Reasoning and Problem Solving
Step 5: Using Scale Factors

National Curriculum Objectives:

Mathematics Year 6: (6R3) Solve problems involving similar shapes where the scale factor is known or can be found

Differentiation:

Questions 1, 4 and 7 (Problem Solving)
Developing Find the perimeter of the original shape using the given scale factor. Involving whole numbers only.
Expected Find the perimeter of the original shape using the given scale factor. Involving whole numbers and decimals to one decimal place.
Greater Depth Find the perimeter of the original shape using the given scale factor. Involving decimals to two decimal places.

Questions 2, 5 and 8 (Reasoning)
Developing Explain if a given statement is correct or not. Involving whole numbers only.
Expected Explain if a given statement is correct or not. Involving whole numbers and decimals to one decimal place.
Greater Depth Explain if a given statement is correct or not. Involving decimals to two decimal places and some scaled factors can increase by a half.

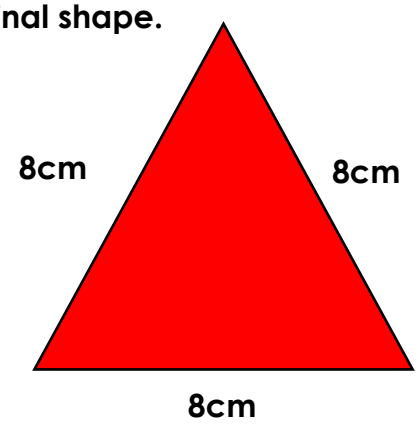
Questions 3, 6 and 9 (Problem Solving)
Developing Identify the measurements of the original shape using the given scale factor. Involving whole numbers only.
Expected Identify the measurements of the original shape using the given scale factor. Involving whole numbers and decimals to one decimal place.
Greater Depth Identify the measurements of the original shape using the given scale factor. Involving whole numbers and decimals and some scaled factors can increase by a half.

More Year 6 Ratio resources.

Did you like this resource? Don't forget to review it on our website.

Using Scale Factors

1a. This shape has been enlarged by a scale factor of 4. Find the perimeter of the original shape.



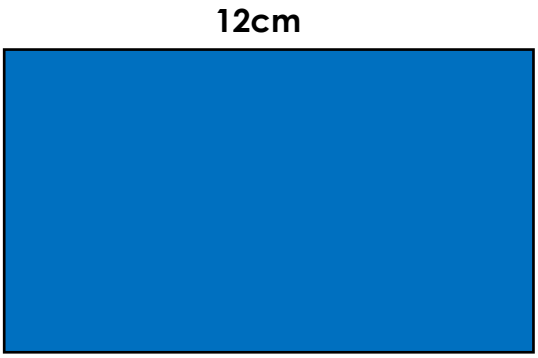
D

Not to scale

PS

Using Scale Factors

1b. This shape has been enlarged by a scale factor of 3. Find the perimeter of the original shape.



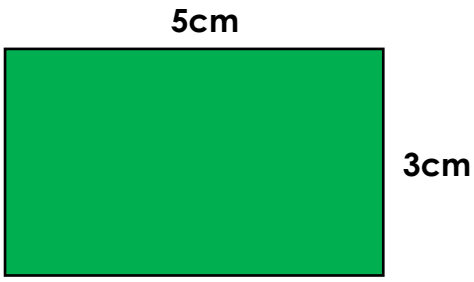
D

Not to scale

PS

2a. Sarah says,

If I enlarge the shape by a scale factor of 2, the new perimeter will be 48cm.



Is she correct? Explain your answer.

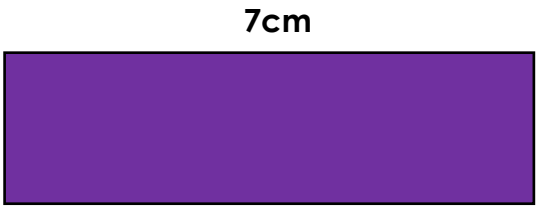
D

Not to scale

R

2b. Laurie says,

If I enlarge the shape by a scale factor of 3, the new perimeter will be 54cm.



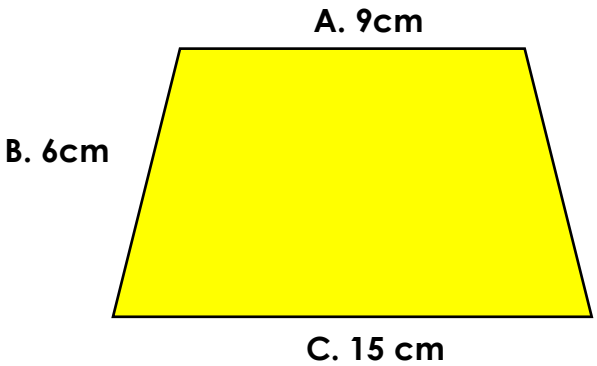
Is he correct? Explain your answer.

