# RECALL

Ratio is when there are two or more amounts which change at the same rate:

Can you complete the tables below to show examples of this?

| Miles | : | KMs |
|---|---|---|
| 5 | : | 8 |
| 10 | : | ? |
| 15 | : | ? |
| 20 | : | ? |
| ? | : | 40 |
| ? | : | 80 |
| 100 | : | ? |

| Minutes | : | Seconds |
|---|---|---|
| 1 | : | 60 |
| 2 | : | ? |
| 3 | : | ? |
| 4 | : | ? |
| ? | : | 300 |
| ? | : | 600 |
| 20 | : | ? |

| Inches | : | cm |
|---|---|---|
| 1 | : | 2.5 |
| 2 | : | ? |
| 3 | : | ? |
| 4 | : | ? |
| ? | : | 30 |
| ? | : | 60 |
| 100 | : | ? |

The length of a day on Earth is 24 hours.

The length of a day on Mercury is $58\frac{2}{3}$ times the length of a day on Earth.

How long is a day on Mercury in hours?

# RECALL

Ratio is when there are two or more amounts which change at the same rate:

Can you complete the tables below to show examples of this?

| Miles | : | KMs |
|---|---|---|
| 5 | : | 8 |
| 10 | : | 16 |
| 15 | : | 24 |
| 20 | : | 32 |
| 25 | : | 40 |
| 50 | : | 80 |
| 100 | : | 160 |

| Minutes | : | Seconds |
|---|---|---|
| 1 | : | 60 |
| 2 | : | 120 |
| 3 | : | 180 |
| 4 | : | 240 |
| 5 | : | 300 |
| 10 | : | 600 |
| 20 | : | 1200 |

| Inches | : | cm |
|---|---|---|
| 1 | : | 2.5 |
| 2 | : | 5 |
| 3 | : | 7.5 |
| 4 | : | 10 |
| 12 | : | 30 |
| 24 | : | 60 |
| 100 | : | 250 |

The length of a day on Earth is 24 hours.

