## Geometry

## **QUESTIONS**

1.	It is known that if $\mathbf{a} + \mathbf{b} + \mathbf{c} = 18$ then $\mathbf{a} + \mathbf{b} + \mathbf{c} + \mathbf{d} = 18 + \mathbf{d}$ . The Euclid's axiom that		
	illustrates this statement is		
	(a) First axiom	(b) Second axiom	
	(c) Third axiom	(d) Fourth axiom	
	(e) None of these		
2.	In geometry, we take a point, a line and a plane (in Euclid's words a plane surface) as		
	(a) constant	(b) defined terms	
	(c) undefined terms	(d) variables	
	(e) None of these		
3.	In Indus Valley Civilization (about 3000 B.C.), the bricks used for construction work were hav dimension in the ratio		
	(a) 2:4:5	(b) 3:2:1	

- (c) 4:2:1 (d) 4:2:5 (e) None of these
- 4. In the shown figure, I is a straight line. Find the value of x.



(b) 30°

(c) 40°

(d) Cannot be determined

(e) None of these

5. In the shown figure, OA || CD and  $\angle OAB = 115^{\circ}$  and  $\angle BCD = 125^{\circ}$ , find the value of  $\angle ABC$ .



6. In which of the following figures, the given two lines will be parallel lines?



7. In the shown figure, if PQ  $\parallel$  MN and NO  $\parallel$  QR, then which of the following conditions can be true?



8. In the following figure, AB || CD and  $\angle ABR = 115^{\circ}$ ,  $\angle BRC = 40^{\circ}$  and  $\angle RCD = x^{\circ}$ . Find the value of x°.



(e) None of these

9. In the given figure, if  $a + c = 205^{\circ}$  and  $0 = 80^{\circ}$ , also N = a, then \_\_\_\_\_



10. ABC is a cyclic triangle and the bisectors of  $\angle BAC$ ,  $\angle ABC$  and  $\angle BCA$  me the circle at P, Q and R respectively. Then the angle  $\angle RQP$  is \_\_\_\_\_.



(e) None of these

#### 11. In the shown figure, the value of a is equal to



- (e) None of these
- 12. In the shown figure, if PQ || BC and AP = 5.4 cm, AQ = (x+1) cm, AB = 8.1cm cm and QC = (x-1) cm, then AC equals to \_\_\_\_\_



(a) 12 cm	(b) 6 cm
(c) 3 cm	(d) 4 cm

(e) None of these

13. In a  $\triangle ABC$ , if  $\angle A - \angle B = 35^{\circ}$  and  $\angle C - \angle B = 34^{\circ}$ , then

(a) $\angle A = 71^{\circ}$	(b) $\angle B = 72^{\circ}$
(c) $\angle A + \angle B = 109^{\circ}$	(d) $\angle A + \angle C = 142^{\circ}$

(e) None of these

14.	In two triangles ACB and QPR if $AB = Q$	R, ZB = ZQ and CA = PR then
	(a) $\Lambda ABC \simeq \Lambda POR$	(b) $\wedge ACB \simeq \wedge BPO$

(a) $\Box ADC \equiv \Delta I QR$	(b) $\Delta ACD \equiv \Delta III Q$
(c) $\Delta BAC \cong \Delta QRP$	(d) $\Delta BAC \cong \Delta QPR$

(e) None of these

15. Two sides of a triangle are of lengths 6.2 cm and 3.5 cm. The length of the third side of the triangle cannot be \_\_\_\_\_

(a) 9.2cm	(b) 8.5cm
(c) 2.8cm	(d) 2.6cm
(e) None of these	

#### 16. Which among the following statements is correct?

- (a) In a triangle PQR, if  $\angle Q < \angle P$  then PR < QR.
- (b)  $\triangle ABC \cong \triangle PQR$  if  $\angle A = \angle P$ , and AC = QR.
- (c) In triangles PQR and STU if  $\angle P = \angle S$ ,  $\angle Q = \angle T$  and PQ = TU, then both the triangles are congruent.
- (d) All the above
- (e) None of these

17. S is a point on the side QR of a triangle PQR such that PS bisects  $\angle QPR$  then \_\_\_\_\_

(a) QS = SR

- (b) PR < RS
- (c) PQ > QS
- (d) Both (b) and (c) are true
- (e) None of these

18. In the shown figure, the bisector of angle P is bisecting the opposite side QR. If PQ = 3 cm then the value of PR is \_\_\_\_\_



