

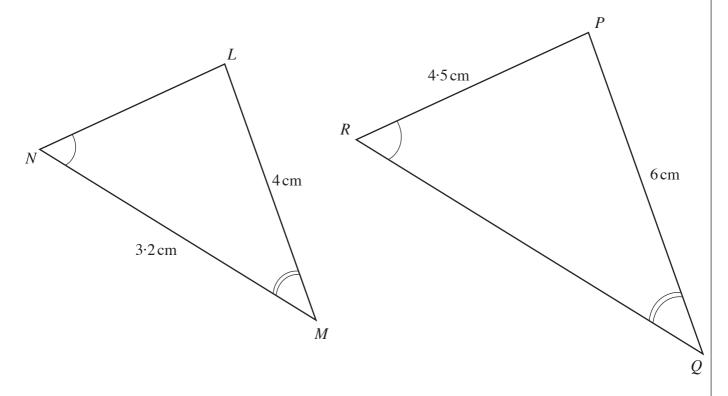
Aberdare Community School Mathematics Department

WJEC GCSE **Higher – Non Calculator**Shape

Similar shapes

Name:	
Set:	
Date:	
Teacher:	

16. Triangles LMN and PQR are similar, with $L\widehat{M}N = P\widehat{Q}R$, $M\widehat{N}L = Q\widehat{R}P$, LM = 4 cm, MN = 3.2 cm, PR = 4.5 cm and PQ = 6 cm.



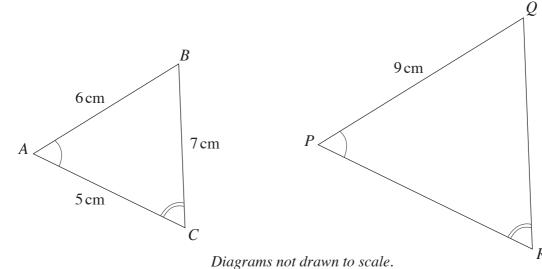
Diagrams not drawn to scale.

Showing all your working, find the length of

(a)	RQ,
	[2]
(b)	LN.
	[2]

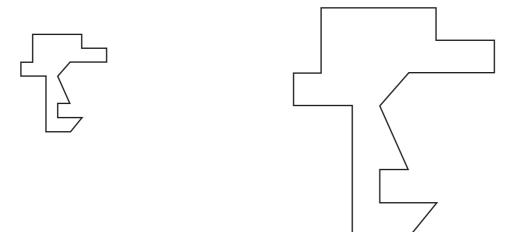
(185-04)

16. Triangles ABC and PQR are similar, with $\overrightarrow{BAC} = \overrightarrow{QPR}$, $\overrightarrow{BCA} = \overrightarrow{QRP}$, AB = 6 cm, BC = 7 cm, AC = 5 cm and PQ = 9 cm.



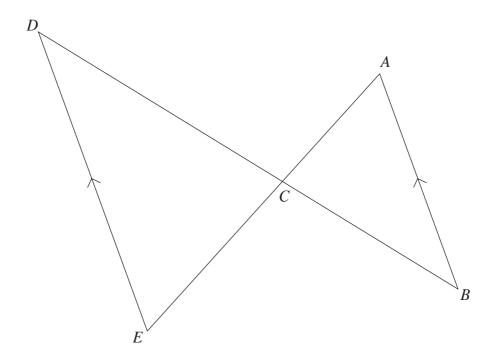
Showing all your working, find the length of QR.

22. The diagram shows two **similar** shapes.



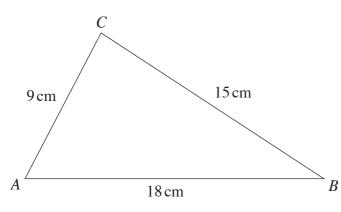
The area of the larger shape is 360cm^2 . Find the area of the smaller shape.	smaller snape.

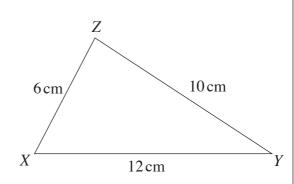
- **16.** In the diagram, AB is parallel to DE.
 - (a) Show that triangles ABC and EDC are similar.



