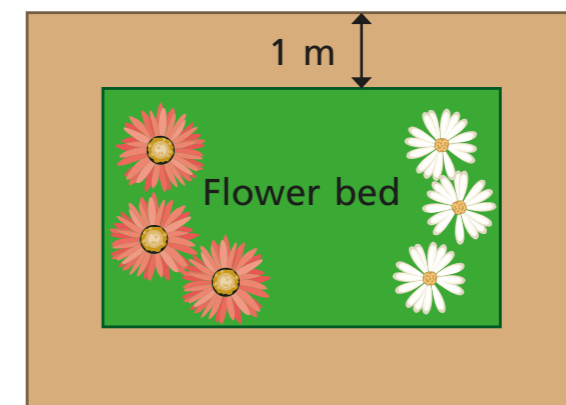
26 cm

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

12 cm

10 cm

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.

1 m

Flower bed

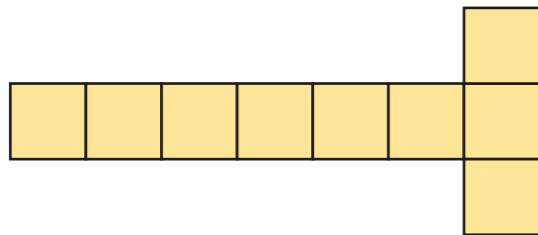**a)** What is the perimeter of the flower bed?

16cm

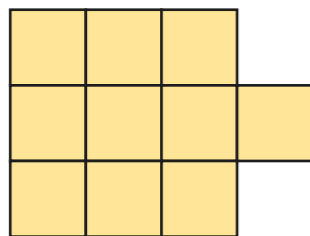**b)** What is the perimeter of the outside of the path?

24cm

Counting squares

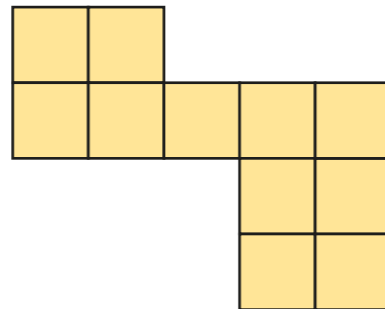**1** Count the squares in each shape to find the area.

A

The area is $\boxed{9}$ squares.

B

C

The area is $\boxed{10}$ squares.   The area is $\boxed{11}$ squares.

Which shape has the greatest area? ___C___

2 What is the area of the shaded part of the shape?
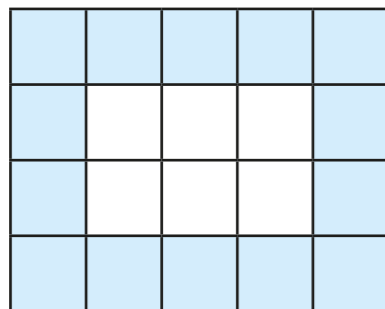
The area is $\boxed{14}$ squares.

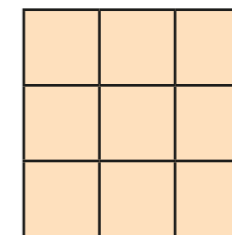**3** Here is a kitchen tile.
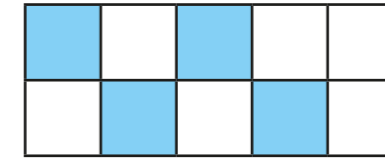
a) What area of the tile is blue? $\boxed{4}$ squares

b) What area of the tile is white? $\boxed{6}$ squares

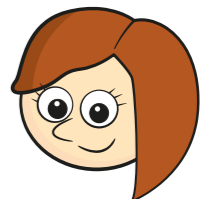**c)** What is the total area of the tile? $\boxed{10}$ squares

4 These two shapes are made up of squares of the same size.
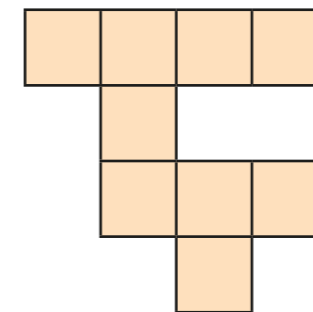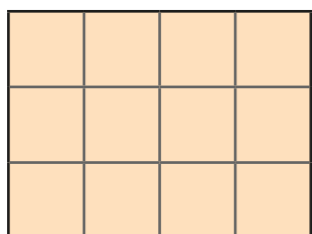
These two shapes have the same area.

Jack

The first shape is bigger as it takes up more space.

Rosie

Who is correct? ___Jack___

Explain how you know.

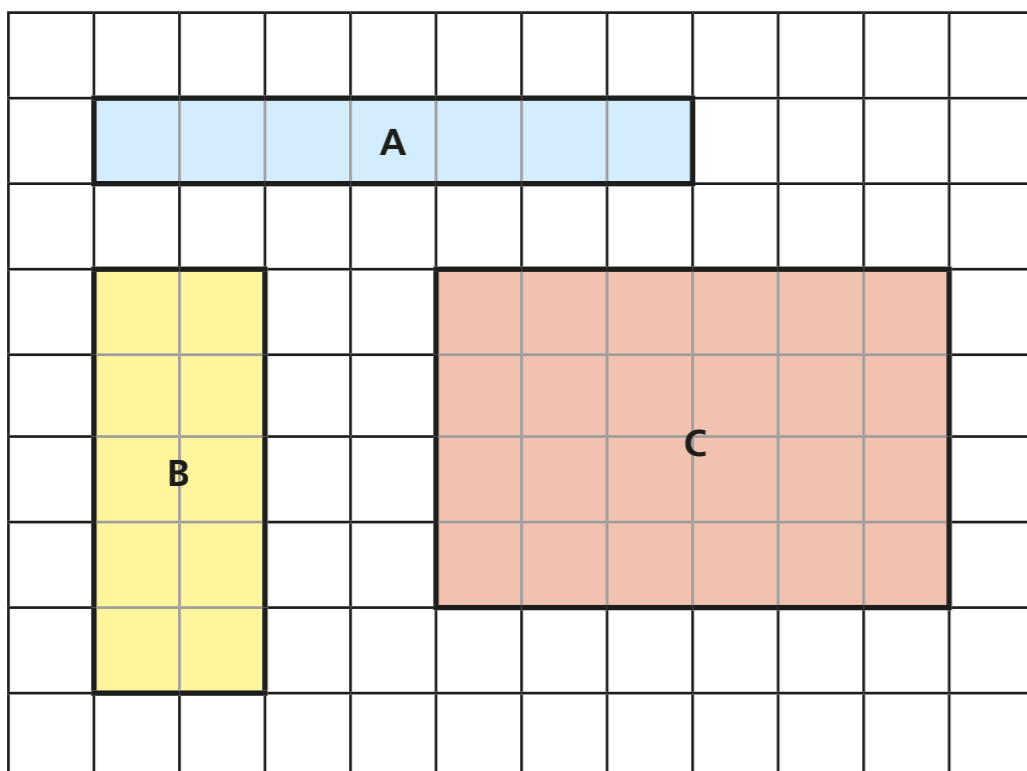___They both have an area of 9 squares.___

_____

5 Here is a rectangle.

a) The rectangle has 3 rows and 4 columns.

b) What is the area of the rectangle? 12 squares

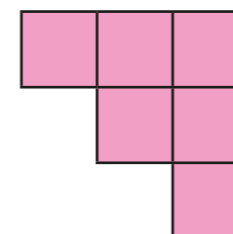c) How did you work out the area?

6 Find the area of each rectangle.

A = 7 squares   B = 10 squares   C = 24 squares
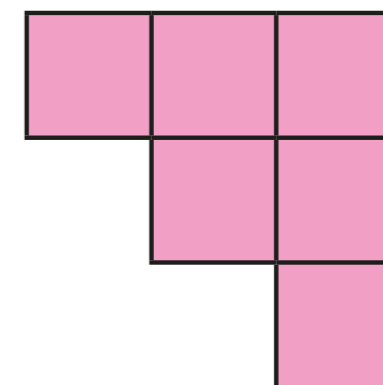
7 Nijah and Eva are making shapes.

They each use 6 squares.
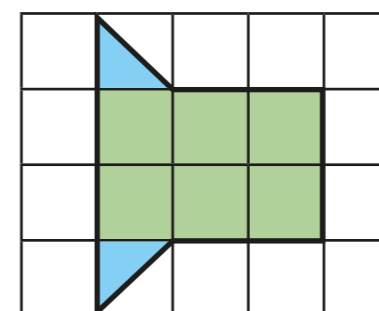
Nijah's shape   **Eva's shape**

The area of Nijah's shape is equal to the area of Eva's shape.
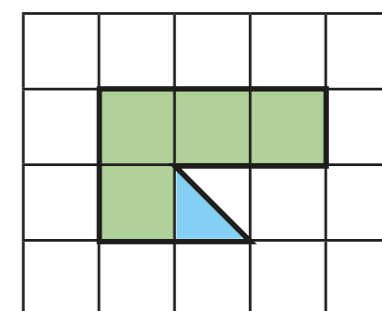
Is this true or false? _False_

How do you know?