D

Not to scale

R

3a. This shape was enlarged by a scale factor of three.



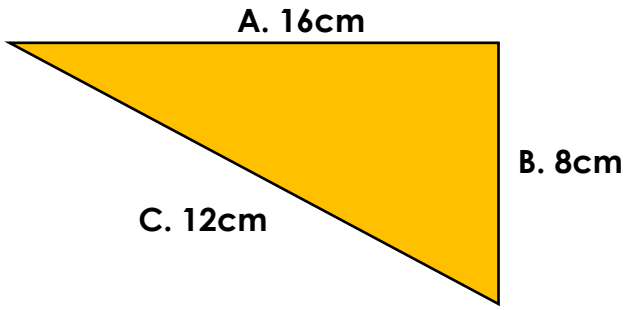
What were the measurements of the original shape?

D

Not to scale

PS

3b. This triangle was enlarged by a scale factor of four.



What were the measurements of the original triangle?

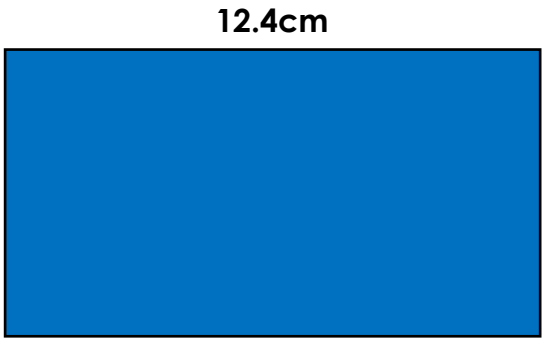
D

Not to scale

PS

Using Scale Factors

4a. This shape has been enlarged by a scale factor of 4. Find the perimeter of the original shape.



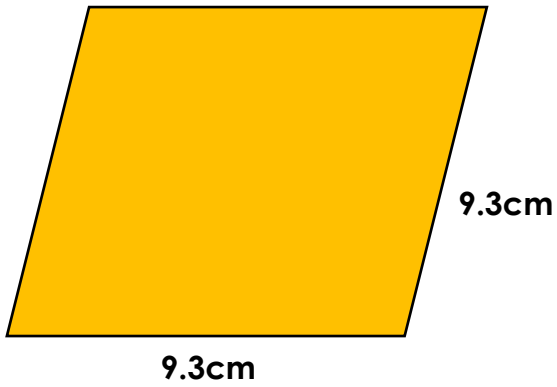
E

Not to scale

PS

Using Scale Factors

4b. This shape has been enlarged by a scale factor of 3. Find the perimeter of the original shape.



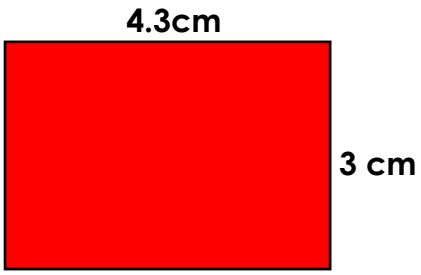
E

Not to scale

PS

5a. Mohammad says,

If I enlarge the shape by a scale factor of 4, the new perimeter will be 58.4cm.



Is he correct? Explain your answer.

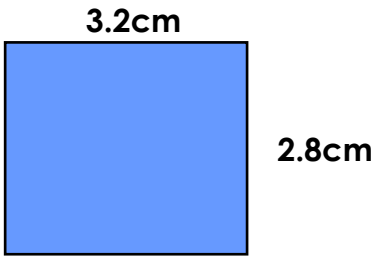
E

Not to scale

R

5b. Ciara says,

If I enlarge the shape by a scale factor of 4, the new perimeter would be 60cm.



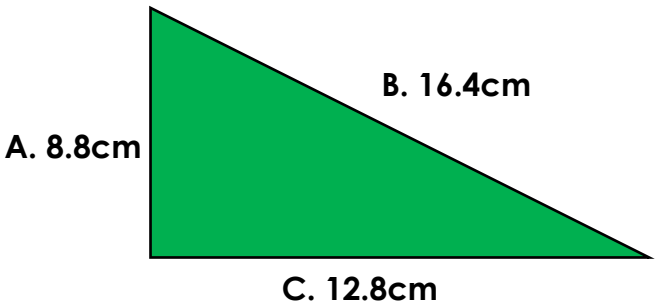
Is she correct? Explain your answer.

