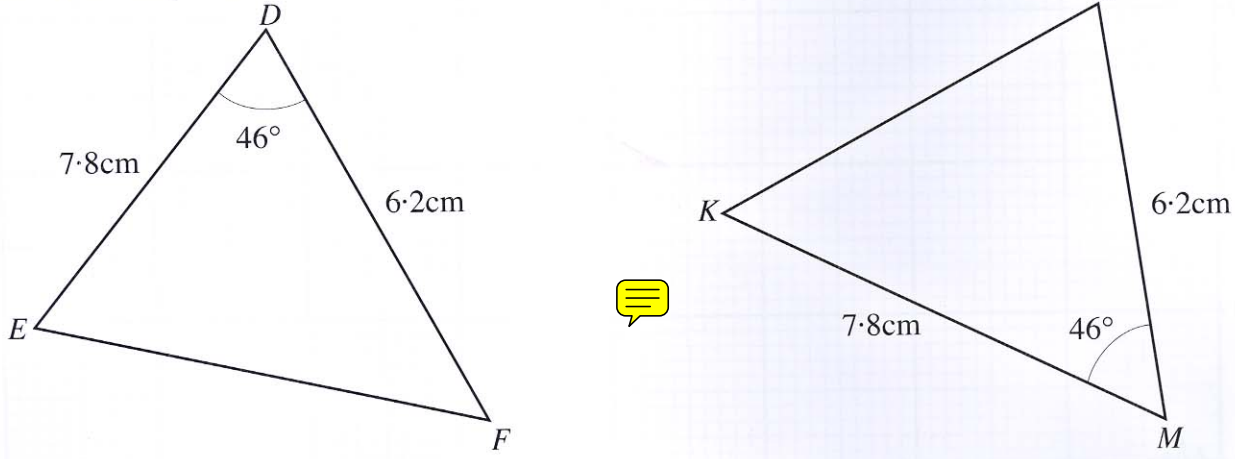
15. Two triangles are shown below.



Diagrams not drawn to scale.

(a) Explain why the two triangles are congruent by giving the case of congruency.

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.....

[1]

(b) State which angle in triangle *KLM* is equal to $\hat{DFE}$.

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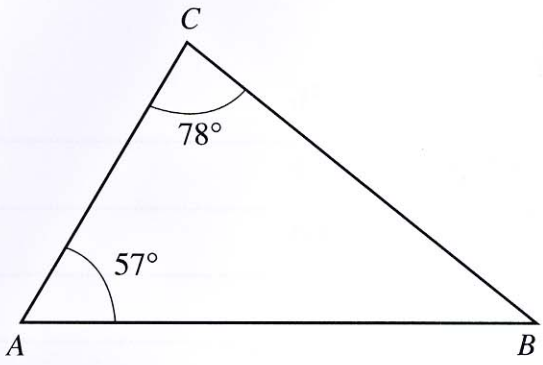
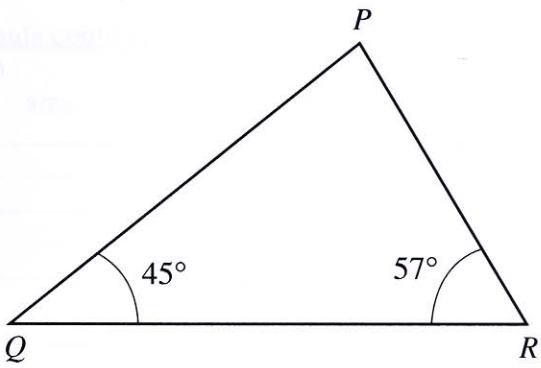
[1]

9. *(a)* Explain clearly why the following triangles are similar.

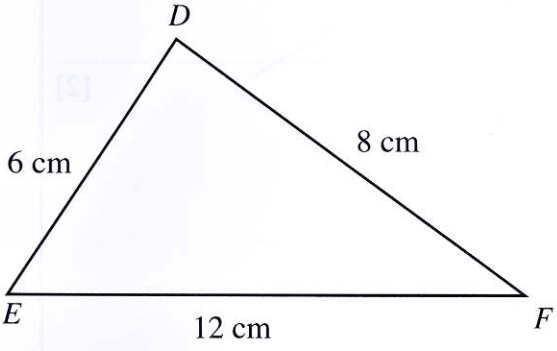


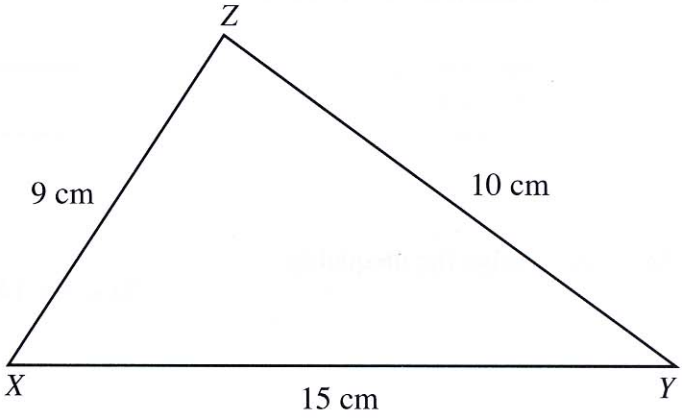


Diagrams not drawn to scale.

