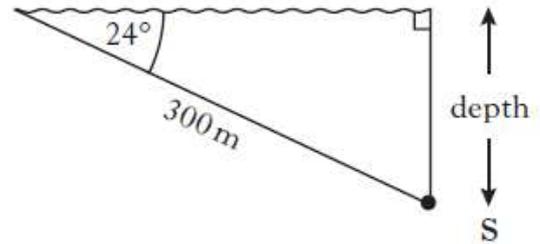
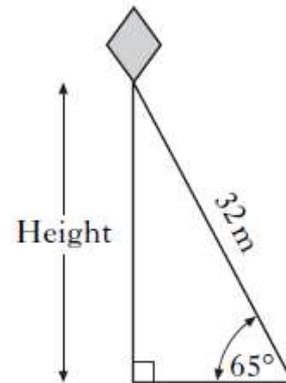


Trigonometry – SOHCAHTOA – Revision Exercise

- 1) A submarine, S, Dives for 300 metres at an angle of 24° to the surface.
Calculate the depth of the submarine as shown in the diagram.

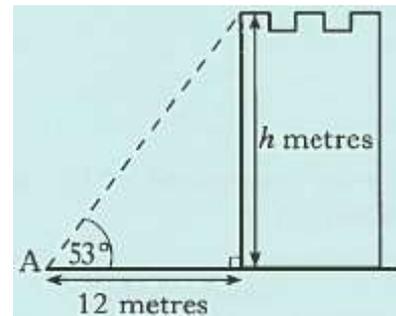


- 2) Katie is flying a kite.
She lets out 32 metres of string, pulled tight, at 65° to the ground.
Calculate the height of the kite as shown in the diagram.

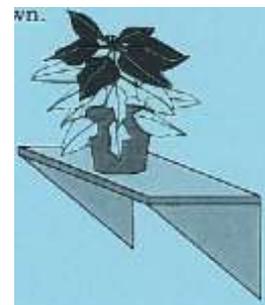
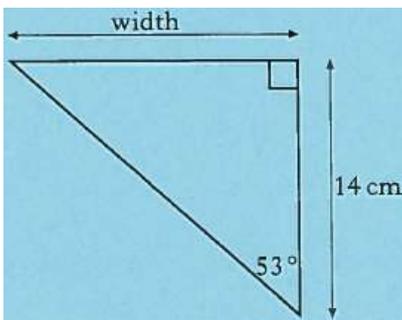


- 3) Point A is 12 metres from the bottom of a tower.
The angle of elevation from A to the top of the tower is 53° .

Calculate the height of the tower, h metres, correct to 1 decimal place.

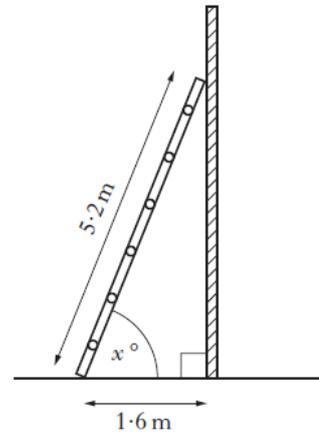


- 4) A rectangular shelf is supported by brackets as shown.
Each bracket is a right angled triangle.

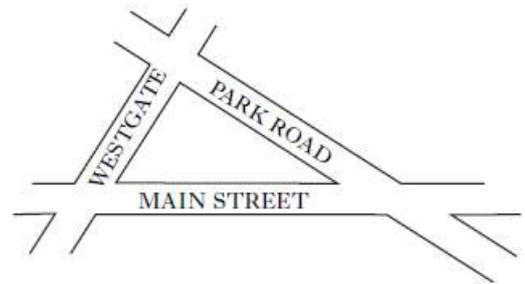


Calculate the width of the bracket. Give your answer correct to one decimal place.

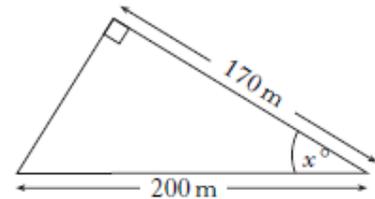
- 5) A ladder which is 5.2 metres long is placed against a wall.
The foot of the ladder is 1.6 metres from the wall.
The size of the angle between the ladder and the ground is x° .
Calculate x .



- 6) Three roads form a right angled triangle as shown in the diagram.