They are not made using the same size shapes

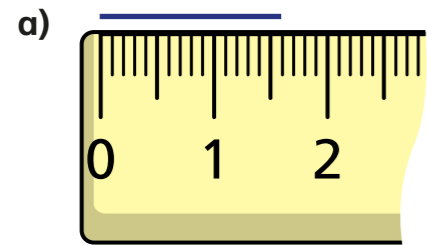**8** What is the area of each shape?
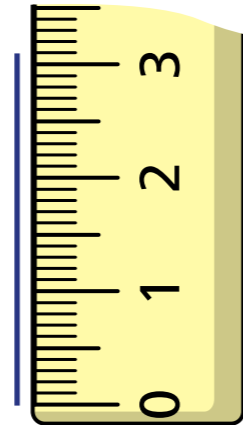

area = 7 squares   area = $4\frac{1}{2}$ squares

1 What is the length of each line?

a)

$1 \cdot 6$ cm

c)

$3 \cdot 1$ cm

b)
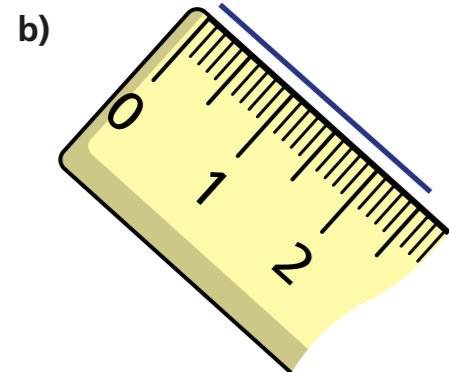
$2 \cdot 5$ cm

d)
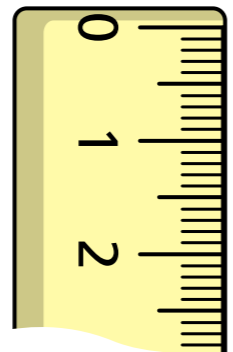
$0 \cdot 7$ cm

2 How long is the pencil?

$12 \cdot 5$ cm

3 Dexter is measuring the length of a line.

I think that the line is 2.6 cm long.

Do you agree with Dexter? __No__

Explain why.

Dexter hasn't started measuring from 0 cm.

4 Measure the sides of the shape to work out the perimeter.

a)

$13 \cdot 4$ cm

b)
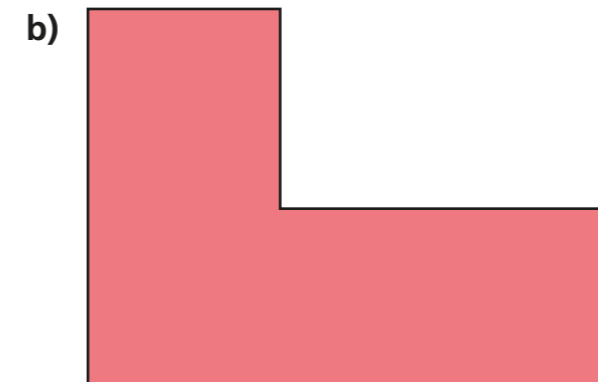
$16 \cdot 2$ cm

How many sides did you have to measure for each shape?

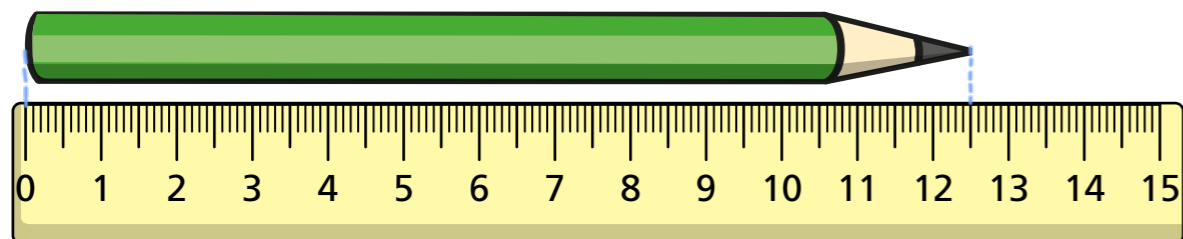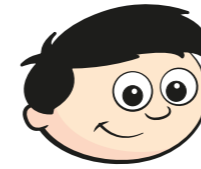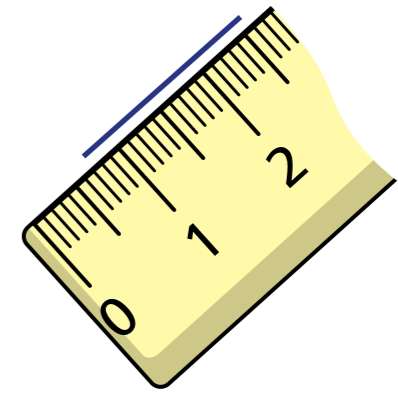**5** By measuring, work out the perimeter of these shapes.

a)

b)
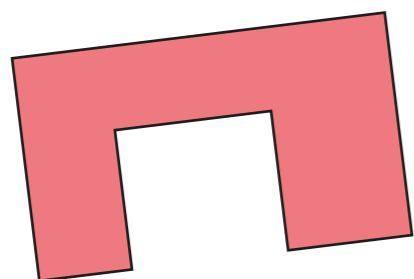
13·2cm
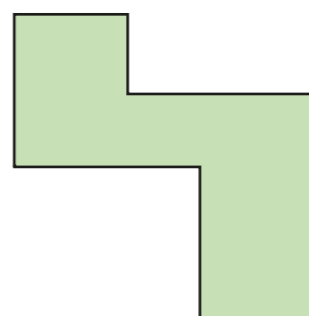
10·9 cm

6 Complete the shape so that it has a perimeter of 15.6 cm.
Various answers.

7 Draw a quadrilateral and pentagon with a perimeter of 10 cm.
Various answers.

8 Sort the shapes into the correct categories.

B

C

A

D

E
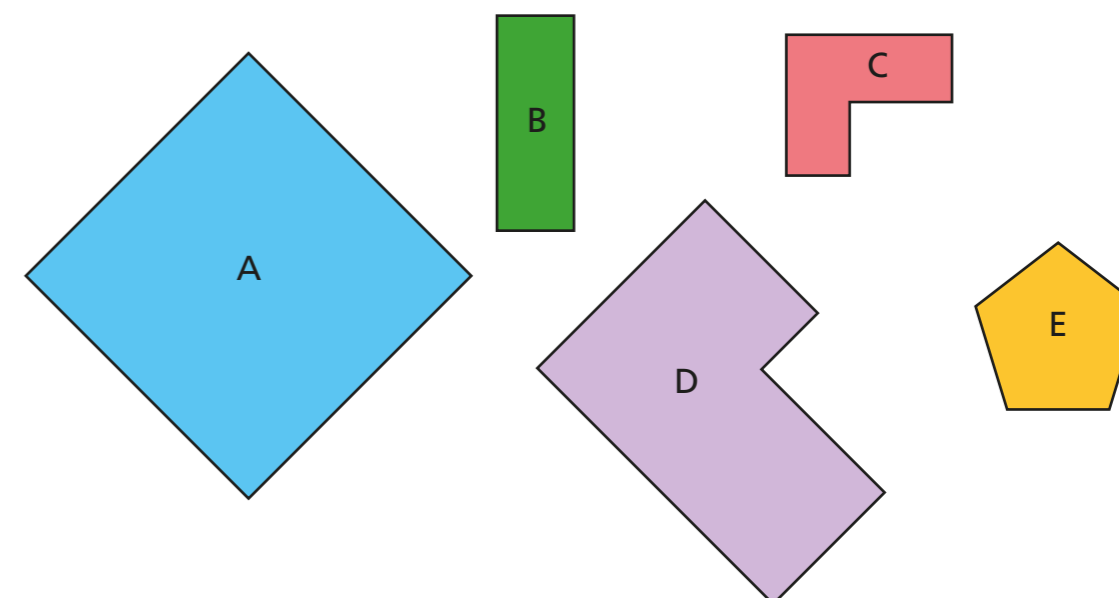
	Regular	Irregular
Perimeter less than 10 cm	E	B C
Perimeter greater than 10 cm	A	D

Calculate perimeter

1 Calculate the perimeter of each shape.

a)

1 cm

1 cm

14 cm

c)

1 cm

1 cm

16 cm

b)

1 cm

1 cm

16 cm

d)

1 cm

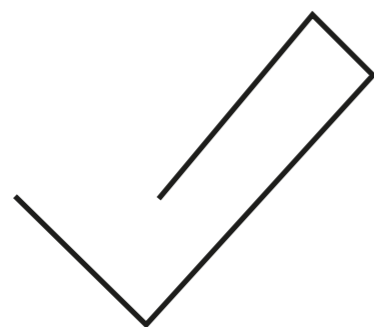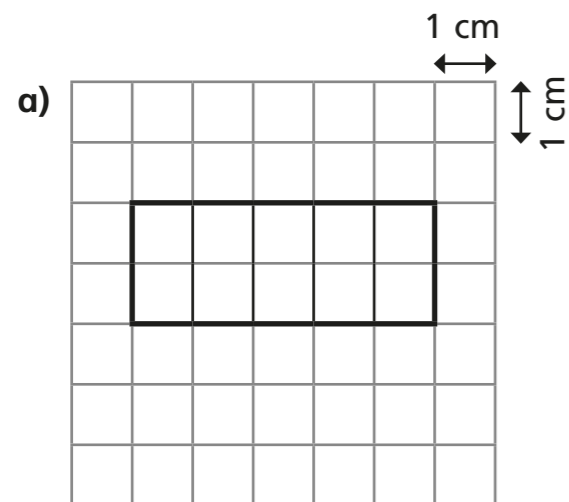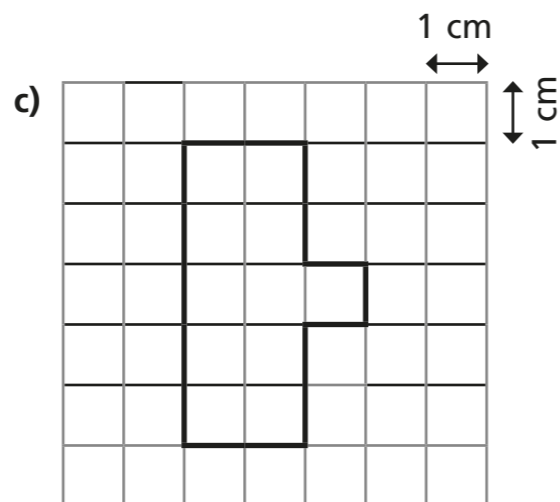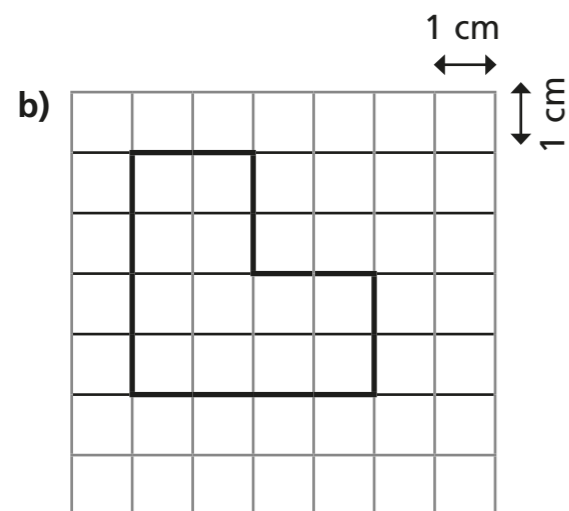1 cm

