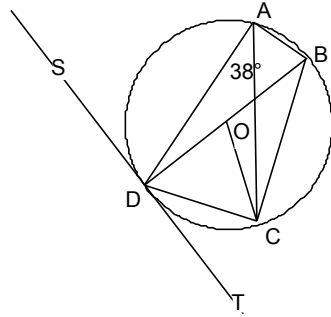


## Shape and Space Revision 1

- 1) In the diagram, O is the centre of the circle, ST is a tangent, and  $AD = AC$ . Find the size of:

(a)  $\hat{D}OC$  (b)  $\hat{A}BC$  (c)  $\hat{A}DS$

Give reasons for each step in your working.



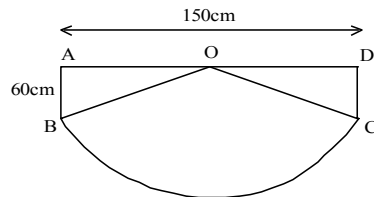
- 2) (a) Find the size of angle AOB using trigonometry.

(b) Find angle BOC

(c) Find OB

(d) Find the perimeter of the whole shape.

(e) Find the area of the whole shape



- 3) Give your answers to parts (a), (b) and (d) of this question in terms of  $\pi$ .

(a) A sphere has a radius of 6cm. Find the volume and surface area of the sphere.

(b) A cone has a base radius of 6cm and a height of 8cm. Find the volume of the cone.

(c) Find the slant height of the cone

(d) Find the curved surface area of the cone.

- 4) A large cylindrical drum used for collecting rainwater has a radius of 40cm. It can hold 700 litres of water. (1 litre = 1000cm<sup>3</sup>)

(a) What is the area of the base of this drum (to 3sf)?

(b) What is the curved surface area of the drum?

## Shape and Space Revision 2

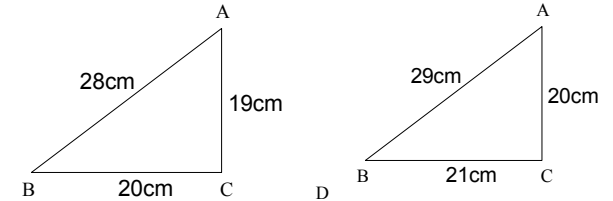
- 1) Model houses come in two sizes, large and small, which are mathematically similar. The large house is 40cm long and 15cm high. If the small house is 24cm long,

(a) Write the ratio of the lengths of the houses in its simplest form, and find the height of the real house.

(b) If the surface area of the small house is 2400cm<sup>2</sup>, find the surface area of the large house

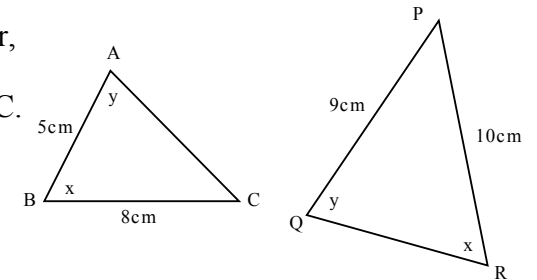
(c) If the volume of the large house is 1800cm<sup>3</sup>; find the volume of the small house.

- 2) These triangles are not drawn accurately. Use Pythagoras' Theorem to decide which one has a right angle at C



- 3) A sphere has a volume of 1 litre. Find the radius of the sphere in cm.

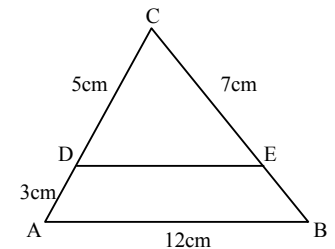
- 4) These two triangles are similar, with equal angles as shown. Find the lengths of QR and AC.