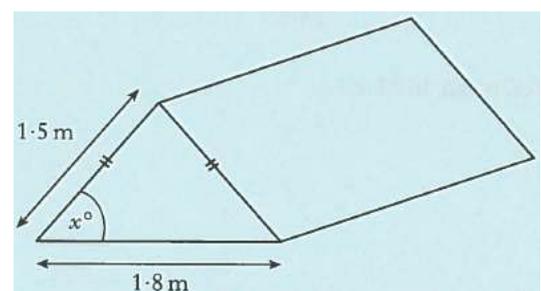
- Main Street is 200 metres long.
- Park Road is 170 metres long.
- The angle between Westgate and Park Road is 90° .



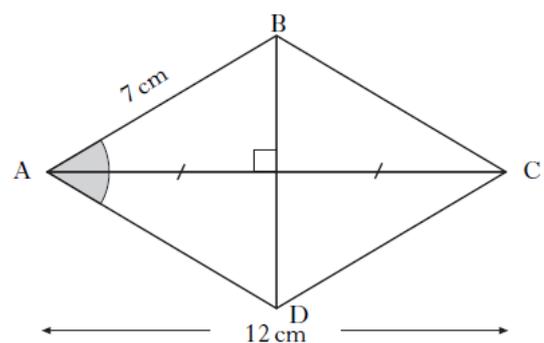
The size of the angle between Main Street and Park Road is x° .

Calculate x . Give your answer to one decimal place.

- 7) The front of the tent shown is an isosceles triangle.
The size of the angle between the side and the bottom of the tent is x° .
Calculate x .



- 8) ABCD is a rhombus.
Side AB is 7 centimetres and diagonal AC is 12 centimetres as shown.
Calculate the size of the shaded angle BAD.



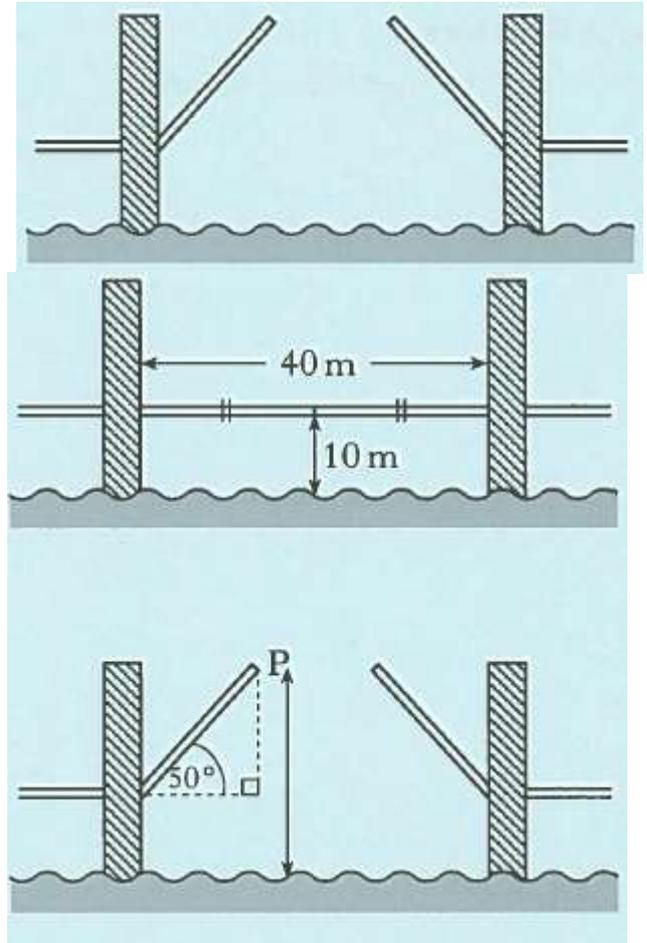
- 9) A road bridge can be raised in the centre to allow ships to pass through.

The movable sections of the bridge are:

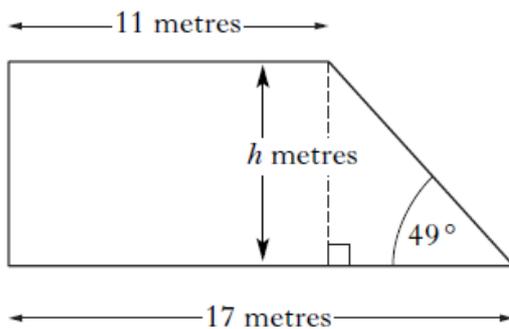
- 10 metres above the water level
- 40 metres long altogether.