[1]

(b) Explain clearly why the following triangles are **not** similar.





Diagrams not drawn to scale.

[3]

12. In the diagram, PQ is parallel to ST, and the triangles PQR and TSR are similar.
The lengths $QR = 9$ cm, $PR = 12$ cm, $RT = 14{\cdot}4$ cm and $ST = 13{\cdot}2$ cm.

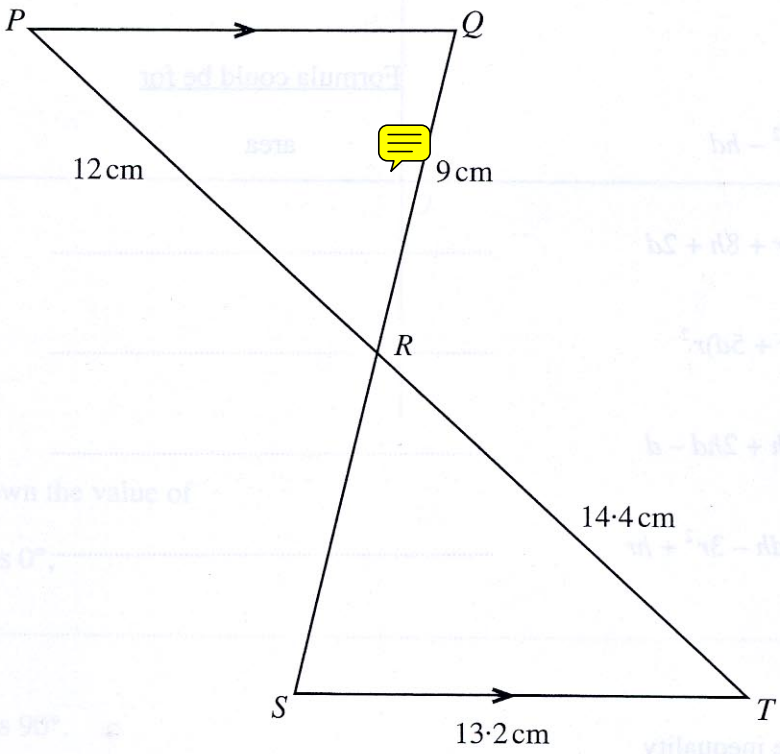


Diagram not drawn to scale.

Showing all your working, find the length of

(a) *RS,*

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[2]

(b) *PQ.*

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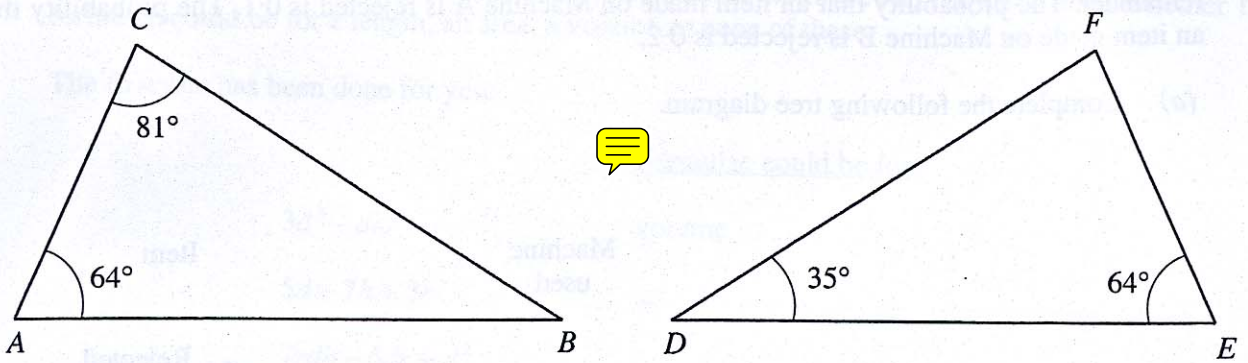
[2]