22 cm

2 Calculate the perimeter of these shapes.

a)

8 cm

3 cm   3 cm

8 cm

22 cm

b)

10 cm

6 cm
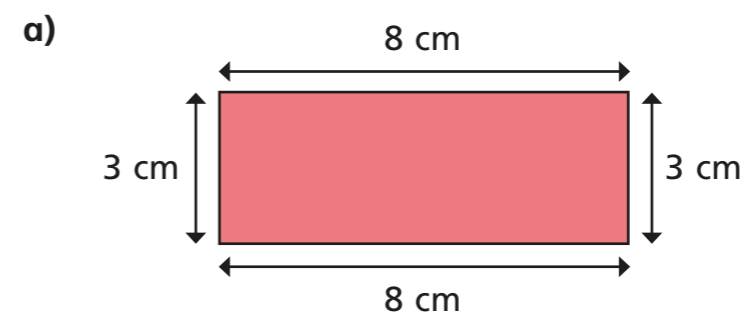
8 cm

24 cm

3 Calculate the perimeter of these shapes.

a)

3 cm

5 cm

7 cm

4 cm

2 cm

7 cm

28 cm

b)

6 cm

7 cm   7 cm

3 cm

4 cm
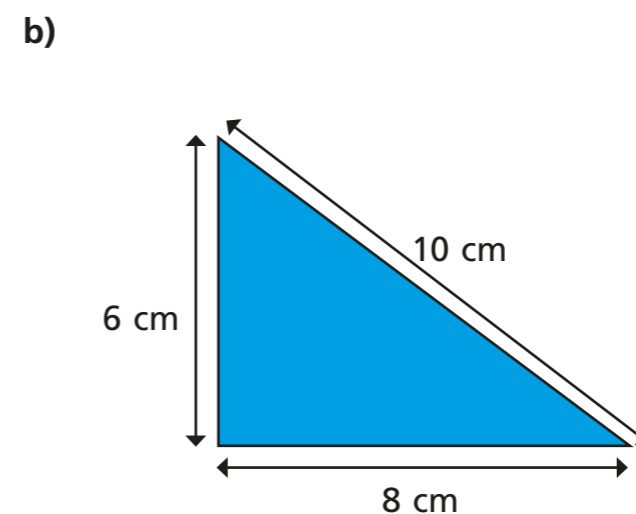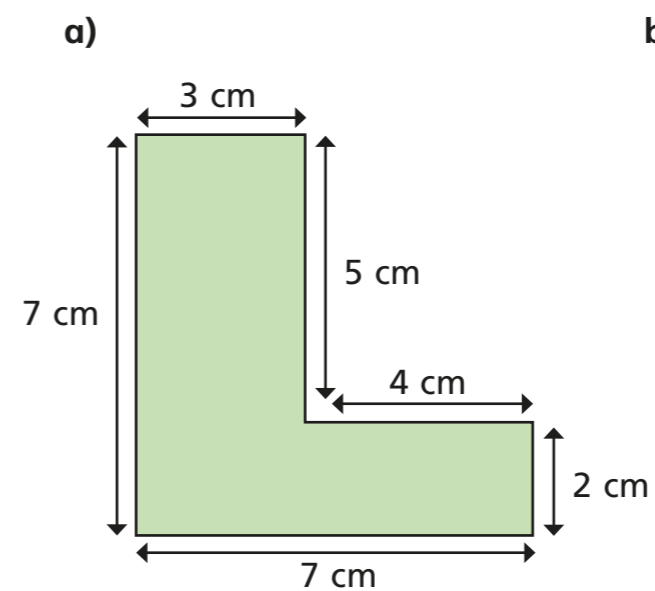
1 cm   2 cm

34 cm

4 Work out the missing lengths on these shapes.

a)

3 cm
5 cm
9 cm
4 cm
7 cm

b)

10 cm
6 cm
8 cm
7 cm 2 cm
3 cm
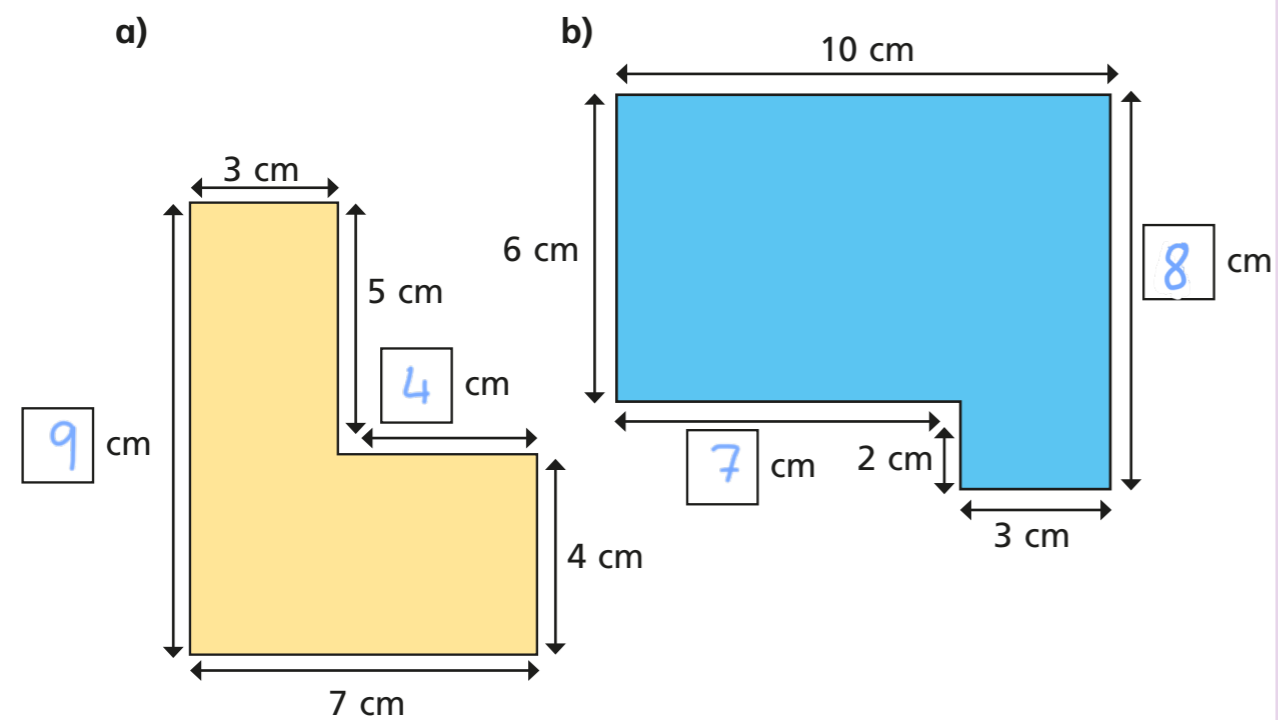
Discuss with a partner how you worked them out.

5 Calculate the perimeter of these shapes.
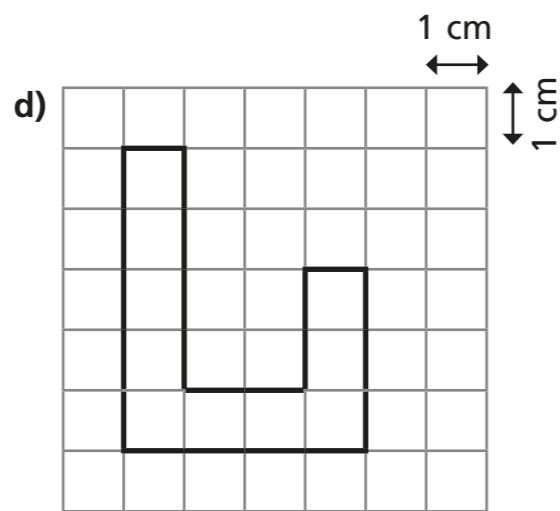
a)

10 cm
4 cm
2 cm
9 cm

38cm

b)