	[2]
(b) The lengths $AP = 2$ on $PC =$	10 1 DC 15
(U) The lengths $AD = 00011$, $DC = 00000$	From and $DC = 15$ cm.
(b) The lengths $AB = 8$ cm, $BC =$	From and $DC = 15$ cm.
Calculate the length of DF	From and $DC = 15$ cm.
Calculate the length of DE .	From and $DC = 15$ cm.
(b) The lengths $AB = 8 \text{cm}$, $BC = \text{Calculate}$ the length of DE .	From and $DC = 15$ cm.
Calculate the length of DE .	From and $DC = 15$ cm.
Calculate the length of DE .	From and $DC = 15$ cm.
Calculate the length of DE .	From and $DC = 15$ cm.
Calculate the length of DE .	From and $DC = 15$ cm.
Calculate the length of DE .	From and $DC = 15$ cm.
Calculate the length of DE .	From and $DC = 15$ cm.
Calculate the length of DE .	From and $DC = 15$ cm.
Calculate the length of DE .	From and $DC = 15$ cm.
Calculate the length of DE.	From and $DC = 15$ cm.
Calculate the length of DE .	From and $DC = 15$ cm.
Calculate the length of DE.	From and $DC = 15$ cm.
Calculate the length of DE .	From and $DC = 15$ cm.
Calculate the length of <i>DE</i> .	From and $DC = 15$ cm.
Calculate the length of DE.	From and $DC = 15$ cm.
Calculate the length of DE.	From and $DC = 15$ cm.
Calculate the length of DE.	From and $DC = 15$ cm.
Calculate the length of DE.	From and $DC = 15$ cm.
Calculate the length of DE.	From and $DC = 15$ cm.
Calculate the length of DE.	From and $DC = 15$ cm.
Calculate the length of DE.	From and DC = 15cm.
Calculate the length of DE.	10cm and <i>DC</i> = 15cm.

16. (a) Explain clearly why triangles ABC and XYZ are similar.

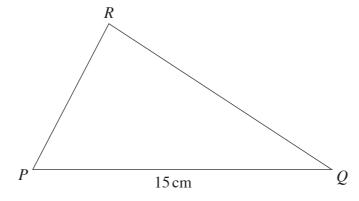




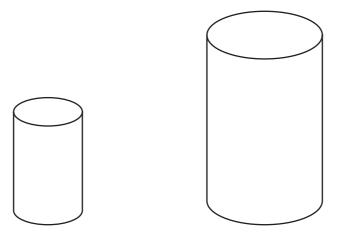
Diagrams not drawn to scale.

[2]

(b) Triangle PQR, in which PQ = 15 cm, is similar to both triangles ABC and XYZ. Calculate the length of QR.

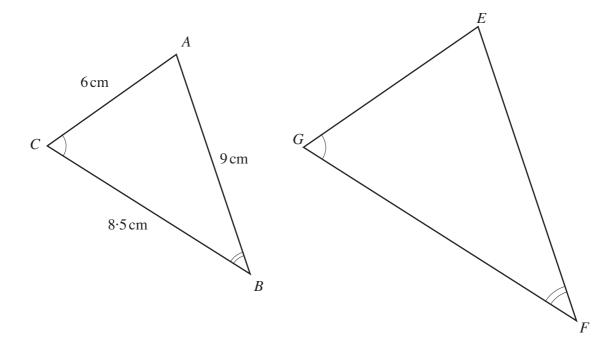


19. The diagram shows two similar cylinders.



The areas of the ends of the smaller and larger cylinders are 16 cm ² and 100 cm ² respectively. Given that the height of the larger cylinder is 12·5 cm, find the height of the smaller cylinder.
[3]

14. (a) Triangles ABC and EFG are similar. Their corresponding sides are in the ratio 2:3. Calculate the length of EF.



[2]

(b) The diagram shows two shapes.