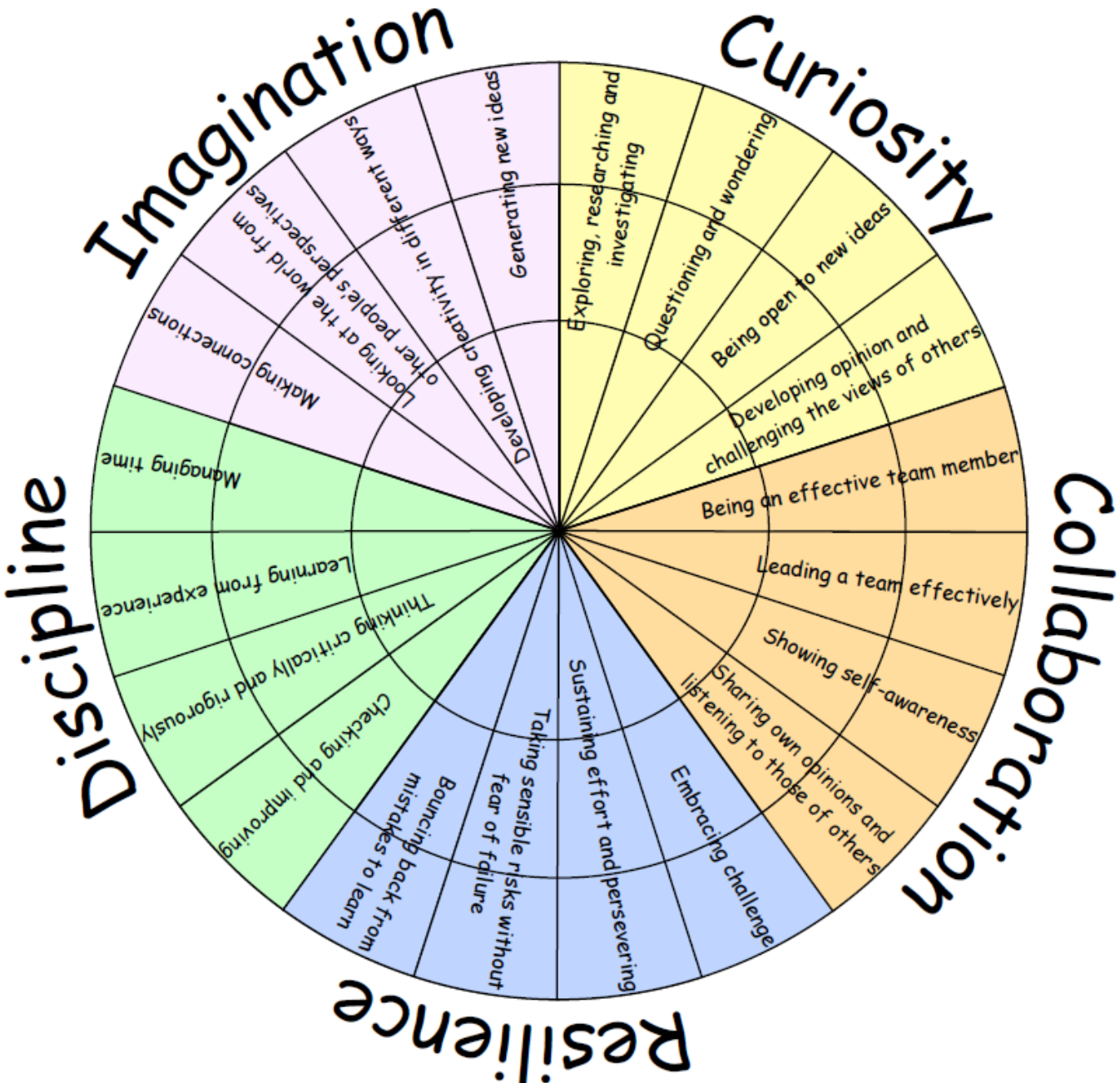
The length of a day on Mercury is $58\frac{2}{3}$ times the length of a day on Earth.