9.2 cm   9.2 cm
4 cm
3.5 cm   3.5 cm

33·4cm
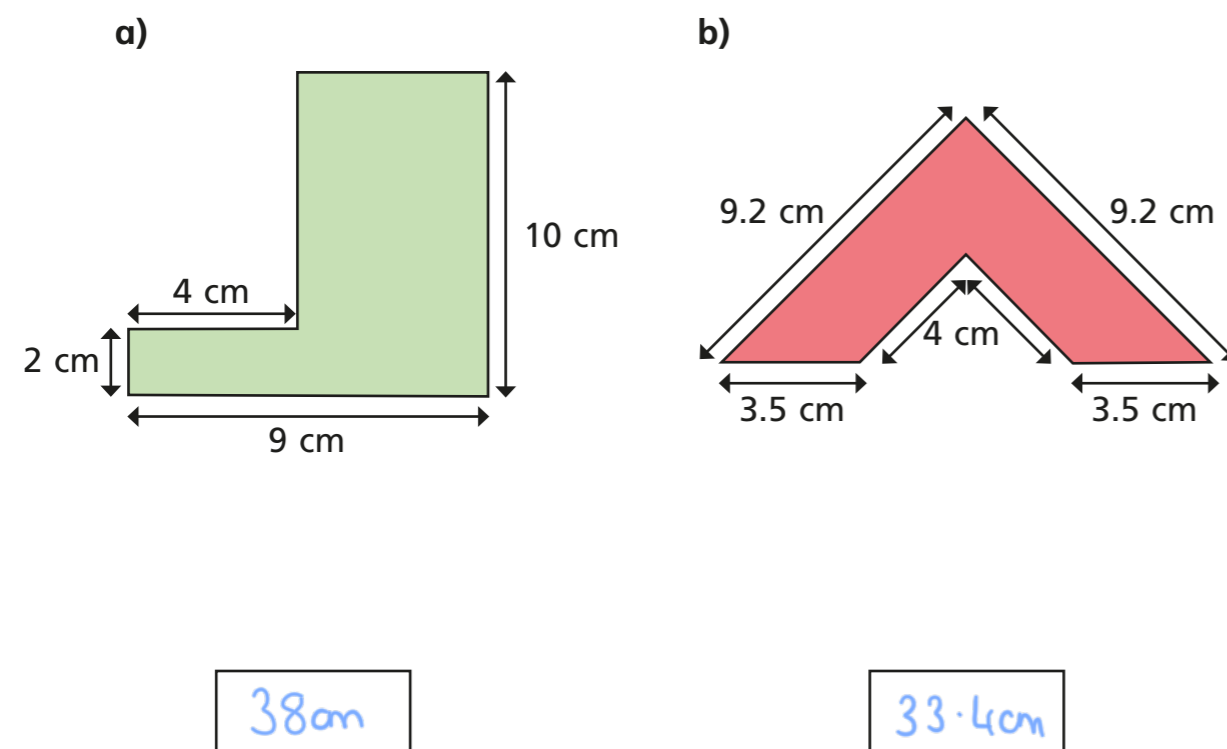
6 Mo thinks that there is not enough information to calculate the perimeter of the shape.

Is he correct? How do you know?

17 cm
3 cm
12cm
9 cm
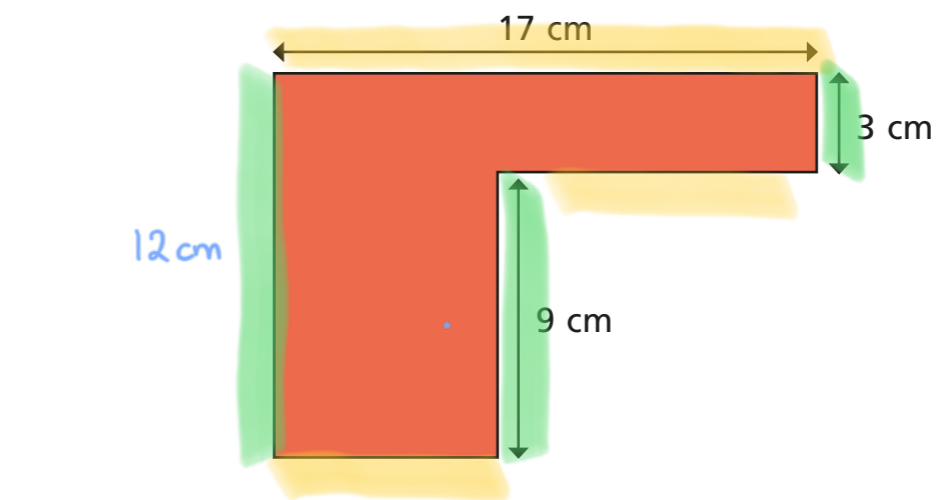
No.   The   perimeter   is 58cm.

7 Rosie is making shapes made up of 3 rectangles.

Each rectangle has a length of 10 cm and a width of 4 cm.
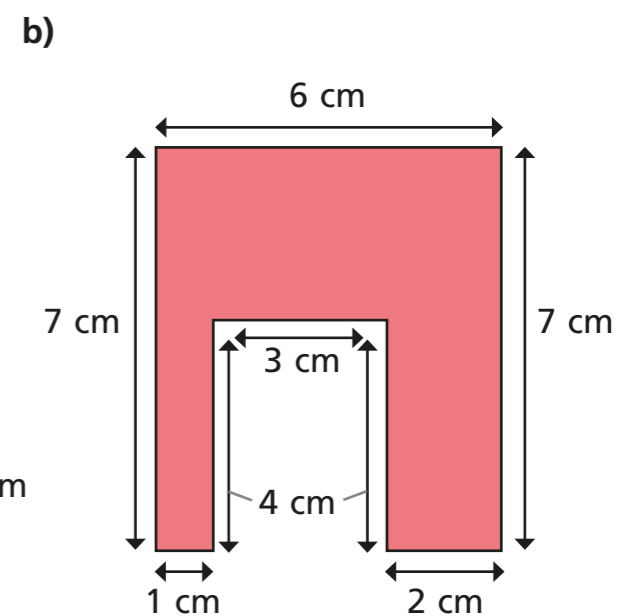
She makes these 2 shapes.

A

B
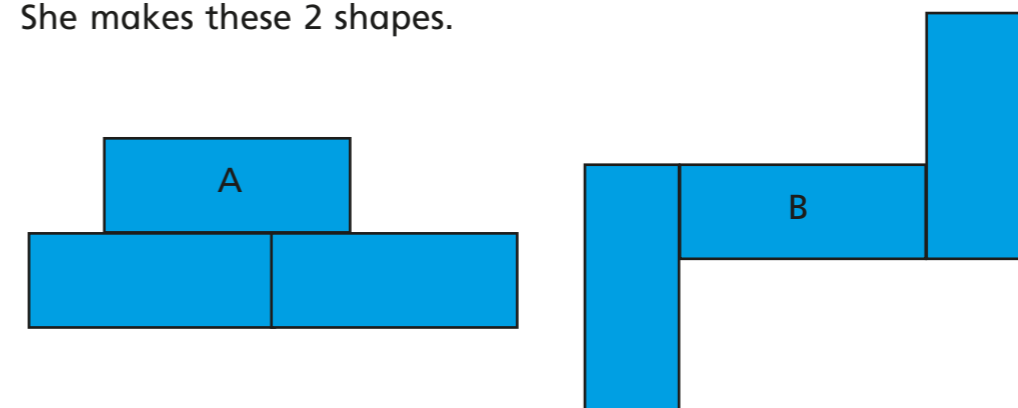
a) Which shape has the greatest perimeter? __B__

b) What other shapes can you make with 3 rectangles?
   What is the perimeter of the shapes?

Area of rectangles

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

Calculate the area of each rectangle.

a)

1 cm ←→   ↕ 1 cm

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

c)

1 cm ←→   ↕ 1 cm

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

b)

1 cm ←→   ↕ 1 cm

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

2 Complete the sentences to describe the rectangle.

There are $\boxed{2}$ rows.

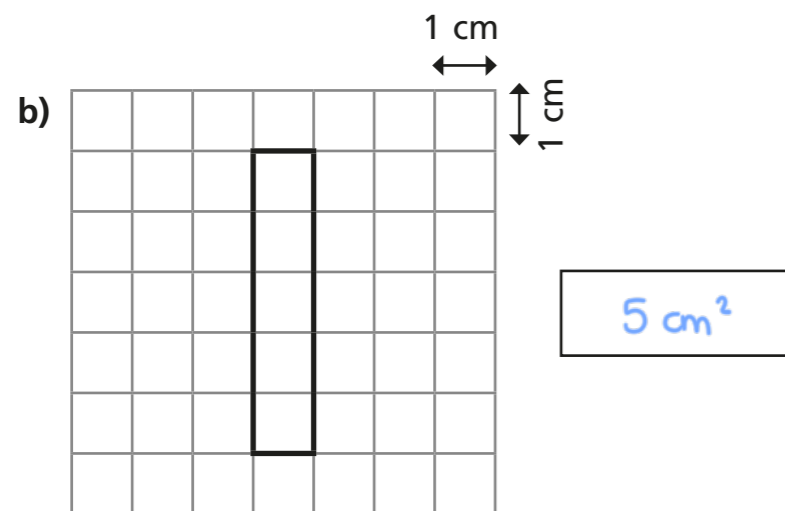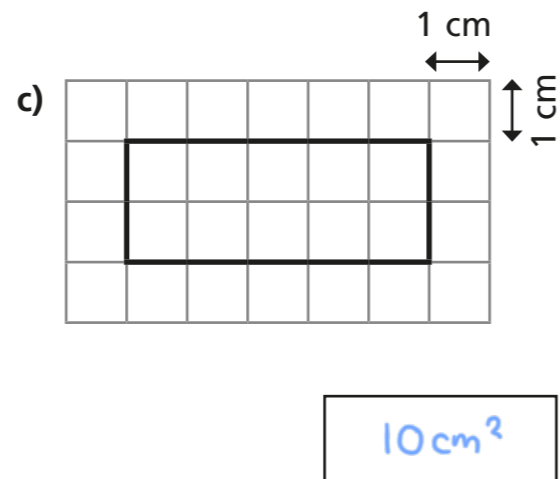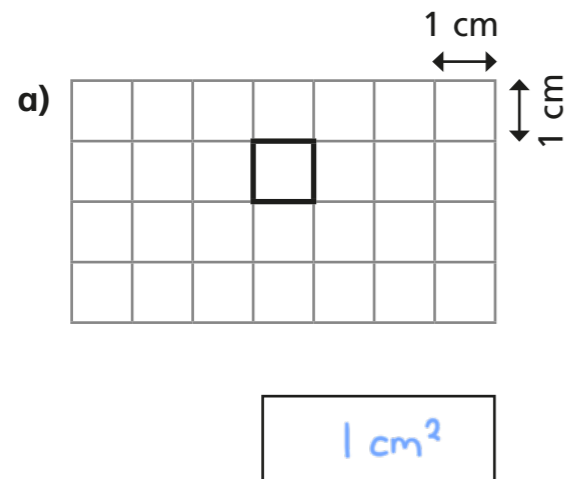Each row has $\boxed{4}$ squares.

