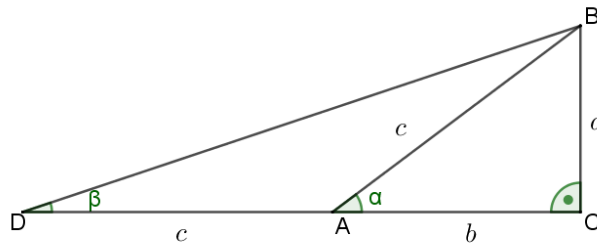


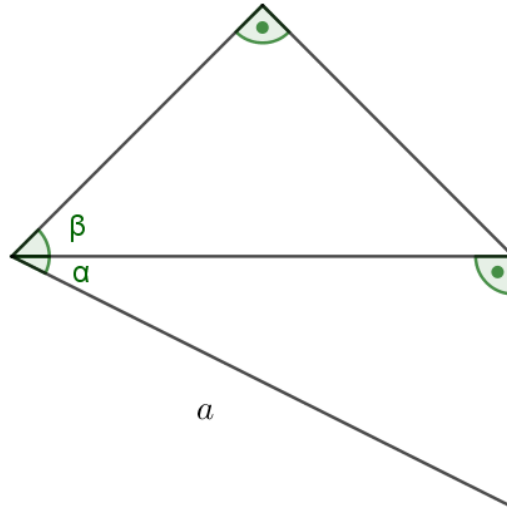
## Revision

1. A tower can be seen at an angle of  $\alpha$  from the level ground. If we move  $d$  meters towards the tower, it can be seen at an angle  $\beta$ . Express the height of the tower in terms of  $d$ ,  $\alpha$  and  $\beta$ .
2. Let  $\triangle ABC$  be a right triangle with the right angle at  $C$ . Let  $D$  be the foot of the height from  $C$ . Let  $\angle BAC = \alpha$ . Find the angle  $\alpha$  if the ratio of the area of the triangle  $ACD$  to the area of the triangle  $ABC$  is 3:4.
3. At what angle can a circle with radius  $r$  be seen at a distance of  $r$  from the edge of this circle?
4. At what distance from centre of the circle with radius 1 will the circle be seen at a right angle?
5. In triangle  $ABC$  the side  $AC$  has been extended by  $c$  - see picture.

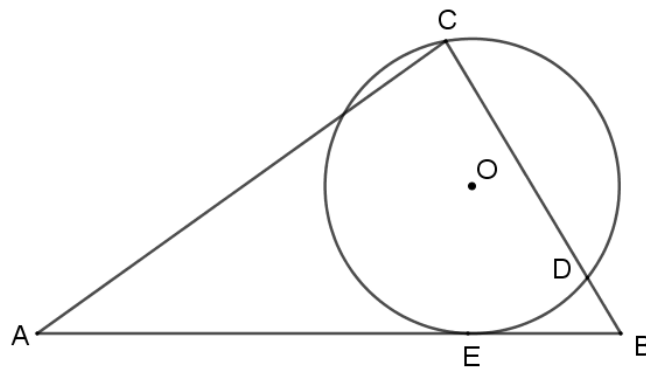


- (a) Show that  $2\beta = \alpha$
- (b) Find  $\text{tg } \beta$  if  $\text{tg } \alpha = \frac{5}{12}$
- (c) Find the exact values of  $\text{tg } 15^\circ$  and  $\text{tg } 22,5^\circ$ .

6. Two right triangles are connected via equal sides as shown below.



- (a) Express  $x$  in terms of  $a$ ,  $\alpha$  and  $\beta$ .
- (b) Find the perimeter of the quadrilateral if  $a = 2\sqrt{6}$ ,  $\alpha = 30^\circ$  and  $\beta = 45^\circ$ .
7. In a triangle  $ABC$  we have  $|AB| = 14$ ,  $|BC| = 9$  and  $\angle CBA = 60^\circ$ . Point  $D$  lies on the segment  $BC$  and  $|CD| = 8$ . A circle has been drawn through points  $C$  and  $D$  and tangent to the segment  $AB$ , see diagram below.



Find the radius of the circle.