The movable sections are raised through 50° to allow a ship to pass through.

Calculate the height of the point P above the water level.



- 10) Calculate the height, h metres, of the trapezium shown below.

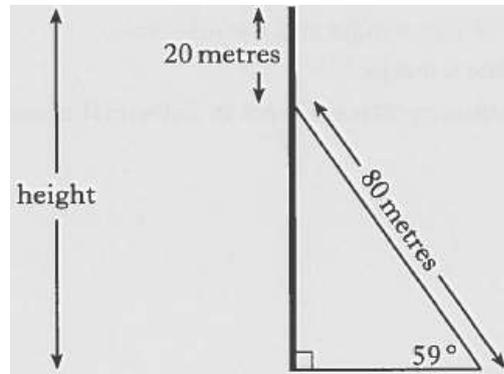
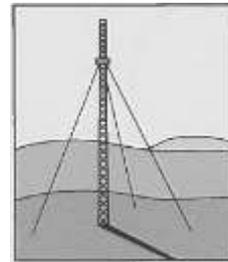


11) A television mast is supported by wires.

The diagram below shows one of the wires

which is 80 metres long.

The wire is attached to the mast 20 metres from the top and makes an angle of 59° with the ground.

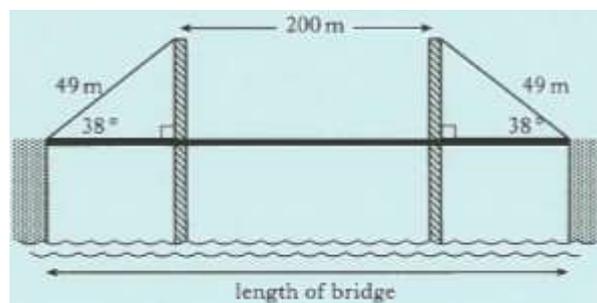


Calculate the height of the mast. Give your answer to the nearest metre.

12) The towers of a bridge are 200 metres apart.

Steel cables of length 49 metres are used to support the bridge at both ends.

The cables make an angle of 38° with the bridge.



Find the total length of the bridge.

ANSWERS

$$1) \quad \sin 24 = \frac{d}{300}$$
$$d = 300 \times \sin 24$$
$$d = 122 \text{ m}$$

$$2) \quad \sin 65 = \frac{H}{65}$$
$$H = 32 \times \sin 65$$
$$H = 29 \text{ m}$$

$$3) \quad \tan 53 = \frac{h}{12}$$
$$h = 12 \times \tan 53$$
$$h = 15 \cdot 9 \text{ m}$$

$$4) \quad \tan 53 = \frac{w}{14}$$
$$w = 14 \times \tan 53$$
$$w = 18 \cdot 6 \text{ cm}$$

$$5) \quad \cos x = \frac{1 \cdot 6}{5 \cdot 2}$$
$$\cos x = 0 \cdot 308$$
$$x = 72 \cdot 1^\circ$$

$$6) \quad \cos x = \frac{170}{200}$$
$$\cos x = 0 \cdot 85$$
$$x = 31 \cdot 8^\circ$$

$$7) \quad \cos x = \frac{0 \cdot 9}{1 \cdot 5}$$
$$\cos x = 0 \cdot 6$$
$$x = 53 \cdot 1^\circ$$

$$8) \quad \cos BAC = \frac{6}{7}$$
$$\cos BAC = 0.857$$
$$BAC = 31^\circ$$
$$BAD = 2 \times 31 = 62^\circ$$

$$9) \quad \tan 50 = \frac{h}{20}$$
$$h = 20 \times \tan 50$$
$$h = 23.8 \text{ m}$$

P is 33.8 m above the water.

$$10) \quad \tan 49 = \frac{h}{6}$$
$$h = 6 \times \tan 49$$
$$h = 6.9 \text{ m}$$

$$11) \quad \sin 59 = \frac{x}{80}$$
$$x = 80 \times \sin 59$$
$$x = 68.6 \text{ m}$$
$$\text{height} = 68.6 + 20 = 88.6 \text{ m}$$

$$12) \quad \cos 38 = \frac{x}{49}$$
$$x = 49 \times \cos 38$$
$$x = 38.6 \text{ m}$$
$$\text{length} = 38.6 + 200 + 38.6 = 277.2 \text{ m}$$