#### 19. If M is any point in the interior of A ABC, then \_\_\_\_\_

- (a) MC + MB > AC + AB(b) MC + MB = AC + AB(c) MC + MB = AC + AB(d)  $MC + MB \ge AC + AB$
- (e) None of these

#### 20. Which one among the following statements is correct?

- (a) If ABCD is a rectangle such that BD bisects  $\angle B$  then it is also a rhombus.
- (b) A rectangle is formed by the bisectors of the angles of a parallelogram.
- (c) A square is formed by the mid points of the consecutive sides of a square.
- (d) All the above
- (e) None of these

#### 21. In a triangle, other than an equilateral triangle, angle opposite to the largest side is \_\_\_\_\_

(a) lesser than $\frac{2}{3}$ of a right angle.	(b) greater than $\frac{2}{3}$ of a right angle.
(c) always greater than a right angle.	(d) lesser than $\frac{1}{2}$ of a right angle.

<sup>(</sup>e) None of these

### 22. PQR is a triangle in which $\angle Q = 2 \angle R$ . If a line PS is drawn from vertex P such that it bisects $\angle QPR$ and cuts QR at S such that PQ = RS, then $\angle QPR + \angle QRP$ equals to \_\_\_\_\_

(a) 72°	(b) 136°
(c) 108°	(d) 130°

(e) None of these.

# 23. If PQR is a triangle and M is the mid-point of QR and the perpendiculars from M to PQ and PR are equal, then PQR is \_\_\_\_\_

- (a) an equilateral triangle
- (c) not an equilateral triangle
- (e) None of these

- (b) an isosceles triangle
- (d) not an isosceles triangle
- 24. In the given triangle PQR, another triangle MLN is drawn by joining the mid-points of the sides of  $\Delta$  PQR. Based on this information choose the correct one among the following.



25. MNOP is a rhombus in which the diagonal OM is produced to Q. If  $\angle POQ = 140^{\circ}$ , then which one is correct?



26. In the shown figure, PQRS is a trapezium where PQ  $\parallel$  RS and M and N are the mid-points of PR and SQ respectively. If PQ = 7 cm and RS = 3cm then the length of MN is \_\_\_\_\_



(a) 1 cm	(b) 2 cm
(c) 3 cm	(d) 4 cm
(e) None of these	

27. In the shown figure, PQRS is a trapezium and PQ  $\parallel$  RS. If M is the mid-point of PS such that MN  $\parallel$  RS and PQ = 8 cm and RS = 12cm, then MN equals to \_\_\_\_\_



28. In the shown figure, N is the mid-point of QP. M is any point on QR. If OR || NM meets PQ in O, then which one among the following is true?



- (a)  $ar(\Delta QMO) = ar(\Delta QNR)$
- (b) ar ( $\Delta$  MNO) = ar ( $\Delta$  MRN)
- (c) ar  $(\Delta QRN) = \frac{1}{2}ar (\Delta PQR)$

(d) All the above

- (e) None of these
- 29. In the shown figure, PQRS is a parallelogram and if M and N are the mid- points of RQ and RS respectively, then \_\_\_\_\_



- (a)  $Ar (\Delta NMR) = \frac{1}{4} Ar( ||^{gm} PQRS)$ (b)  $Ar (\Delta PQM) = \frac{1}{8} Ar(||^{gm} PQRS)$ (c)  $Ar (\Delta PNM) = \frac{3}{8} Ar ( ||^{gm} PQRS)$ (d) All of the above
- (e) None of these

#### 30. In the shown triangle PQR, find the value of $\alpha$



31. Two concentric circles with centre 0 have P, Q, R, S as the points intersection with the line I as shown in the figure. If PS = 16 cm and QR = 12 cm then the lengths of \_\_\_\_\_



(a) PQ is 3 cm	
(c) SQ is 14 cm	

(e) None of these

- (b) PR is 12 cm (d) RS is 4 cm
- 32. PQ and RS are two chords of the circle such that PQ = 8 cm and  $RS = 16 PQ \parallel RS$ . If the distance between PQ and RS is 4 cm, then \_\_\_\_\_



- (a) ON = 5 cm (b) radius = 4 cm
- (c)  $OM = 8.5 \, cm$  (d) All the above
- (e) None of these

33. In the shown figure, a circle with centre O and radius r is given with chords PQ and RS. Based on this information, which among the following statements is incorrect?