How long is a day on Mercury in hours? $24 \times 58\frac{2}{3} = 1408$ hours

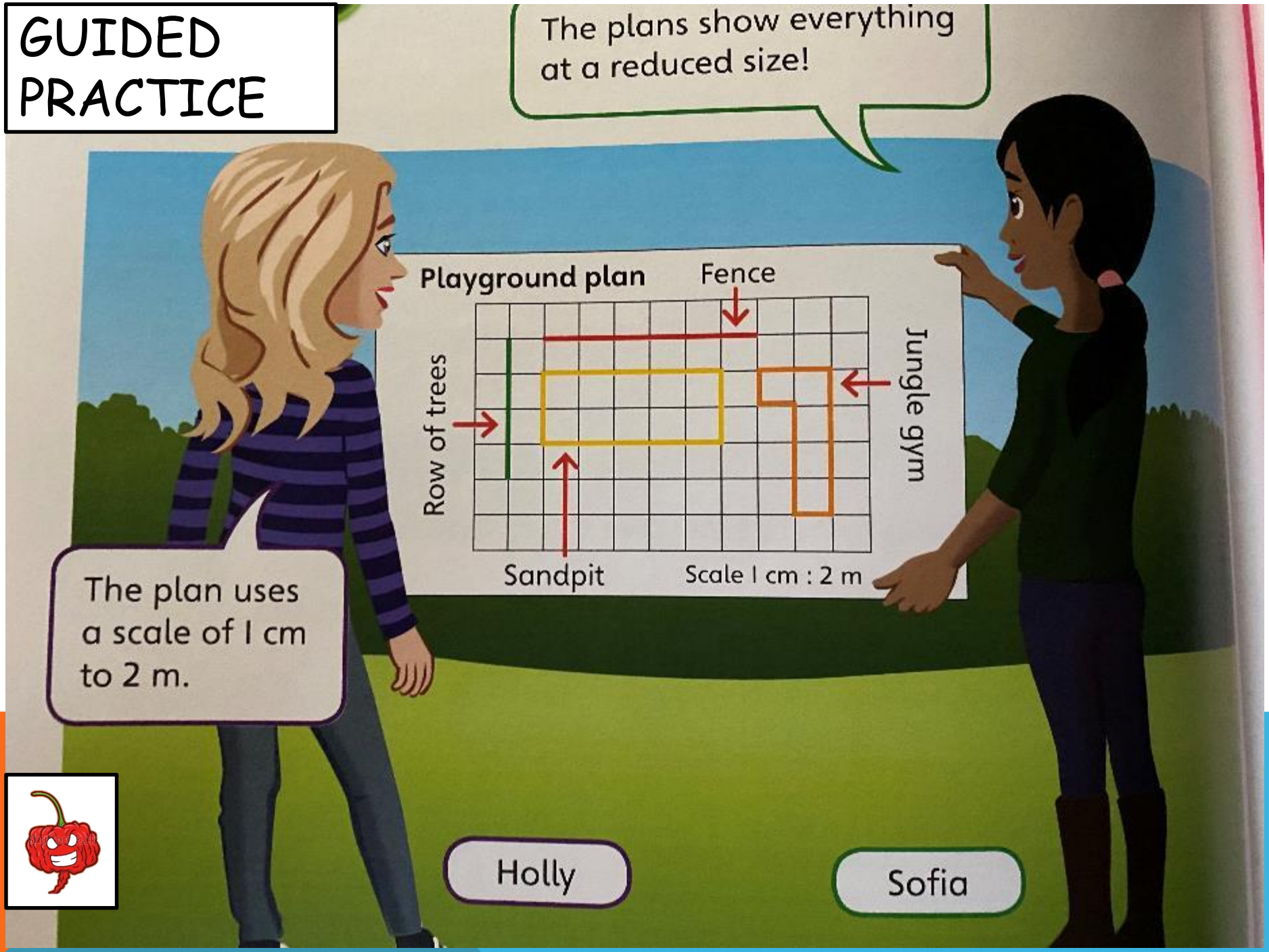
# I CAN SOLVE PROBLEMS INVOLVING SIMILAR SHAPES WHERE THE SCALE FACTOR IS KNOWN OR CAN BE FOUND

Percentages and Ratio (15iv)

# LEARNING HABITS?



# GUIDED PRACTICE



# INTELLIGENT PRACTICE

Draw a line which is 5 squares long (in your maths book).

Label its length.

Draw a line which is twice as long.

Label its length.

Write an equation to show this.

**3 B4 Me:**

? X ? = ?

Draw a line which is 7 squares long (in your maths book).

Label its length.

Treble the length of the line.

Label its length.

Write an equation to show this.

**3 B4 Me:**

? X ? = ?

Draw a rectangle which is 7 squares long by 5 squares wide.

Label its length and width.
Double the length of the rectangle.
Double the width of the rectangle.
Complete the rectangle by drawing the other two sides.

You have enlarged the rectangle by a scale factor of 2 (i.e. you have doubled the length **and** the width.

Double ➔ ?
Treble ➔ ?
Quadruple ➔ ?

# INTELLIGENT PRACTICE - ANSWERS

Draw a line which is 5 squares long (in your maths book).

5 squares

Draw a line which is twice as long.

10 squares

Write an equation to show this.

**3 B4 Me:**
5 x 2 = 10

Draw a line which is 7 squares long (in your maths book).

7 squares

Treble the length of the line.

21 squares

Write an equation to show this.

**3 B4 Me:**
7 x 3 = 21

Draw a rectangle which is 7 squares long by 5 squares wide.

Label its length and width.
Double the length of the rectangle.
Double the width of the rectangle.
Complete the rectangle by drawing the other two sides.

You have enlarged the rectangle by a scale factor of 2 (i.e. you have doubled the length **and** the width.