- 5) In the diagram on the right,

(a) Find the length of DE

(b) Find the length of EB

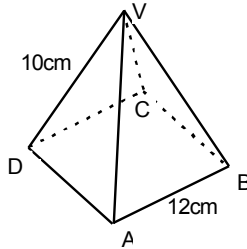


- 6) In a triangle PQR,  $\angle PQR = 90^\circ$ ,  $\angle QPR = 40^\circ$  and  $QP = 10$ cm. Find the length of PR

### Shape and Space Revision 3

1) In the pyramid on the right, find

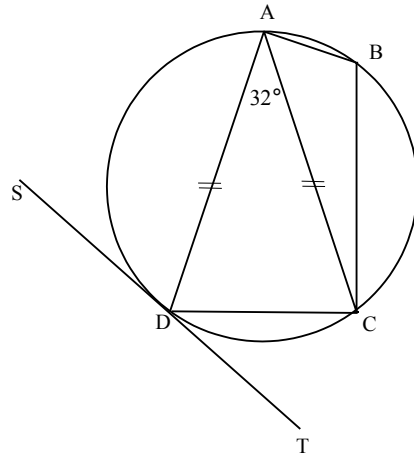
- BD
- the height of the pyramid
- the angle VDB



2) A ship sails from port A on a bearing of  $155^\circ$  for a distance of 90km to port B. It then sails from B on a bearing of  $040^\circ$  for 70km to port C. Draw a diagram of these journeys and find angle ABC. Use the cosine rule and/or sine rule to find how far, and on what bearing, the ship must sail in order to return from C to A.

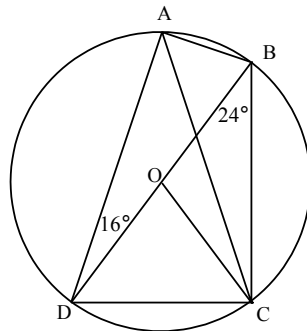
3) Triangle ABC has an area of  $20\text{cm}^2$ . If  $AB = 6\text{cm}$  and  $AC = 8\text{cm}$ , find the size of angle BAC.

- 4) In the diagram on the right, find, giving reasons for your answers:
- angle ABC
  - angle ASD



5) In the diagram on the right, find, giving reasons for your answers:

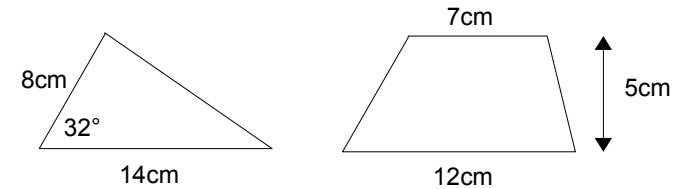
- angle DAC
- angle DOC
- angle ACO



### Shape and Space Revision 4

#### Areas

1) Find the area of these shapes:

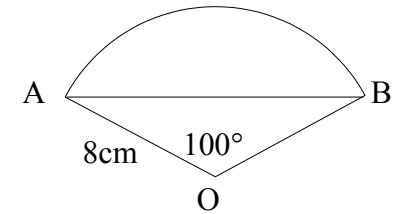


2) A rope 500m long is placed around the edge of a circular cricket pitch. What is the area of the pitch?

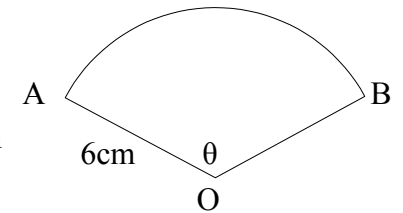
#### Sectors, arcs and chords

3) In the diagram on the right, find:

- the length of the arc AB
- the length of the chord AB
- the area of the sector OAB
- the area of the triangle OAB

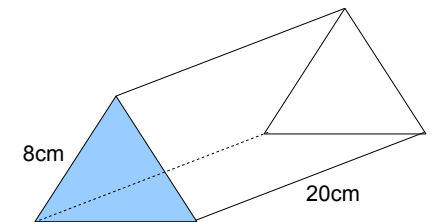


- 4) In the diagram on the right, find the angle  $\theta$  in each of the following cases:
- If the length of the arc AB is 8cm
  - If the length of the chord AB is 8cm
  - If the area of the sector OAB is  $50\text{cm}^2$



#### Volume of a prism

5) The cross-section of this prism is an equilateral triangle. Find the volume of the prism.



6) A cylindrical pipe has an internal radius of 6cm and is full of water. Find in litres the volume of water in 1 metre of this pipe.