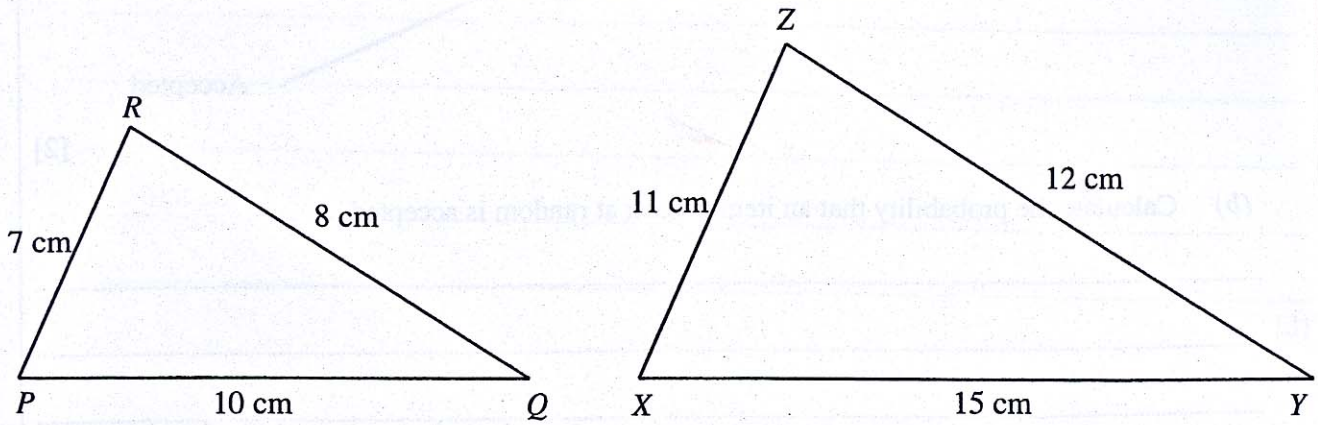
8. *(a)* Explain clearly why triangles *ABC* and *DEF* are similar.



Diagrams not drawn to scale.

[1]

(b) Explain clearly why triangles *PQR* and *XYZ* are **not** similar.



Diagrams not drawn to scale.

[3]

10.

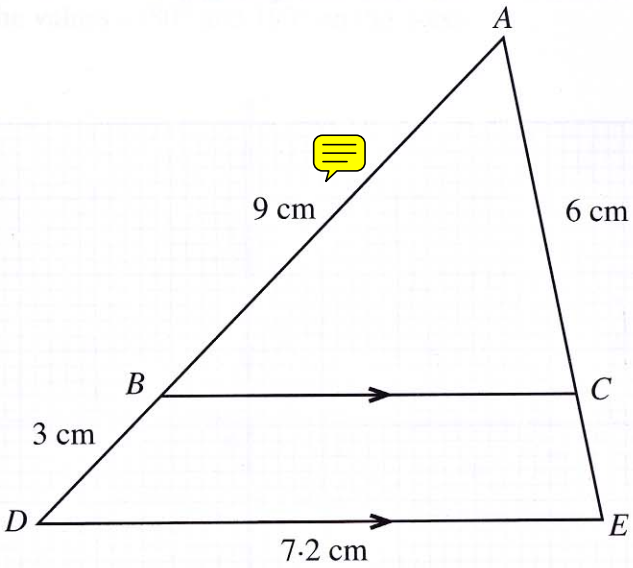


Diagram not drawn to scale.

In the diagram, BC is parallel to DE, and the triangles ABC and ADE are similar.
$AB = 9$ cm, $AC = 6$ cm, $BD = 3$ cm and $DE = 7{\cdot}2$ cm.

Showing all your working, find the length of

(a) BC,

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[2]

(b) AE.

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[2]

11.

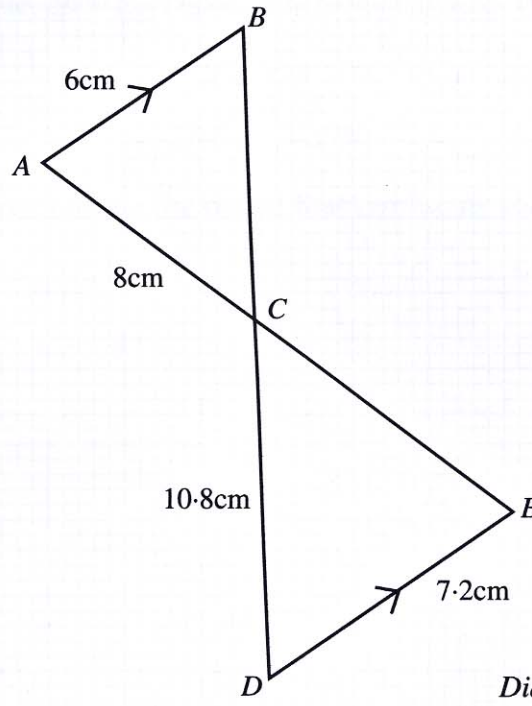

Diagram not drawn to scale.

