

Enlargement

Starter

1. **(Review of last lesson)** A cylinder has a height of 15 cm and its volume is $135\pi \text{ cm}^3$. Calculate its radius.

Working: *Substitute into $V = \pi r^2 h$:* $\pi r^2 \times 15 = 135\pi$
Divide by 15π : $r^2 = \frac{135\pi}{15\pi} = 9$
 $r = \sqrt{9} = 3$

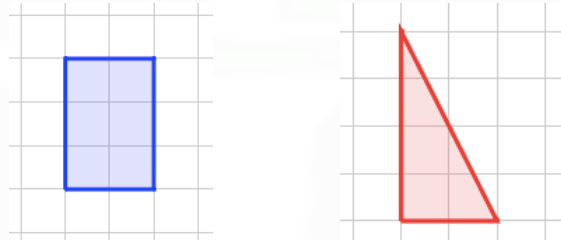
The radius of the cylinder is 3 cm.

2. **(Review of last lesson)** A cylindrical cup has radius 2.5 cm and height 12 cm. The cup is to be painted on its outside. What is the area to be painted? Give your answer to 3 s.f..

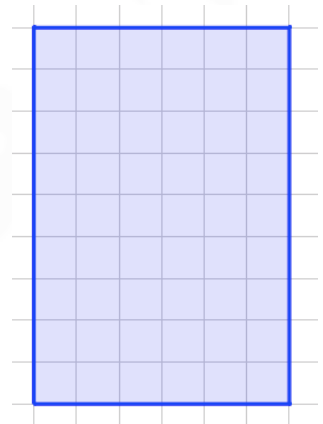
Working: The cup is open at the top so the formula needs to change — there is only one πr^2 .
So $SA = \pi r^2 + 2\pi rh$: $SA = \pi \times 2.5^2 + 2\pi \times 2.5 \times 12$
 $= 6.25\pi + 60\pi$
 $= 208$

The area to be painted is 208 cm².

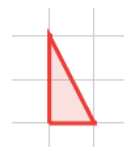
3. (a) Enlarge the **rectangle** by a length factor of 3.
 (b) Enlarge the right-angled **triangle** by a length factor of $\frac{1}{2}$.



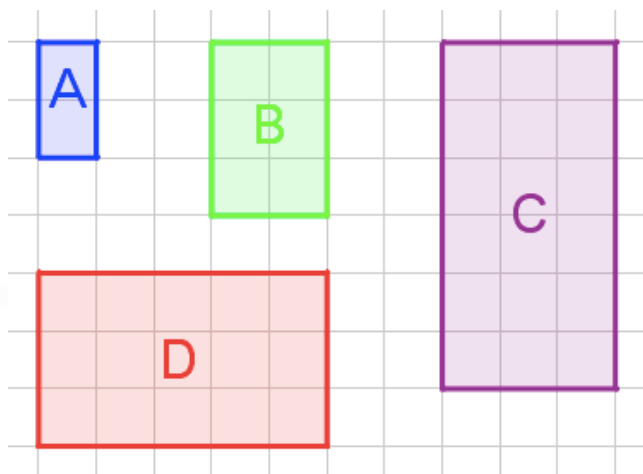
Working: (a) Original rectangle is 2 by 3
 Length factor is 3
 Multiply lengths by 3
 Enlarged rectangle is 6 by 9



(b) Original triangle: base is 2 height is 4
 Length factor is $\frac{1}{2}$
 Multiply lengths by $\frac{1}{2}$
 Enlarged triangle: base is 1 height is 2



E.g. 1 Decide whether rectangles **B**, **C** and **D** are enlargements of rectangle **A**.



Working:

Rectangle A: shortest side = 1 longest side = 2

Rectangle B

Shortest side = 2 this has been doubled from A

If the longest side of A is doubled, it would be 4

But the longest side of B is 3 — so **rectangle B is not an enlargement of A**

Rectangle C

Shortest side = 3 this has been multiplied by 3 from A

If the longest side of A is multiplied by 3, it would be 6

Since the longest side of C is 6, **rectangle C is an enlargement of A**

Rectangle D

Shortest side = 2 this has been doubled from A

If the longest side of A is doubled, it would be 4

Since the longest side of D is 5, **rectangle D is not an enlargement of A**

Video 1:

[Enlargements \(without centre\)](#)

Video 2:

[Enlargements \(without centre\)](#)

[Solutions to Starter and E.g.s](#)

Exercise

p132 Ex 19.1 Qu 1-6, 7ac, 8ac, 9, 10