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

$\boxed{2} \times \boxed{4} = \boxed{8}$
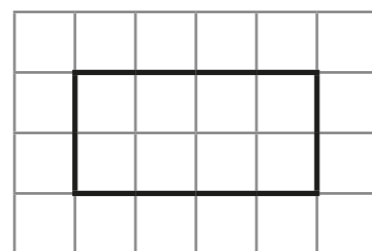
3 The area of each square is 1 cm²

Work out the area of each rectangle.

a)

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

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

c)

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

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

b)

$\boxed{5} \times \boxed{2} = \boxed{10}$

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

d)
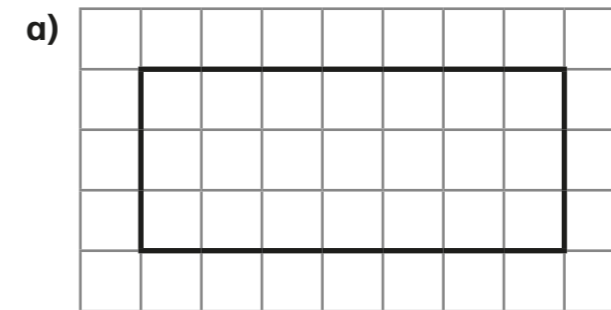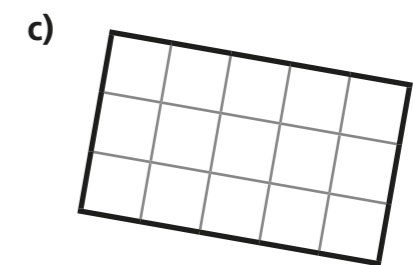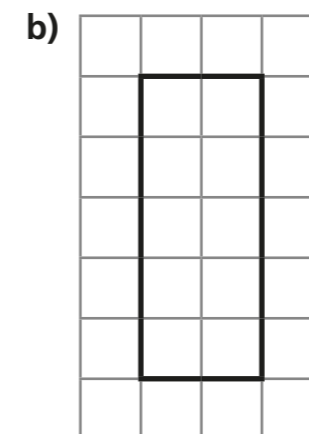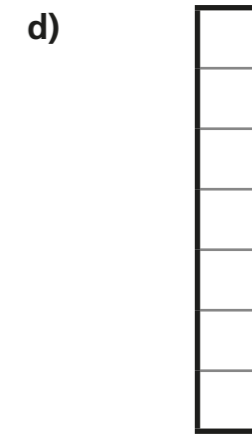
$\boxed{7} \times \boxed{1} = \boxed{7}$

area = $\boxed{7 \text{ cm}^2}$

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
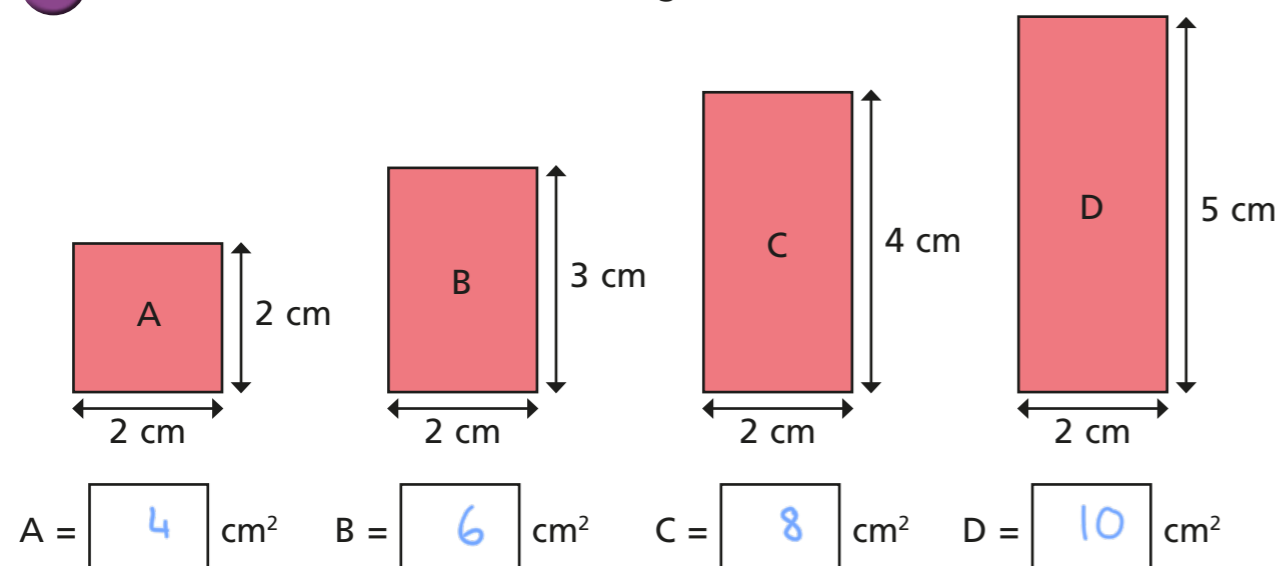
5 Work out the area of these rectangles.

a) 4 mm, 12 mm

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

b) 30 m, 7 m

$\boxed{210\,m^2}$
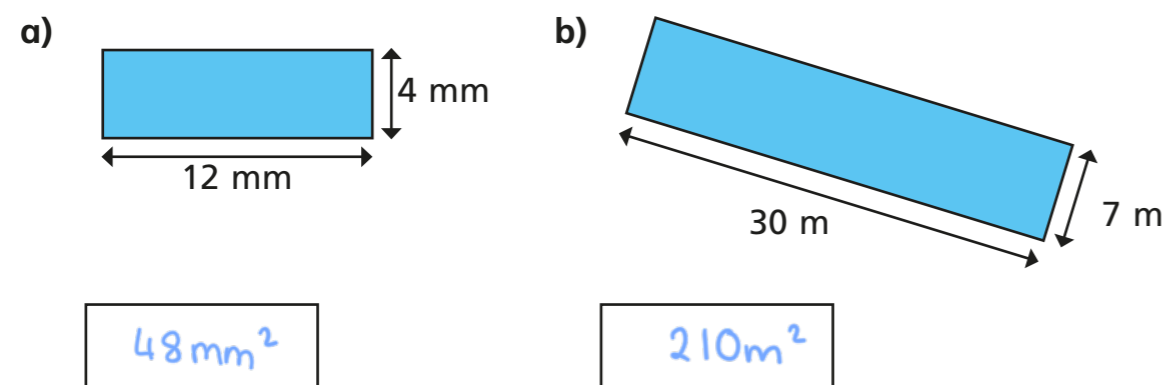
6 How many rectangles can you draw that have an area of 24 cm²?
Label the lengths. Your drawings do not have to be exact.

24cm
1cm

6cm
4cm

12cm
2cm

8cm
3cm
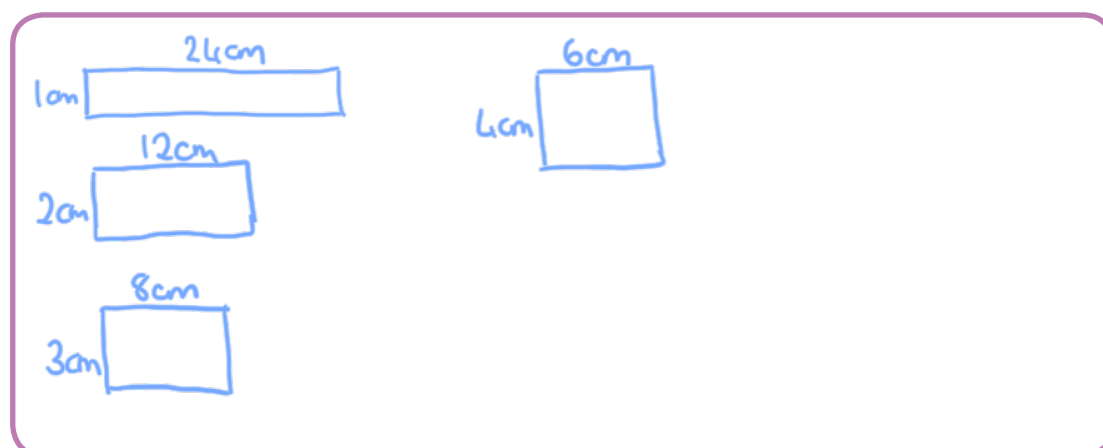
Compare your answers with a partner.

7 These shapes all have the same area. Shape A is a square.

Work out the missing lengths.

