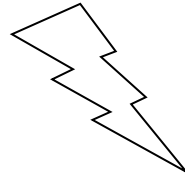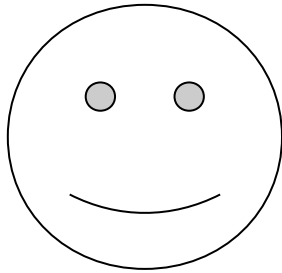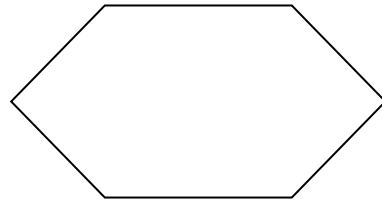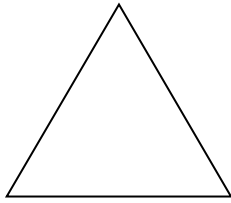Full Marks: 40   Time: 1:20 mins

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° and 60° 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 θ and $90^o - \theta$ respectively. Prove that $\tan\theta = \sqrt{\dfrac{b}{a}}$. [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° and 60° .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]