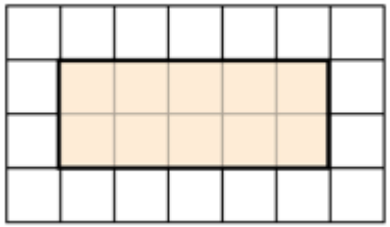
Double ➔ x2
Treble ➔ x3
Quadruple ➔ x4

# DIVE DEEPER 1

1) Here is a rectangle.

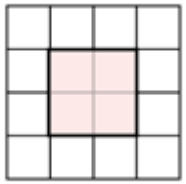
Draw another rectangle which is twice as big.

Use the squares in your book and a ruler!



2) Here is a square.

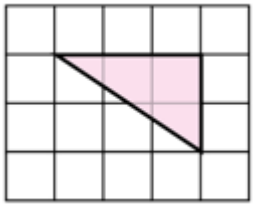
Draw another square which is 4 times as big!

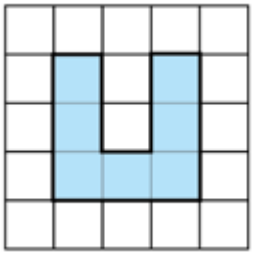


3a) Explain what it means to enlarge a shape by a scale factor of 2.

3b) If a rectangle has a length of 8cm and a width of 3cm, what will the length and width be after I have enlarged the shape by a scale factor of 2?

4) Enlarge these two shapes by a scale factor of 2:

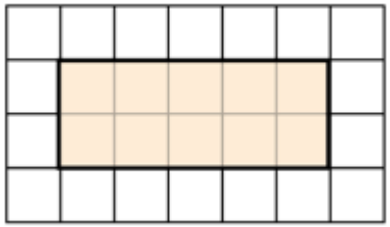




# DIVE DEEPER 1 - ANSWERS

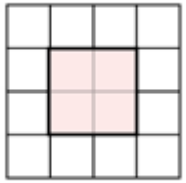
1) Here is a rectangle.

The new rectangle should be 10 squares in length and 4 squares in width.
I want to see photos of rulers!



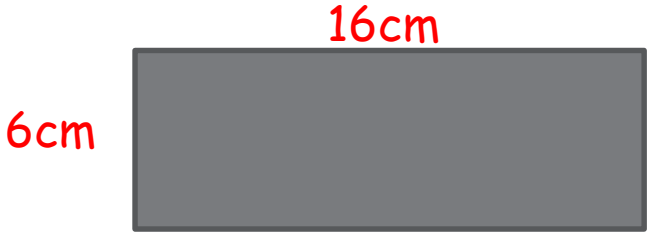
2) Here is a square.

The new square should be 8 squares by 8 squares. Area of the square = 64 squares! Square numbers – they get everywhere (especially when drawing squares!

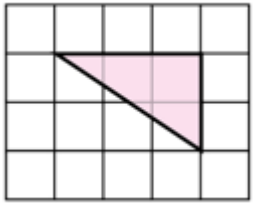


3a) To make the length two times longer and the width two times wider!

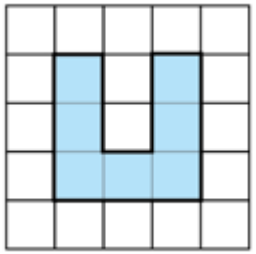
3b)




4) Enlarge these two shapes by a scale factor of 2:



This shape should now be 6 squares long and 4 squares wide.



This 'U' should be 6 squares tall and 6 squares wide with 4 squares by 2 squares in the centre part.

# DIVE DEEPER 2

5) Copy and complete the sentence:

A shape in which each side has tripled in size has been enlarged by a scale factor of ….

6) Here is a rectangle:

a) Measure the length and the width of the rectangle and label them on a copy of the diagram.

b) Enlarge the rectangle by a scale factor of 3 and label the length and the width now.

8) A rectangle measures 5cm long by 3 cm wide.

a) What is its area?

b) I enlarge the rectangle by a scale factor of 2. What are the new length and width?