A — 6 cm

B — 9 cm, $\boxed{4}$ cm

C — 3 cm, $\boxed{12}$ cm

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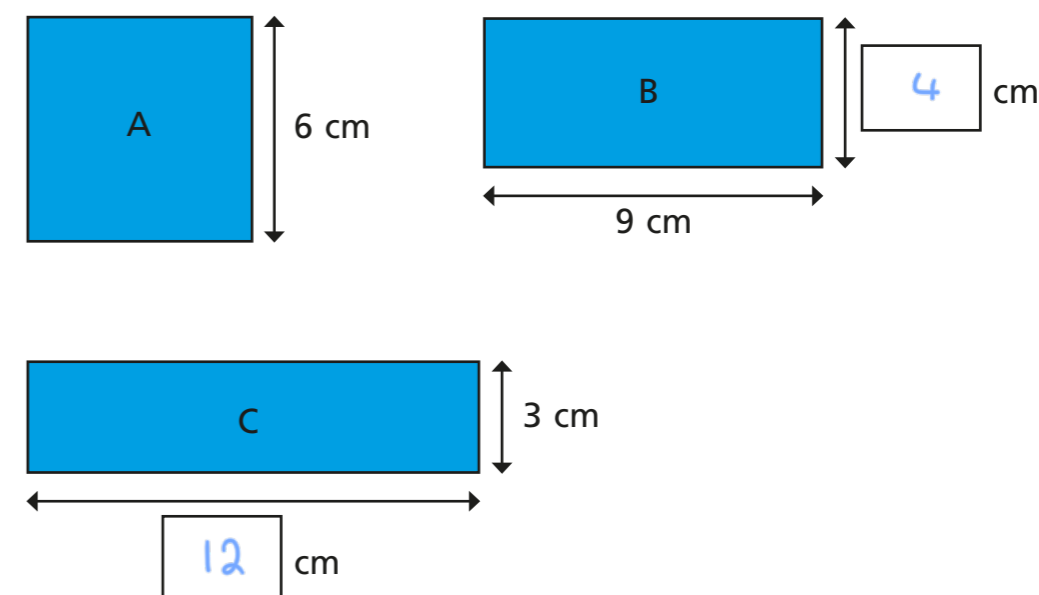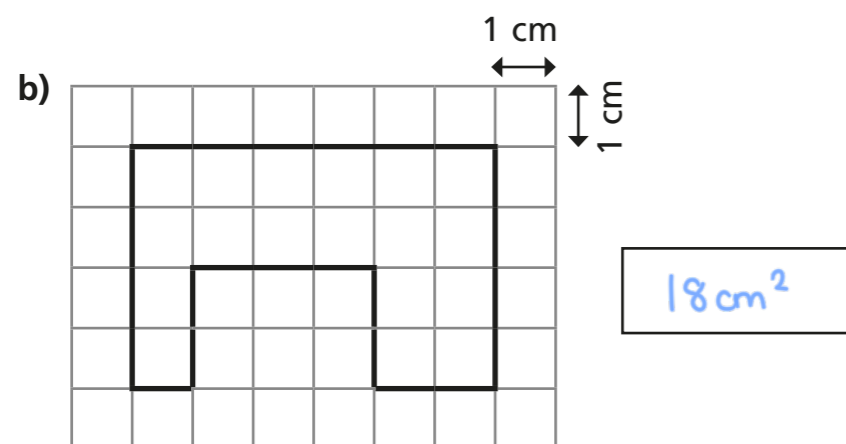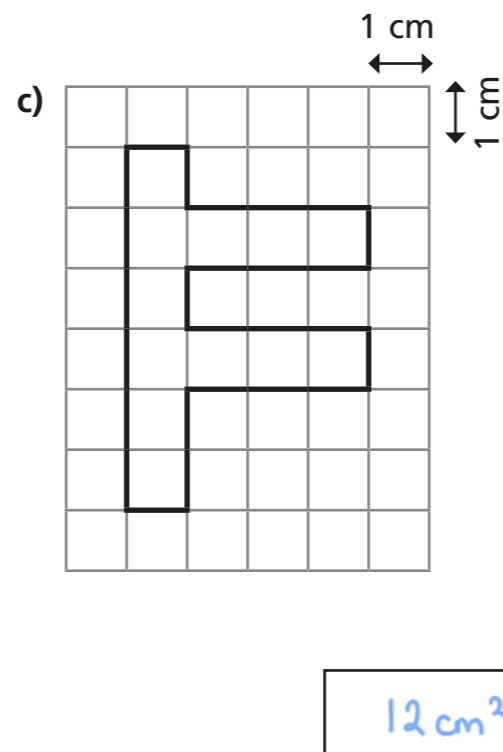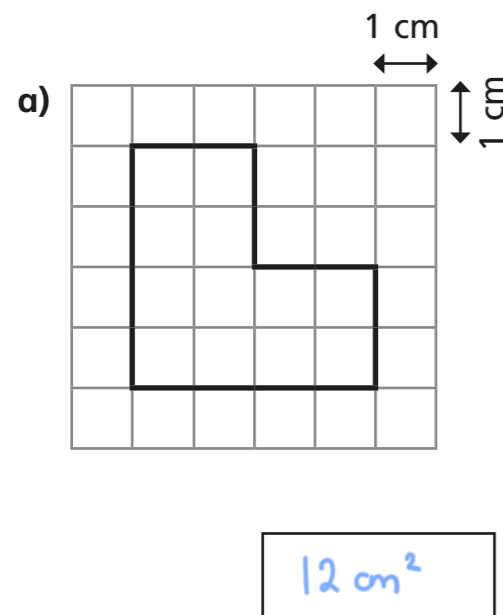
The length of the rectangle is 4 cm longer than the width.

Work out the length and width of the rectangle.

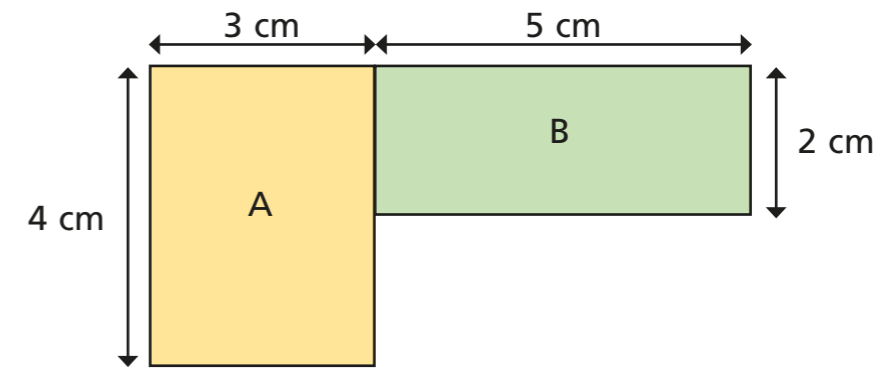length = $\boxed{12cm}$ width = $\boxed{8cm}$

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

Calculate the area of each shape.

a)

1 cm

1 cm

12 cm²

b)

1 cm

1 cm

18 cm²

c)

1 cm

1 cm

12 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
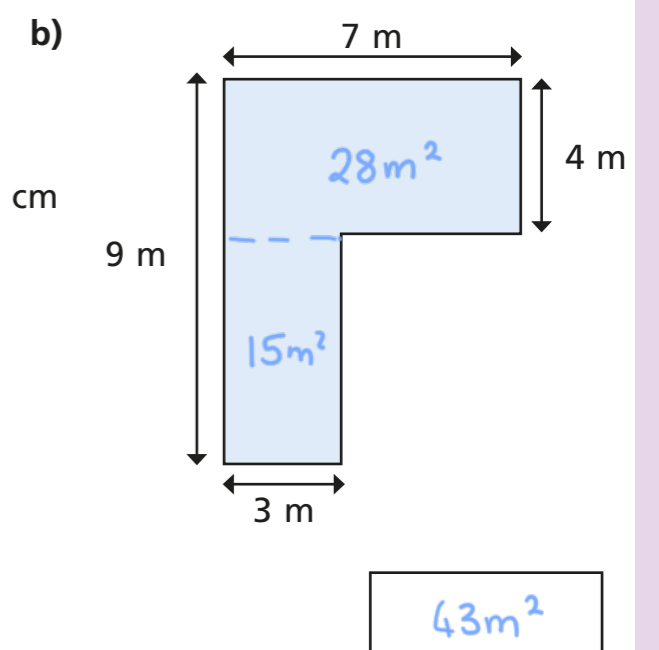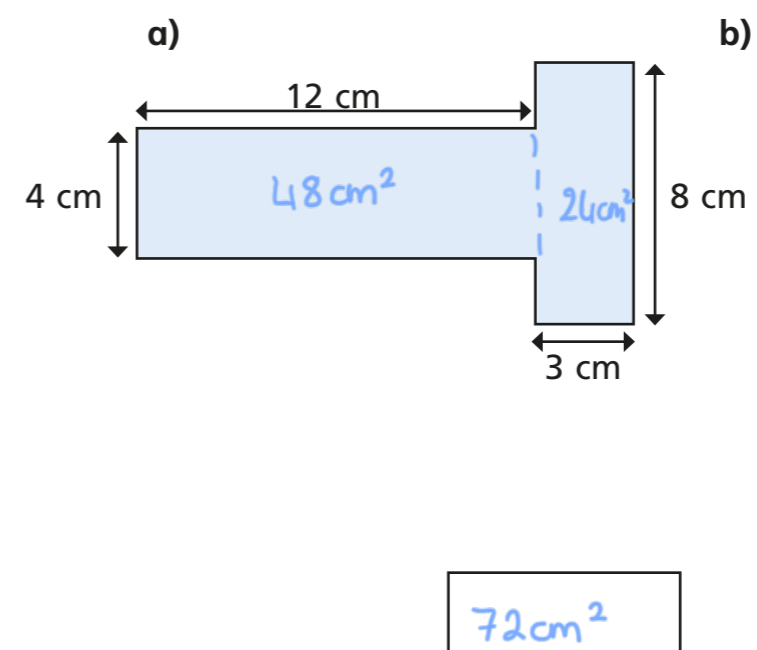
area = 10 cm²

c) Work out the area of the compound shape.
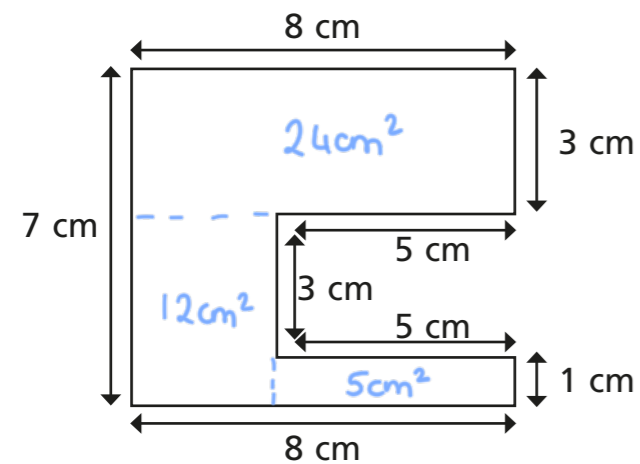
area = 22 cm²

Talk about it with your partner.

