

Test  
Heights and Distance, Symmetry and Reflection  
ICSE

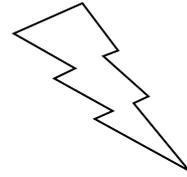
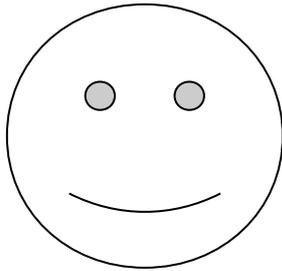
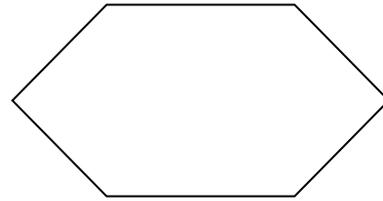
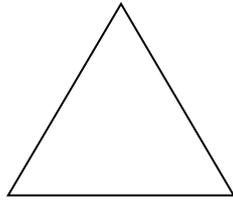
Full Marks: 40

Time: 1:20 mins

1. An aeroplane when flying at a height of 3125 m from the ground passes vertically below another plane at an instant when the angles of elevation of the two planes from the same point on the ground are  $30^\circ$  and  $60^\circ$  respectively. Show that the distance between the two planes at that instant is 6250 m.  
[5]
2. The angles of elevation of the top of tower from two points distance  $a$  and  $b$  from the base and in the same straight line are  $\theta$  and  $90^\circ - \theta$  respectively. Prove that  $\tan \theta = \sqrt{\frac{b}{a}}$ . [5]
3. Two men are on the opposite sides of a tower. They measure the angle of elevation the top of the tower as  $45^\circ$  and  $60^\circ$  respectively. The height of the tower is 30 m show that the distance between the men is 47.32 m [5]
4. The length of the shadow of a vertical tower is  $\sqrt{3}$  times its height. Find the angle of elevation of sun.  
[3]
5. Two points  $P(-3,4)$  and  $Q(5,6)$  are reflected along the line  $L_1$ .  $L_1$  is such that  $(3,0)$  is invariant under reflection along  $L_1$ . [4]
  - a. Name the line  $L_1$
  - b. Write down the co-ordinate of  $P'$  and  $Q'$ , where  $P'$  and  $Q'$  are the images of  $P$  and  $Q$  under the reflection on  $L_1$
  - c. Give the geometrical name of the figure  $PQQ'P'$
6. Write down the co-ordinate of the point  $(-3,0)$  under the reflection on [3]
  - a.  $x$ -axis
  - b.  $y$ -axis
  - c. origin
7. A point  $P$  is reflected in the  $x$ -axis. Co-ordinates of its images are  $(3,-4)$  [3]
  - a. Find the coordinates of  $P$
  - b. Find the coordinates of the image  $P$  under reflection on  $y$ -axis
8. Define line of symmetry and point of symmetry. [4]

9. Draw the line(s) of symmetry of the following figures wherever possible.

[8]



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