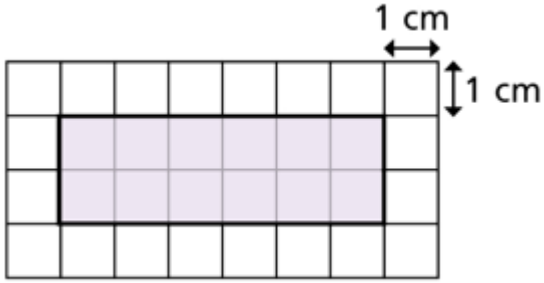
c) What is its new area?

d) What do you notice about the increase in the area?

7) The sides of a rectangle are increased by a scale factor of 2.

What is the perimeter of the new shape?

Why?

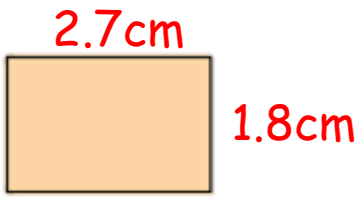


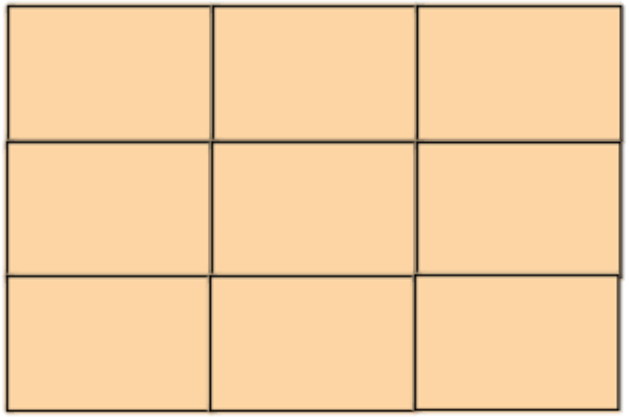
# DIVE DEEPER 2 - ANSWERS

5) Copy and complete the sentence:

A shape in which each side has tripled in size has been enlarged by a scale factor of 3.

6) Here is a rectangle:



8) A rectangle measures 5cm long by 3 cm wide.

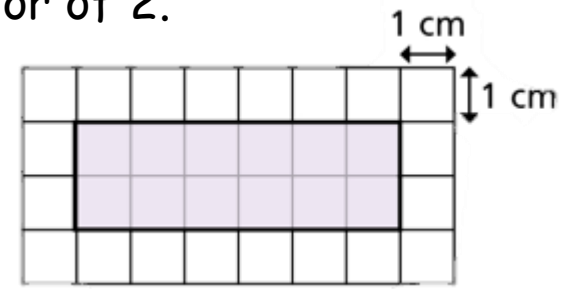
a) What is its area? $15cm^2$

b) I enlarge the rectangle by a scale factor of 2. What are the new length and width?
10cm x 6cm

c) What is its new area?
$60cm^2$

d) The area is four times as big!

7) The sides of a rectangle are increased by a scale factor of 2.



