

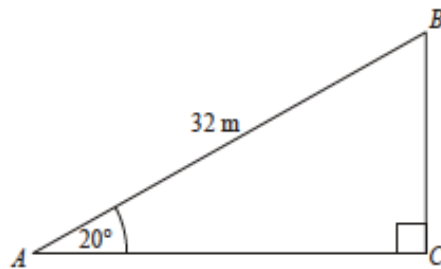
## Topic 6 Right-angled triangles (Post-TT) [45]

1.

The diagram shows a triangle  $ABC$ .

Angle  $A = 20^\circ$  and angle  $C = 90^\circ$

$AB = 32$  m



Not drawn accurately

Calculate the height  $BC$ .

(Total 3 marks)

2.

Work out  $2\sqrt{3}(\sqrt{3} + \sqrt{8})$

Give your answer in the form  $a + b\sqrt{6}$  where  $a$  and  $b$  are integers.

(Total 3 marks)

3.

Triangle  $ABC$  has perimeter 20 cm.

$AB = 7$  cm.

$BC = 4$  cm.

By calculation, deduce whether triangle  $ABC$  is a right-angled triangle.

(Total 4 marks)

4. **Non-calculator**

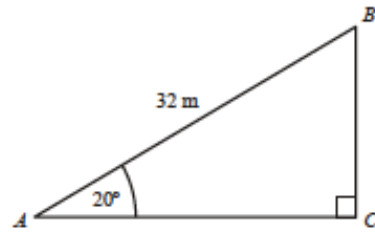
(a) State the exact value of  $\cos 45^\circ$ .

(b) Express the exact value of  $5 \times \sin 60^\circ \times \tan 30^\circ$  in terms of surds and simplify your answer.

(Total 4 marks)

5.

The diagram shows a triangle  $ABC$ .  
Angle  $A = 20^\circ$  and angle  $C = 90^\circ$   
 $AB = 32$  m



Not drawn accurately

Calculate the height  $BC$ .

(Total 3 marks)

6.

(a) By rationalising the denominator, simplify  $\frac{15}{\sqrt{5}}$

(2)

(b) Show that  $(\sqrt{3} + \sqrt{12})^2 = 27$

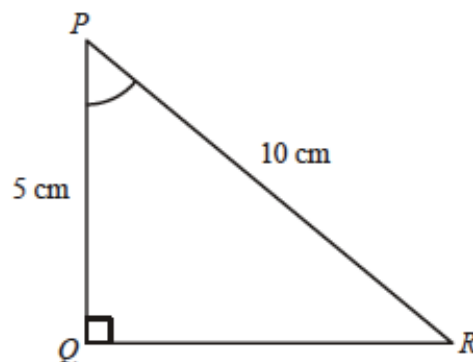
(2)

(Total 4 marks)

7.

$PQR$  is a right-angled triangle.  
 $PR = 10$  cm and  $PQ = 5$  cm

Not drawn accurately 10 cm



(a) Calculate the length  $QR$ .

(3)

(b) Calculate the size of angle  $QPR$ .

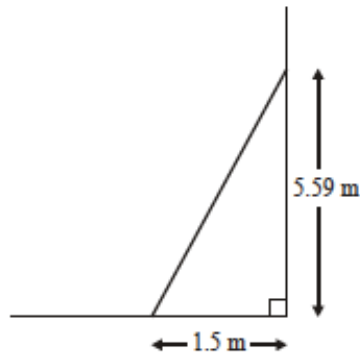
(3)

(Total 6 marks)

8.

For a ladder to be safe it must be inclined at between  $70^\circ$  and  $80^\circ$  to the ground.

(a) The diagram shows a ladder resting against a wall.



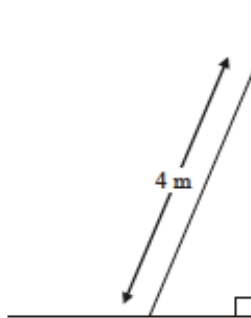
Not to scale

Is it safe?

You **must** show your working.

(3)

(b) Another ladder rests against a wall.



Not to scale

Work out the closest distance that the bottom of the ladder can be from the wall so that it is safe.

(3)

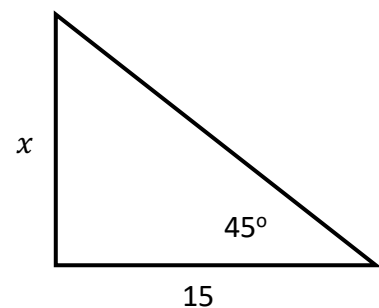
(Total 6 marks)

9.

**Non-calculator**

Find the exact value of  $x$  in the right-angled triangle below.

(Total 3 marks)

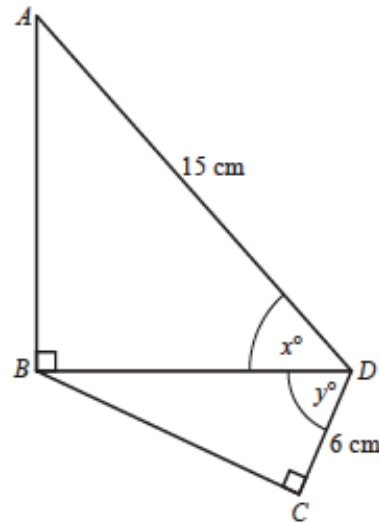


10.

The diagram shows two right-angled triangles.

$AD = 15$  cm.

$CD = 6$  cm.



Not to scale

(a) Given that  $\cos x^\circ = \frac{2}{3}$ , calculate the length  $BD$ .

(2)

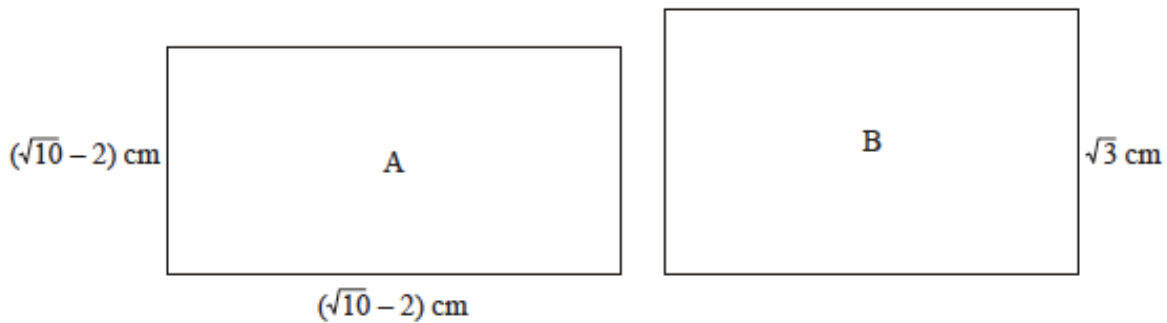
(b) Find the value of  $\sin y^\circ$ .

(3)

(Total 5 marks)

11. **N.B.** The *length* of rectangle A should be  $(\sqrt{10} + 2)$  and not  $(\sqrt{10} - 2)$ . The width is correctly stated as  $(\sqrt{10} - 2)$ .

Two rectangles, A and B, are equal in area.



Not to scale

Calculate the length of rectangle B.

Give your Answer in the form  $p\sqrt{3}$ .

(Total 4 marks)