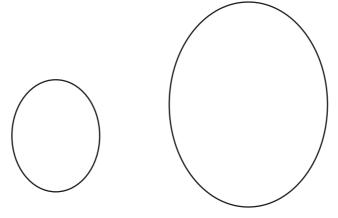


Diagram not drawn to scale.

The larger shape is an enlargement of the smaller shape with a scale factor 3. The are the smaller shape is $5\mathrm{cm}^2$. Calculate the area of the larger shape.	
	[3]

Turn over.

12. The diagram shows two similar triangles, *ABC* and *PQR*.

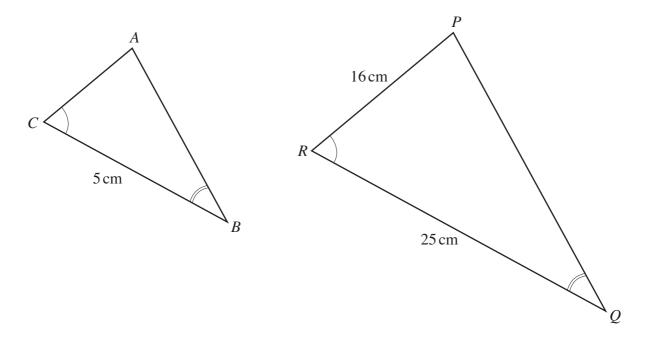
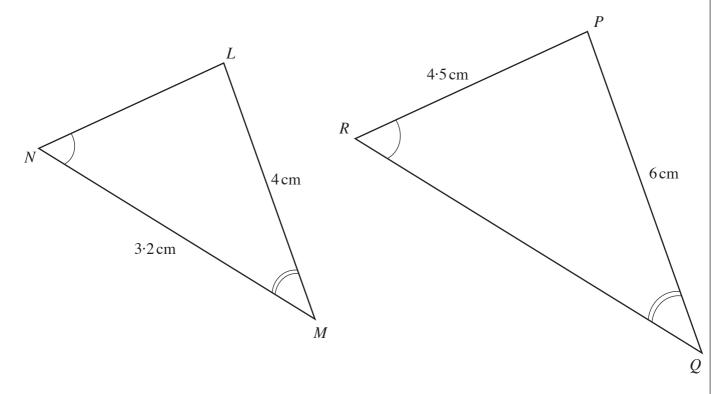


Diagram not drawn to scale.

Given that $CB = 5 \text{ cm}$, $RQ = 25 \text{ cm}$ and $PR = 16 \text{ cm}$, find the length of AC .
[2

(185-09) **Turn over.**

15. Triangles LMN and PQR are similar, with $L\widehat{M}N = P\widehat{Q}R$, $M\widehat{N}L = Q\widehat{R}P$, LM = 4 cm, MN = 3.2 cm, PR = 4.5 cm and PQ = 6 cm.



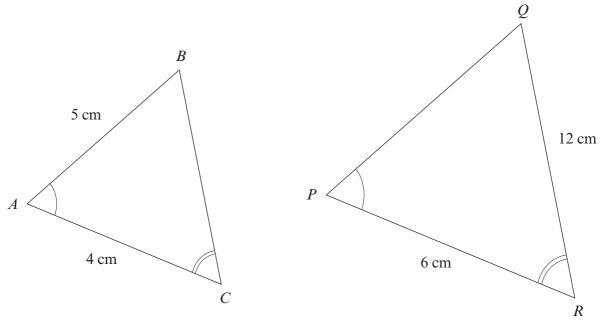
Diagrams not drawn to scale.

Showing all your working, find the length of

(a)	RQ,	
		[2]
(b)	LN.	[2]
		[2]

(185-04)

14. Triangles ABC and PQR are similar, with BAC = QPR, BCA = QRP, AB = 5 cm, AC = 4 cm, PR = 6 cm and RQ = 12 cm.



Diagrams not drawn to scale.

