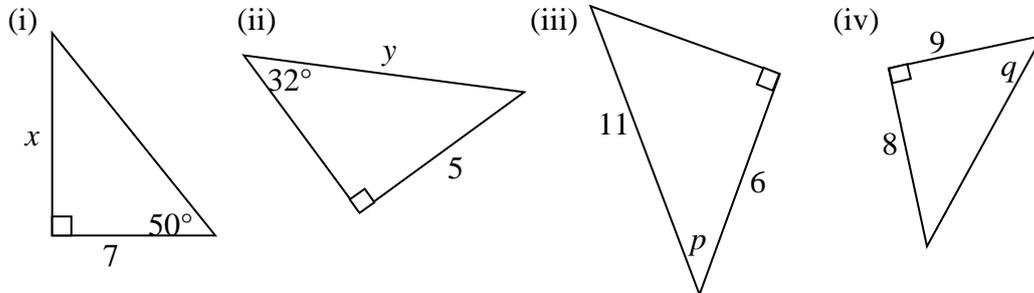


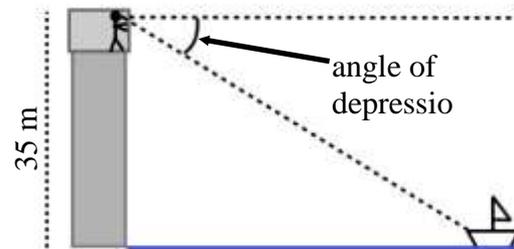
## Section 2: Basic trigonometry

### Exercise

1. Find the sides and angles marked with letters in the triangles below.



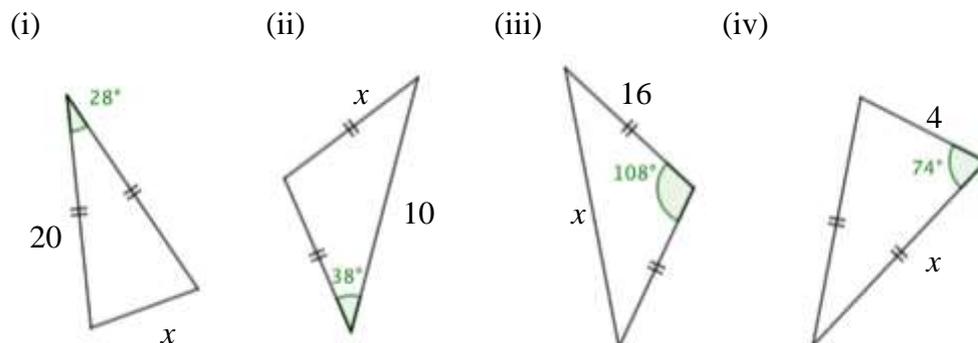
2. A man is standing at the top of a 35m tower and is trying to estimate the distance from the base of the tower to some objects. He measures the angle of depression from the tower to the object using a clinometer.



Find the distances of the objects with the following angles of depression

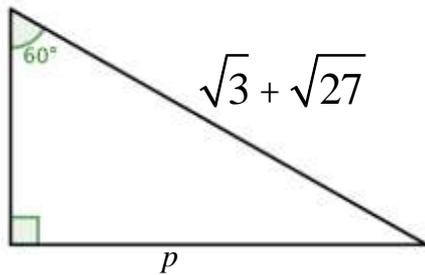
- (i)  $45^\circ$
- (ii)  $30^\circ$
- (iii)  $15^\circ$

3. Find the missing side lengths for these isosceles triangles

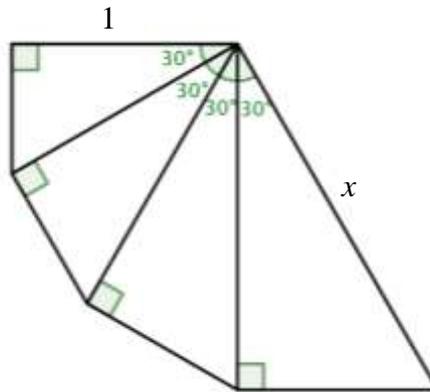


*Do not use a calculator for these questions*

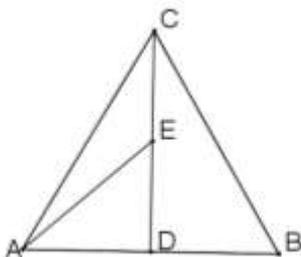
4. In the following diagram show that the missing side  $p$  is an integer.



5. The diagram below shows 4 similar right-angled triangles, each has one angle that is  $30^\circ$ . Show that the missing side  $x$  can be written in the form  $\frac{a^2}{b^2}$  where  $a$  and  $b$  are integers.



6.  $ABC$  is an equilateral triangle with side 2 cm.  $D$  is the midpoint of  $AB$ .  $E$  is the midpoint of  $CD$ .



Decide whether  $\angle EAD$  is smaller than, bigger than or equal to  $45^\circ$ . You must explain your reasoning clearly.