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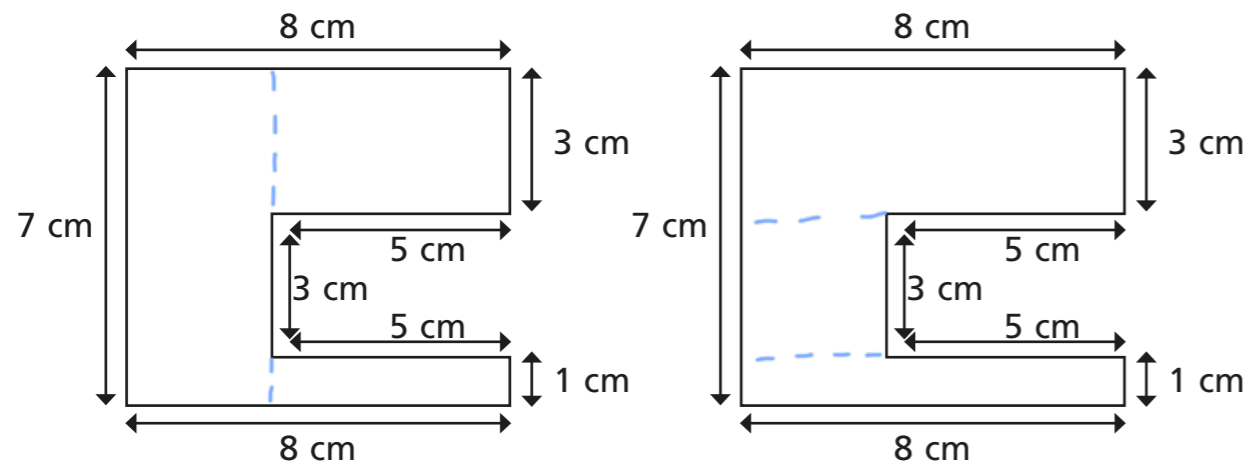
Show all your working.

a)

12 cm

4 cm   48 cm²   24 cm²   8 cm

3 cm

72 cm²

b)

7 m

28 m²   4 m

9 m

15 m²

3 m

43 m²

4 Calculate the area of the compound shapes.

a) Mark on the shape how you partitioned it.

8 cm

24cm²

3 cm

7 cm

5 cm

3 cm

12cm²

5 cm

5cm²

1 cm

8 cm

41cm²

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

8 cm

3 cm

7 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

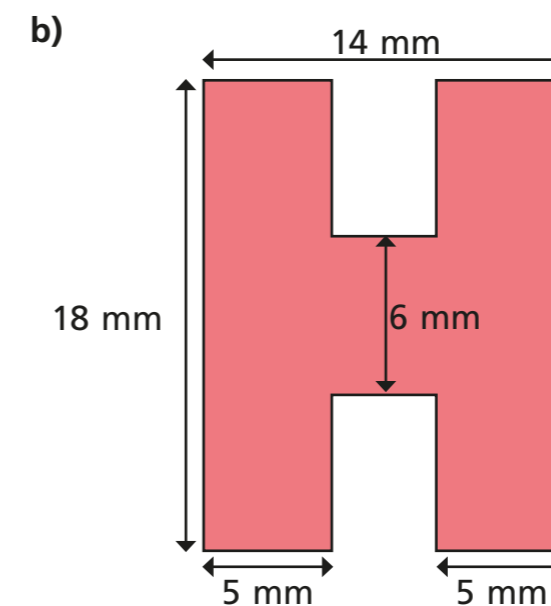Explain the method Alex has used.

She has found the area of the larger rectangle and
subtracted the area of the 'missing' rectangle.
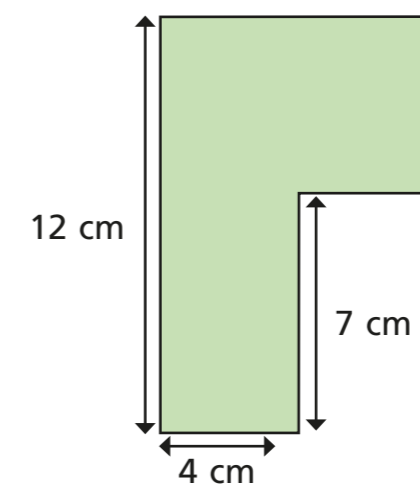
5 Calculate the area of these compound shapes.

a)

7 cm   7 cm

10 cm

4 cm

25 cm

184cm²

b)

14 mm

18 mm   6 mm

5 mm   5 mm
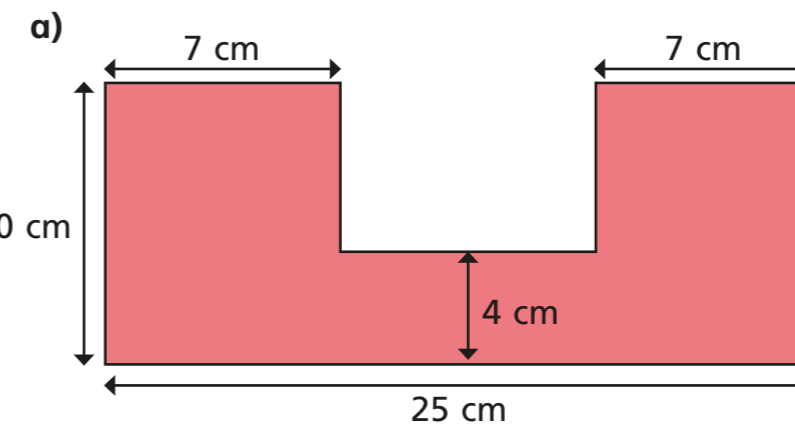
204mm²

5 The area of this shape is 83 cm²

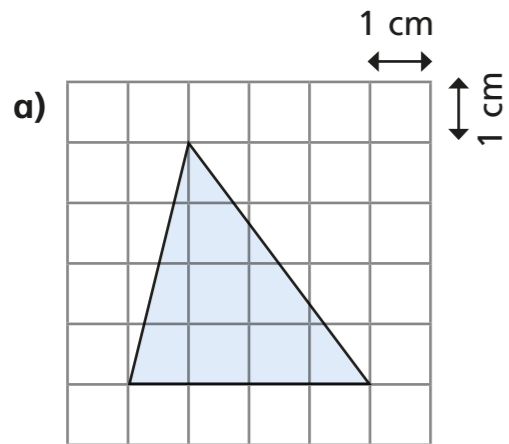Work out the perimeter of the shape.

12 cm

7 cm

4 cm

46 cm

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
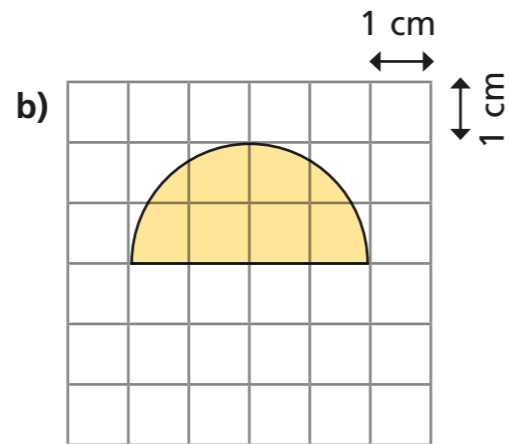
6 cm²

2 Mo draws two shapes on a cm² grid.

Estimate the area of each shape.

a)

1 cm

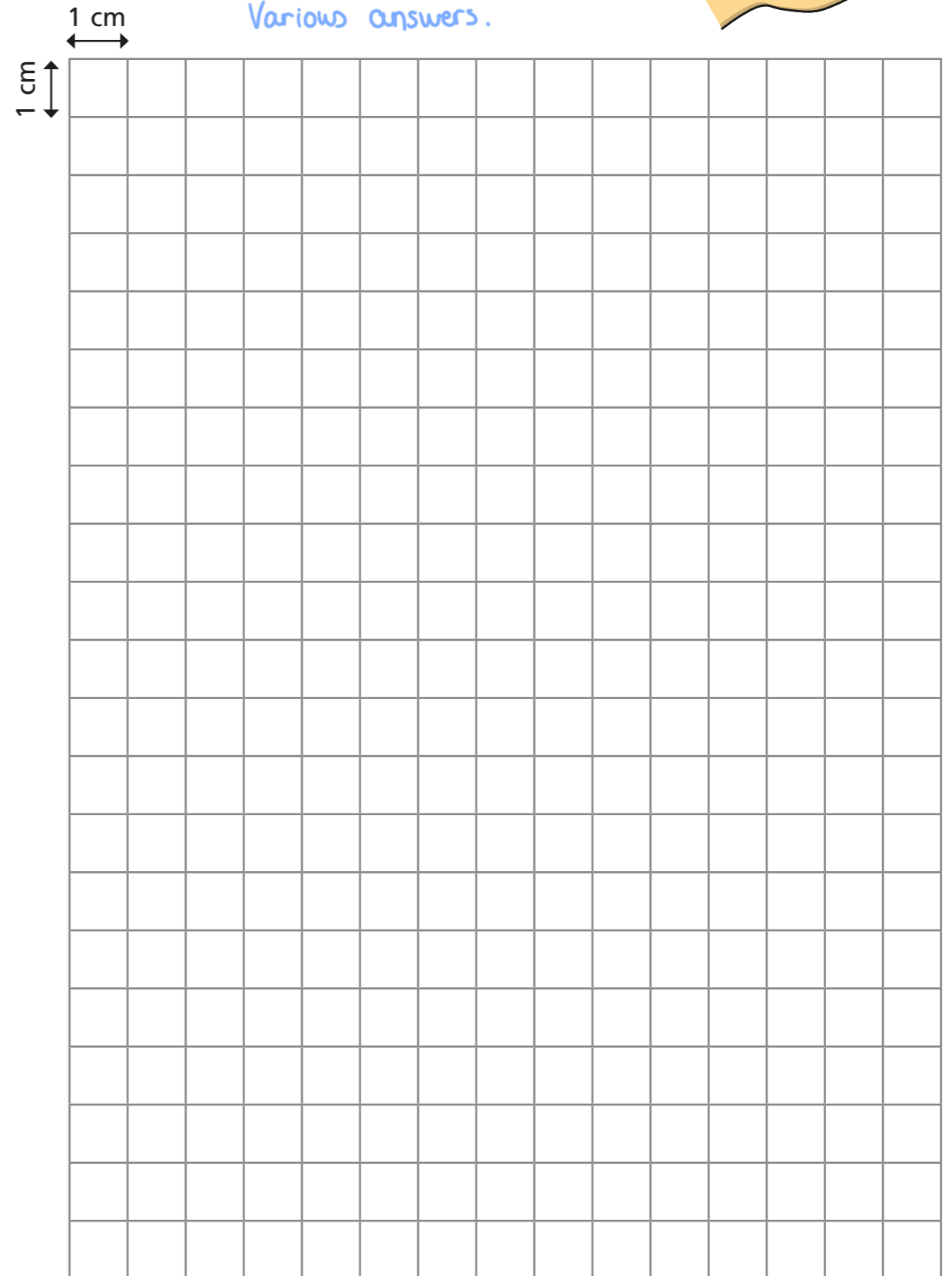1 cm

20 cm²

b)