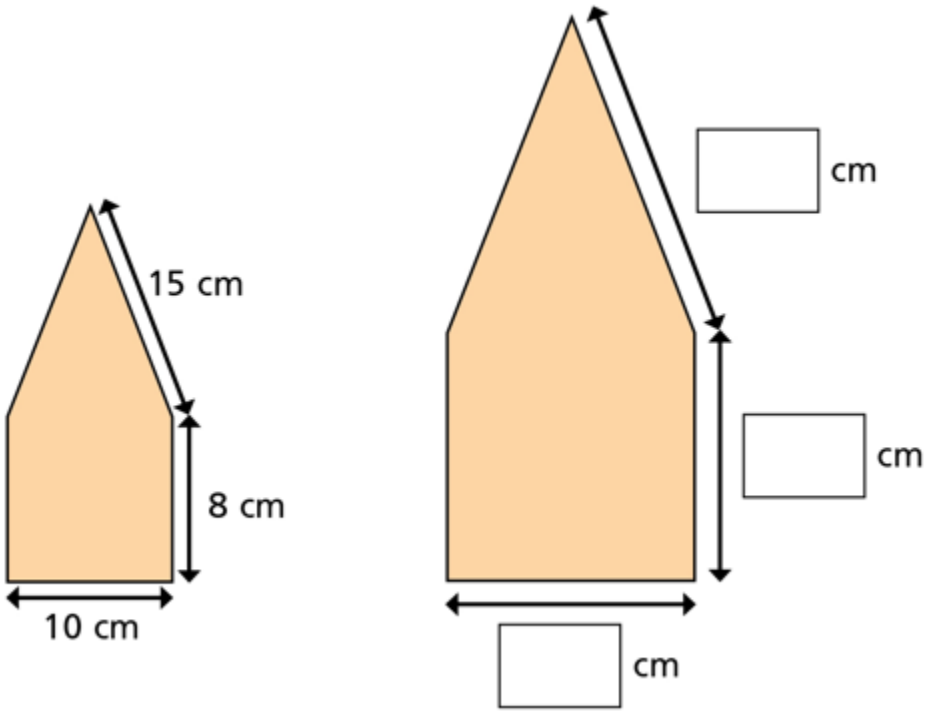

What is the perimeter of the new shape? 32cm

Why? All the sides have doubled so the perimeter doubles.

# DIVE DEEPER 3

9) The shape has been enlarged by a scale factor of $1\frac{1}{2}$.

a) Fill in the dimensions of the new shape.

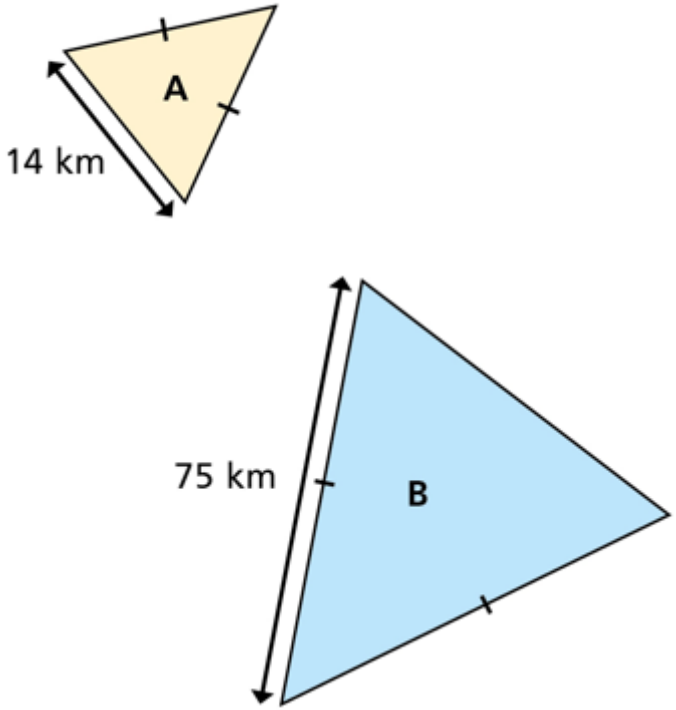



b) Can you label the missing two sides?

10) Triangle A has been enlarged by a scale factor of 5.

Triangle B is the enlarged triangle.