- (a) If PQ = RS then  $\angle POQ = \angle ROS$ .
- (b) If PQ < RS then PQ is nearer to the circle than RS.
- (c) If PQ = RS, then both are equidistant from the centre of the circle 0
- (d) The perpendicular bisector of both the chords of the circle will pass through its centre.
- (e) None of these
- 34. In the shown figure, AB is a diameter of the circle with centre O. If AC is a chord and OM is perpendicular on it where AB = 13 cm and BC = 5 cm, then the length of OM is \_\_\_\_\_



35. Two circles with centres O and O' and of radii 6 cm and 4 cm touch each other internally. If the perpendicular bisector of line segment OO' meets the bigger circle in M and N, then the length of MN

(a) 1cm	(b) 2√ <u>35</u> cm
(c) $3\sqrt{5} cm$	(d) $\sqrt{35} \ cm$

(e) None of these

is \_\_\_\_\_

36. The radius of the circle, in which an equilateral triangle of side 16 cm is inscribed, is \_\_\_\_\_

(a) 
$$\frac{8\sqrt{3}}{3}$$
 cm (b)  $\frac{16\sqrt{3}}{3}$  cm

(c) 
$$8\sqrt{3}$$
 cm (d)  $\frac{2\sqrt{3}}{3}$  cm

(e) None of these

37. In the shown figure, AD and BC are two chords of the circle with centre O, intersecting at E and AE = 6 cm, BE = 5 cm. Find the value of  $\frac{EC + ED}{EC - ED}$ .



38. A circle with centre O is inscribed in a quadrilateral PQRS as shown in the figure. Which one of the following statements is /are true?



(i)  $\angle POS + \angle QOR = 180^{\circ}$ 

(ii)  $\angle POQ$ , and  $\angle ROS$  are complementary.

(iii) OP, OQ, OR and OS are the angle bisectors of  $\angle P$ ,  $\angle Q$ ,  $\angle R$  and  $\angle S$  respectively.

- (a) both (i) and (ii) (b) both (i) and (iii)
- (c) both (ii) and (iii) (d) All (i), (ii) and (iii)
- (e) None of these

39. In the shown figure, O is the centre of the circle and PT is a tangent to the circle at P. If  $\angle RPT = 15^{\circ}$  and  $\angle PTR = 65^{\circ}$ , then find the value of  $\angle PQO$ .



40. P, Q and R are on ML, NL and MN of the equilateral triangle MLN respectively. If MP : PL = NQ : QL = 1 : 2 and G is the centroid of the triangle PQL and S is the mid-point of MN. Find LG: GS.

(a) 2:3	(b) 4:5
(c) 3:4	(d) 1:3

(e) None of these

ANSWER - KEY				
<b>1.</b> (B)	<b>2.</b> (C)	<b>3.</b> (C)	<b>4.</b> (C)	<b>5.</b> (B)
<b>6.</b> (C)	<b>7.</b> (C)	<b>8.</b> (D)	<b>9.</b> (C)	<b>10.</b> (D)
<b>11.</b> (C)	<b>12.</b> (B)	<b>13.</b> (C)	<b>14.</b> (E)	<b>15.</b> (D)
<b>16.</b> (A)	<b>17.</b> (C)	<b>18.</b> (A)	<b>19.</b> (B)	<b>20.</b> (D)
<b>21.</b> (B)	<b>22.</b> (C)	<b>23.</b> (B)	<b>24.</b> (B)	<b>25.</b> (C)
<b>26.</b> (B)	<b>27.</b> (C)	<b>28.</b> (D)	<b>29.</b> (C)	<b>30.</b> (C)
<b>31.</b> (C)	<b>32.</b> (B)	<b>33.</b> (B)	<b>34.</b> (D)	<b>35.</b> (B)
<b>36.</b> (B)	<b>37.</b> (A)	<b>38.</b> (B)	<b>39.</b> (B)	<b>40.</b> (B)