E

Not to scale

R

6a. This triangle was enlarged by a scale factor of four.



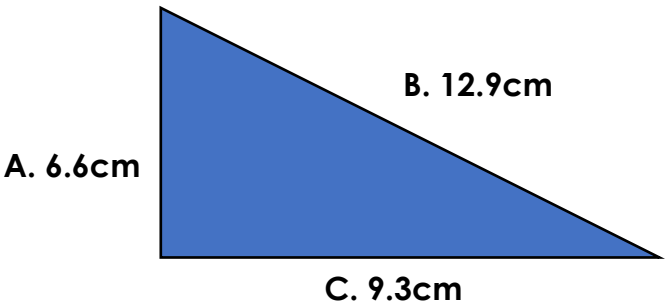
What were the measurements of the original triangle?

E

Not to scale

PS

6b. This triangle was enlarged by a scale factor of three.



What were the measurements of the original triangle?

E

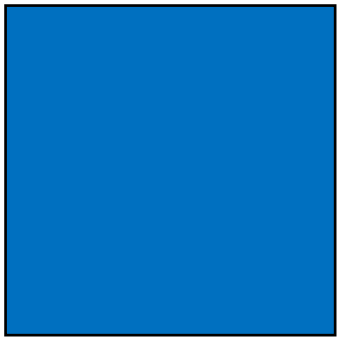
Not to scale

PS

Using Scale Factors

7a. This square has been enlarged by a scale factor of 4. Find the perimeter of the original shape.

12.08cm



Not to scale

PS

Using Scale Factors

7b. This shape has been enlarged by a scale factor of 3. Find the perimeter of the original shape.

9.63cm

7.35cm

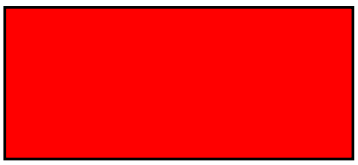
Not to scale

PS

8a. Ashleigh says,

If I enlarge the shape by a scale factor of 3.5, the new area will be 112.7cm².

4.6cm



2cm

Is she correct? Explain your answer.

Not to scale

R

8b. Roberto says,

If I enlarge the shape by a scale factor of 2.5, the new area will be 50.88cm².

4.24cm

3cm

Is he correct? Explain your answer.

Not to scale

PS

9a. This shape was enlarged by a scale factor of 2.5.

A. 10cm

B. 5cm

C. 7.5cm

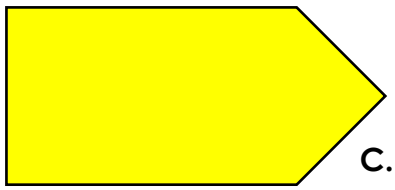
What were the measurements of the original shape?

Not to scale

PS

9b. This shape was enlarged by a scale factor of 1.5.

A. 6cm



B. 4.5cm

C. 3cm

What were the measurements of the original triangle?

Not to scale

R

Reasoning and Problem Solving Using Scale Factors

Developing

1a. 6cm

2a. No because the perimeter of the original shape is 16cm. The new perimeter would be 32cm.

3a. A: 3cm, B: 2cm, C: 5cm

Expected

4a. 10.6cm

5a. Yes because the perimeter of the original shape is 14.6cm. 14.6 x 4 = 58.4cm

6a. A: 2.2cm, B: 4.1cm, C: 3.2cm

Greater Depth

7a. 12.08cm

8a. Yes because the sides increase to 16.1cm and 7cm. 16.1cm x 7cm = 112.7cm²

9a. A: 4cm, B: 2cm, C: 3cm

Reasoning and Problem Solving Using Scale Factors

Developing

1b. 12cm

2b. Yes because the perimeter of the original shape is 18cm. The new perimeter would be 54cm.

3b. A: 4cm, B: 2cm,C: 3cm

Expected

4b. 12.4cm

5b. No because the perimeter of the original shape is 12cm. 12 x 4 = 48cm not 60cm. That is a scale factor of 5.

6b. A: 2.2cm, B: 4.3cm, C: 3.1cm

Greater Depth

7b. 11.32cm

8b. No because the sides increase to 10.6cm and 7.5cm. 10.6 x 7.5 = 79.5cm² not 50.88cm².

9b. A: 4cm, B: 3cm, C: 2cm