1 cm

1 cm
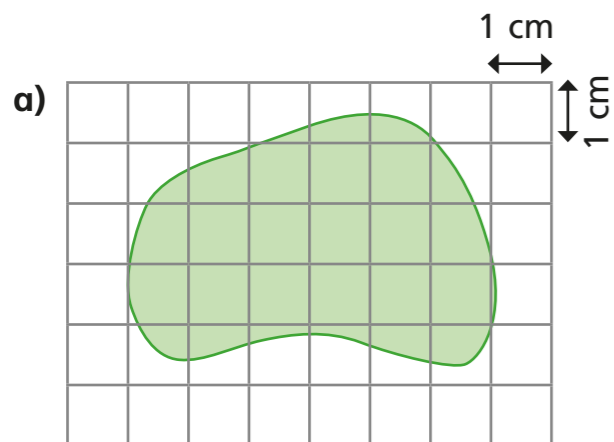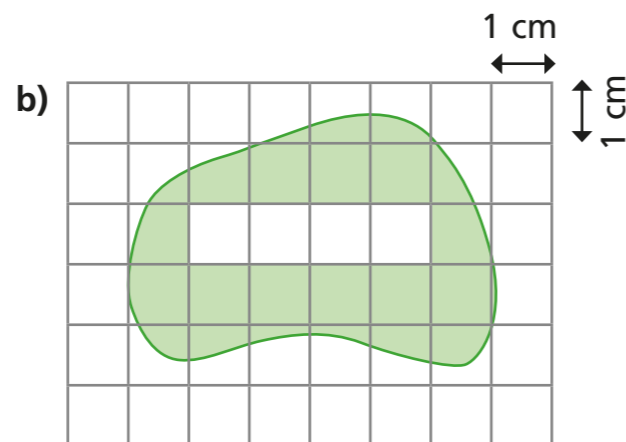
16 cm²

How did you estimate the area of b)?

Talk about it with your partner.
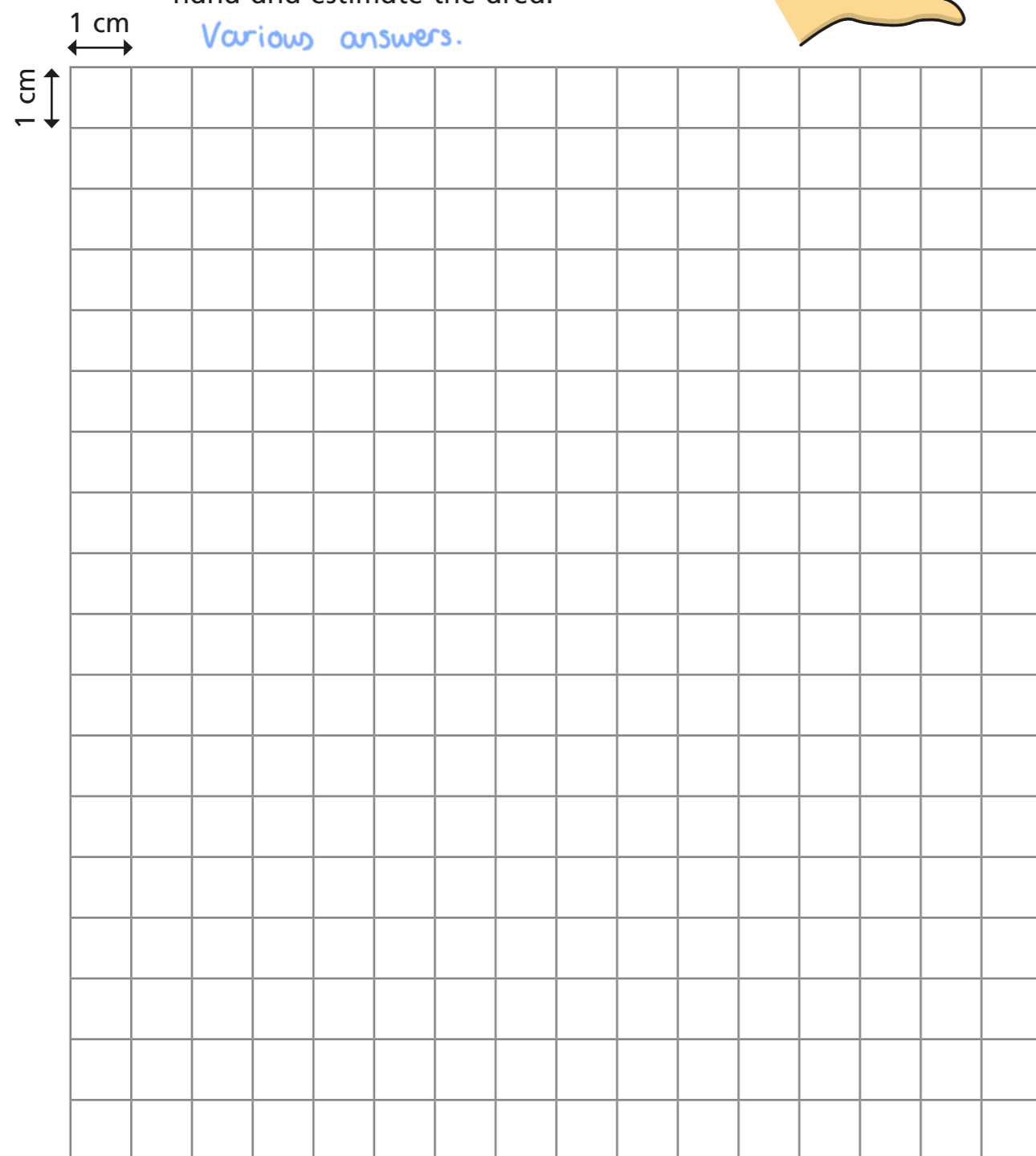
3 **a)** On the grid below, draw around your closed hand and estimate the area.

1 cm

1 cm

Various answers.

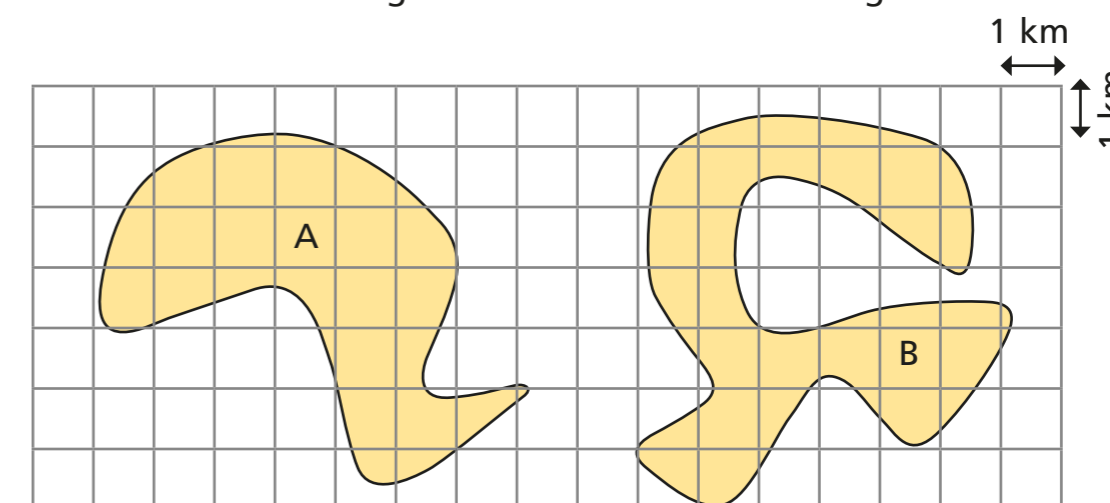**b)** On the grid below, draw around your open hand and estimate the area.

Various answers.

1 cm ↔

1 cm ↕

1 cm ↕

c) Compare your estimates for a) and b). Do you notice anything?

_____

_____

4 Here is the outline of two islands.
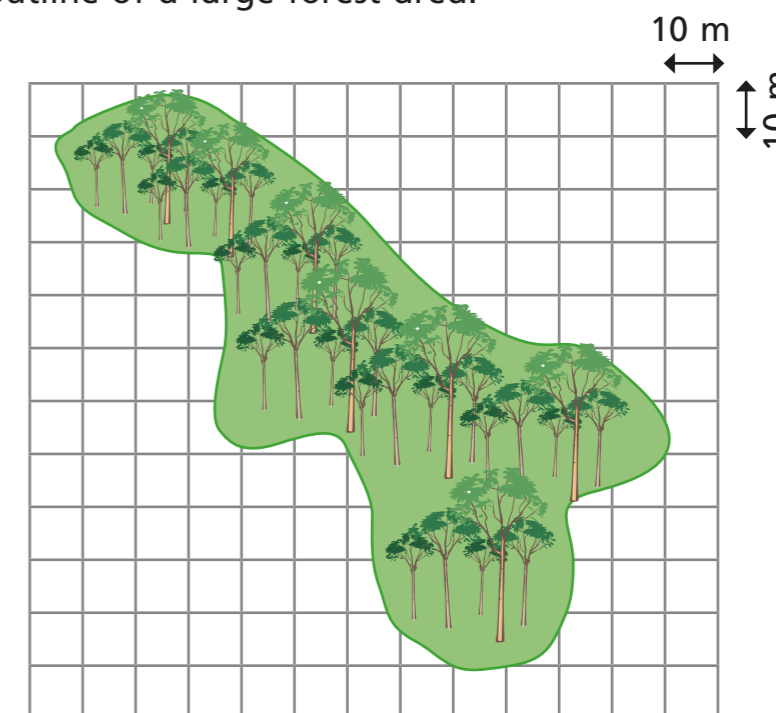
Each square represents 1 km² of land.

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

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