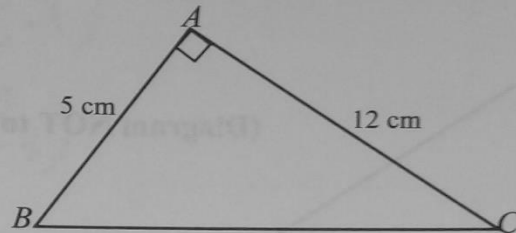


## Grade 9

### Trigonometry & Quadratic Equations Exams Type Question.

- 7 (a) The diagram shows a right-angled triangle  $ABC$  in which

$AB = 5$  cm,  $AC = 12$  cm and  $\angle BAC = 90^\circ$ .



(Diagram NOT to scale)

- (i) Write down the value of  $\tan \hat{ACB}$ .

Answer (a) (i)  $\tan \hat{ACB} =$  \_\_\_\_\_ [1]

- (ii) Calculate the length of  $BC$ .

Answer (a) (ii) \_\_\_\_\_ [2]

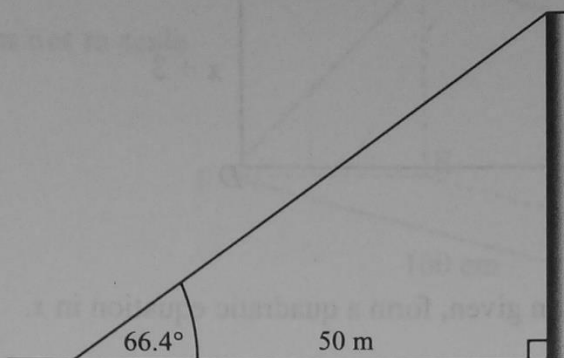
- (iii) Write down the value of  $\cos \hat{ABC}$ .

Answer (a) (iii)  $\cos \hat{ABC} =$  \_\_\_\_\_ [1]

- (iv) Find the area of the triangle  $ABC$ .

Answer (a) (iv) \_\_\_\_\_  $\text{cm}^2$  [2]

- 7 (b) One end of a rope is tied to the top of a vertical pole with the other end fixed to the ground at a distance of 50 m from the foot of the pole. It makes an angle of  $66.4^\circ$  with the ground.  
Calculate



- (i) the height of the pole,  
(ii) the length of the rope,

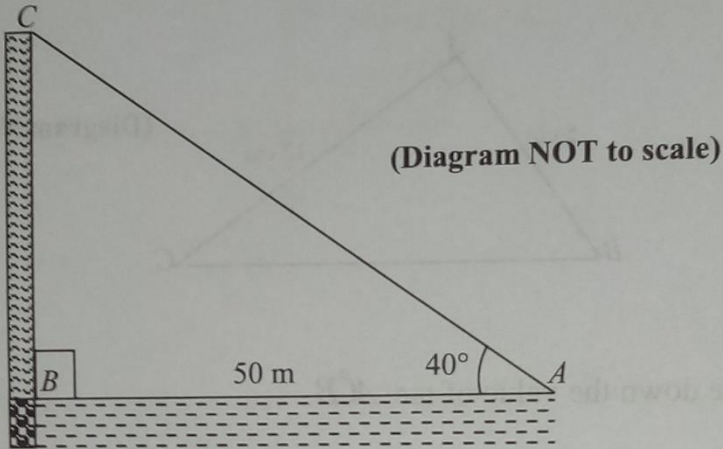
[ $\sin 66.4^\circ = 0.916^\circ$ ,  $\cos 66.4^\circ = 0.400$ ,  $\tan 66.4^\circ = 2.289$ ]

Answer (b)(i) Height of pole = \_\_\_\_\_ m [2]

(b)(ii) Length of rope = \_\_\_\_\_ m [2]

**EXAM 4**

- 7 (b) From a motor-boat A at sea a boy looks at the top of a cliff BC 50 m away.  
 It is given that  $\angle ABC = 90^\circ$  and  $\angle BAC = 40^\circ$ .  
 [sin  $40^\circ = 0.643$ , cos  $40^\circ = 0.766$ , tan  $40^\circ = 0.839$ ]



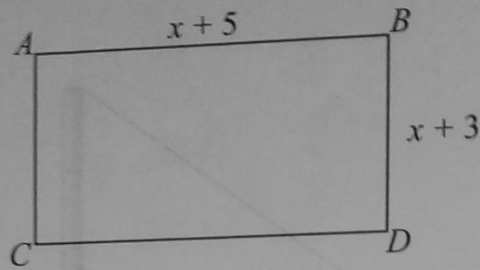
- (i) Using as much of the given information as necessary, find the height of the cliff.

Answer (b) (i) height = \_\_\_\_\_ m [2]

- (ii) The motor-boat moves  $x$  metres towards the cliff and finds that tan A is now exactly 2. Find  $x$ .

Answer (b) (ii)  $x =$  \_\_\_\_\_ [2]

- 8 (a)  $ABCD$  is a rectangle with  $AB = (x + 5)$  cm and  $BC = (x + 3)$  cm. The area of  $ABCD$  is  $35 \text{ cm}^2$ .



- (i) Using the information given, form a quadratic equation in  $x$ .

Answer: (a)(i) \_\_\_\_\_ [1]

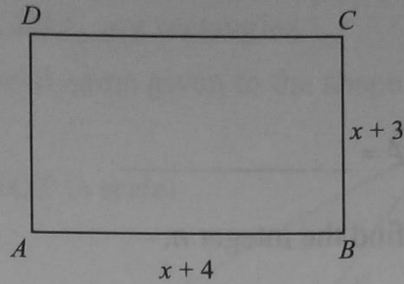
- (ii) Solve the equation obtained in part (i) above.

Answer: (a)(ii)  $x =$  \_\_\_\_\_ or  $x =$  \_\_\_\_\_ [3]

- (iii) Hence, find the length of  $AB$ .

Answer: (a)(iii) Length of  $AB =$  \_\_\_\_\_ cm [1]

- 9 (a)  $ABCD$  is a rectangle with  $AB = (x + 4)$  cm and  $BC = (x + 3)$  cm. The area of the rectangle  $ABCD$  is  $30 \text{ cm}^2$ .



- (i) Using the given information, form a quadratic equation in  $x$  in the form  $ax^2 + bx + c = 0$ , where  $a$ ,  $b$ , and  $c$  are integers.

Answer (a) (i) \_\_\_\_\_ [2]

- (ii) Hence, find the length  $AB$  of the rectangle  $ABCD$ .

Answer (a) (ii)  $AB =$  \_\_\_\_\_ cm [2]

- (iii) Form and simplify a linear expression in  $x$  that represents the perimeter of the rectangle  $ABCD$ .

Answer (a) (iii) \_\_\_\_\_ [2]