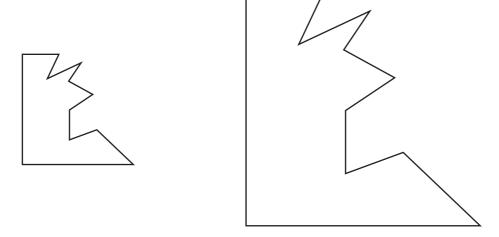
Showing all your working, find

(a) the length of QP,

[2]

(b) the length of BC.

16. The diagram shows two **similar** shapes.



Each length on the The area of the lar	larger shape is thre ger shape is 90 cm ²	ee times the correspondence times the correspondence to the correspondence to the correspondence to the correspondence times times the correspondence times times times the correspondence times tim	ponding length on the smaller shape.	the smaller shap	pe.

13. The diagram shows two similar triangular prisms.

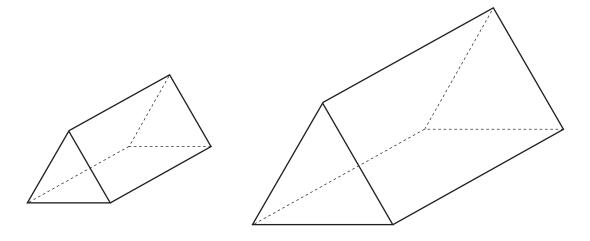


Diagram not drawn to scale

The areas of the ends of the smaller and larger prisms are $16 \mathrm{cm^2}$ and $25 \mathrm{cm^2}$ respectively. Given that the length of the larger prism is $7.5 \mathrm{cm}$, find the length of the smaller prism.		
[3]		

(185-13)

11. (a) The diagram shows two similar triangles.

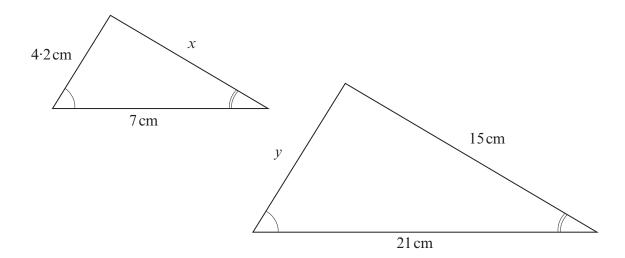


Diagram not drawn to scale

Calculate the lengths of the sides marked x and y.			
χ	<i>:</i> = cm	<i>y</i> = cm	[4]

(b) The diagram shows two similar shapes.

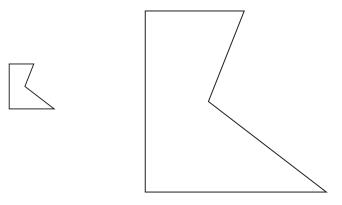


Diagram not drawn to scale

C	
Each length on the larger shape is four times the corresponding length on the shape. The area of the smaller shape is 3.5 cm ² . Find the area of the larger shape	e smaller oe.
Area of larger shape cm ²	[3]

(0185-13)

Examiner only

16. The points A and B lie on the circumference of a circle with centre O. The straight lines PAQ and RBQ are tangents to the circle.

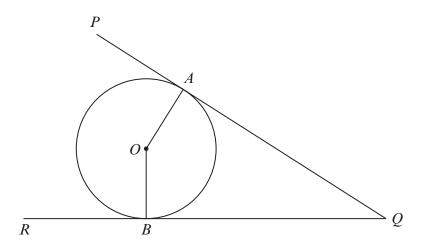


Diagram not drawn to scale

You are given that $A\widehat{Q}B = 2x$, where x is measured in degrees.

Write down the size of $A\widehat{O}Q$ in terms of x.

Give reasons in your answer.

[4]

999999999	9999		
Fifteen small ceramic pebbles are arranged in a straight row. Each pebble touches the next pebble in the row. All of the pebbles are identical in size and shape. Each of the pebbles has a volume of 2 cm ³ .			
A similar larger ceramic pebble is made with a volume of 54 cm ³ . A straight row of these pebbles is made in the same way as with the	e smaller pebbles.		
How many of these larger pebbles will be needed to form a straight row equal in length to the row of 15 smaller pebbles? You must show all your working.			