

EINSTEIN'S ACADEMY

10<sup>TH</sup> MATHS

UNIT- 4

Choose the correct answer

5X1=5

1. If in  $\Delta ABC$ ,  $DE \parallel BC$ ,  $AB=3.6\text{cm}$   $AC=2.4\text{cm}$  then the length of  $AE$  is

- a) 1.4cm
- b) 1.8cm
- c) 1.2cm
- d) 1.05cm

2. How many tangents can be drawn to the circle from the external point?

- a) one
- b) two
- c) infinity
- d) zero

3. A tangent is perpendicular to the radius at the

- a) centre
- b) infinity
- c) point of contact
- d) chord

4. The two tangents from an external point  $P$  to a circle with centre at  $O$  are  $PA$  and  $PB$ . If  $\angle APB=70^\circ$  then the value of  $\angle AOB$  is

- a)  $100^\circ$
- b)  $110^\circ$
- c)  $120^\circ$
- d)  $130^\circ$

5.  $n$  triangles  $ABC$  and  $EDF$ ,  $\frac{AB}{DE} = \frac{BC}{FD}$  then they will be similar, when

- a)  $\angle B = \angle E$
- b)  $\angle A = \angle D$
- c)  $\angle B = \angle D$
- d)  $\angle A = \angle F$

Answer the following (ANY 5)

5x2=10

6. In  $\Delta ABC$ ,  $D$  and  $E$  are points on the sides  $AB$  and  $AC$  respectively such that  $DE \parallel BC$  if  $\frac{AB}{DE} = \frac{3}{4}$  and  $AC=15\text{cm}$  find  $AE$ .

7. A man goes 18 m due east and then 24 m due north. Find the distance of his current position from the starting point?

8. If  $\Delta ABC$  is similar to  $\Delta DEF$  such that  $BC=3\text{cm}$ ,  $EF=4\text{cm}$  and the area of  $\Delta ABC=54\text{cm}^2$  find the area of  $\Delta DEF$ .

9. Find the length of the tangent drawn from a point whose distance from the centre of a circle is 5cm and radius of the circle is 3cm.

10. A man goes 18m due east and then 24m due north. Find the distance of his current position from the starting point?

11. Check Whether  $AD$  is the bisector of  $\angle A$  of  $\Delta ABC$  if  $AB=5\text{cm}$ ,  $AC=10\text{cm}$ ,  $BD=1.5\text{cm}$  find  $AE$ .

Answer the following any 5 (Q.NO17 IS COMPULSORY)

5X5=25

12. 5 m long ladder is placed leaning towards a vertical wall such that it reaches the wall at a point 4m high. If the foot of the ladder is moved 1.6 m towards the wall, then find the distance by which the top of the ladder would slide upwards on the Geometry.

13. Two poles of height 'a' metre and 'b' metre are 'p' metre apart. Prove that the height of the point of intersection of the line joining the top of each pole to the foot of the opposite pole is given by

$\frac{ab}{a+b}$  metre.

14. State and prove Thales theorem.

15. ABCD is a quadrilateral in which AB=AD the bisector of  $\angle BAC$  and  $\angle CAD$  intersect the sides BC and CD at the points E and F respectively prove that  $EF \parallel BD$ .

16. In the adjacent figure, ABC is a right angled triangle with right angled at B and points D, E trisect BC. P.T  $8AE^3 = 3AC^2 + 5AD^2$ .

17. Show that the angle bisectors of a triangle are concurrent.