In the diagram, AB is parallel to DE, and the triangles ABC and EDC are similar.
$AB = 6\,\text{cm}$, $AC = 8\,\text{cm}$, $DE = 7{\cdot}2\,\text{cm}$ and $CD = 10{\cdot}8\,\text{cm}$.

Showing all your working, find the length of

(a) CE,

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[2]

(b) BC.

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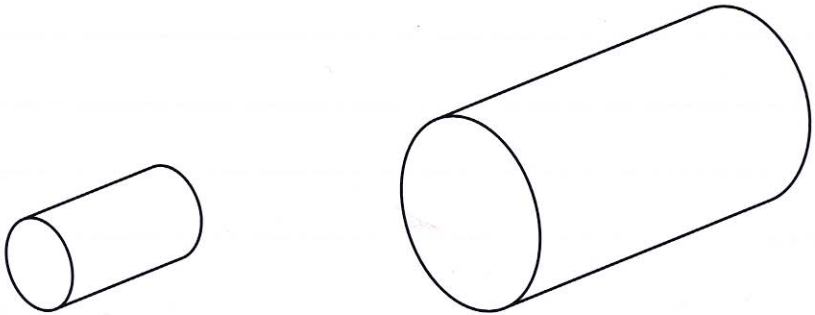
[2]

14. The diagram shows two **similar** cylinders.
The radius of the smaller cylinder is half the radius of the larger cylinder.
The volume of the smaller cylinder is 200 cm^3.



Diagrams not drawn to scale.

Find the volume of the larger cylinder.

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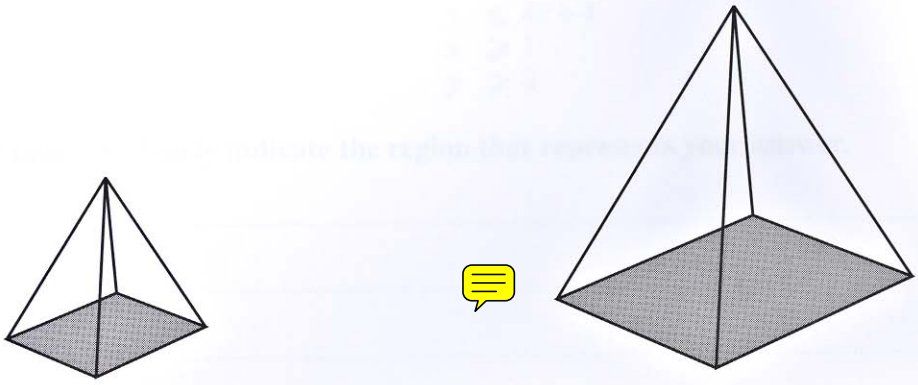
[2]

18. The diagram shows two squared-based pyramids that are **similar**.



Diagrams not drawn to scale.

The smaller square-based pyramid has a base area of $30\,cm^2$ and a perpendicular height of 6·4 cm.

(a) Find the volume of the smaller square based pyramid.

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[2]

(b) The area of the base of the **similar** large square-based pyramid is $120\,cm^2$.

(i) Find the perpendicular height of the larger square-based pyramid.

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[2]

(ii) Find the volume of the larger square-based pyramid.

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[3]

15. A solid metal cone has a height of 80 cm and radius of 30 cm. A smaller cone of height 20 cm is obtained by cutting off the top of the original cone.

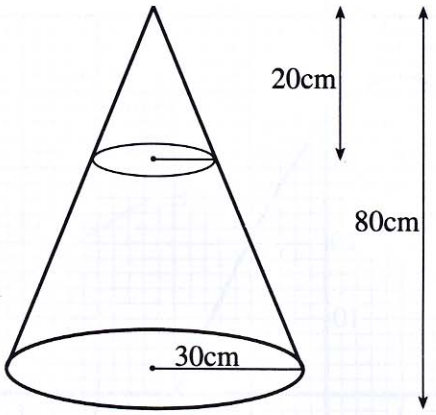

Diagram not drawn to scale.

(a) Calculate the volume of the smaller cone.

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[3]

(b) The smaller cone is melted down and recast as 20 identical cylinders. The length of each cylinder is 1·8 cm. Calculate the radius of each cylinder, giving your answer to an appropriate degree of accuracy.

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[4]