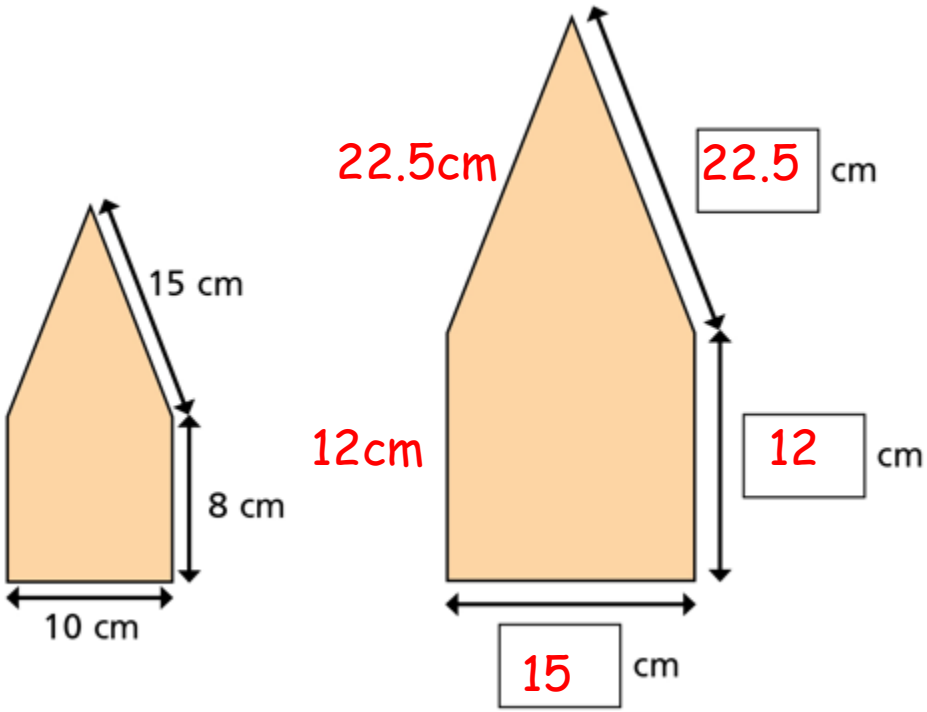
Find the perimeter of each triangle.



# DIVE DEEPER 3 - ANSWERS

9) The shape has been enlarged by a scale factor of $1\frac{1}{2}$.

a) Fill in the dimensions of the new shape.




b) Can you label the missing two sides?

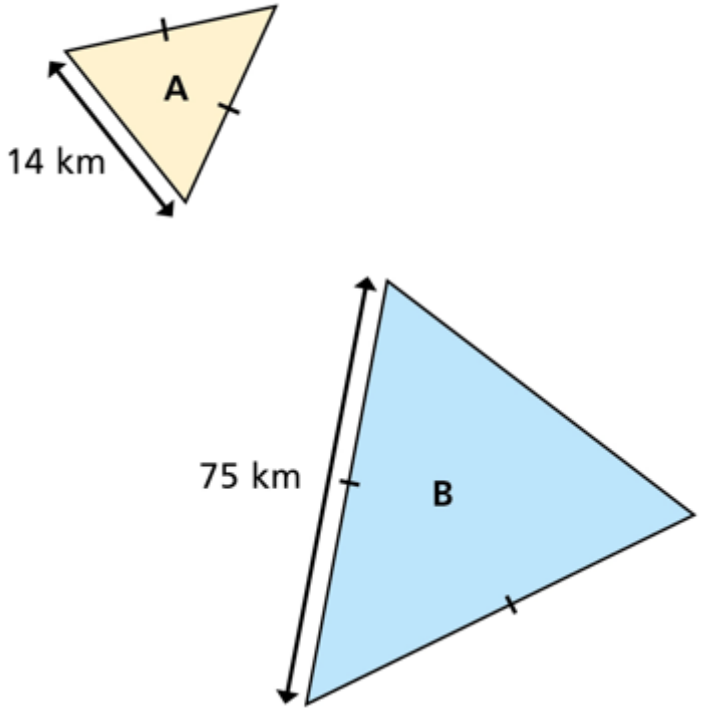
10) Triangle A has been enlarged by a scale factor of 5.

Triangle B is the enlarged triangle.

Find the perimeter of each triangle.

A = 44km

B = 220km



# SELF-ASSESSMENT

- Some will even be able to explain what happens to the area of enlarged shapes
- Some will be able to enlarge by fractional amounts
- Most will be able to enlarge by different scale factors
- All will increase the size of a shape by a factor of 2