



# RAMAGYA SCHOOL, NOIDA

IX/MATHEMATICS/2017-18

## OLYMPIAD PRACTICE WORKSHEET

### (Concept based)

1. The centre of a circle lies in \_\_\_\_\_ of the circle.  
(A) interior (B) exterior (C) radius (D) none of these
2. ABCD is a rectangle of Area  $40 \text{ cm}^2$ . X is any point on AB, What is the area of the triangle XCD?  
(A)  $10 \text{ cm}^2$  (B)  $20 \text{ cm}^2$  (C)  $40 \text{ cm}^2$  (D) Insufficient data
3. A point, whose distance from the centre of a circle is greater than its radius lies in \_\_\_\_\_ of the circle.  
(A) interior (B) exterior (C) radius (D) none of these
4. If a triangle and a parallelogram are on the same base and between same parallels, then the ratio of the area of the triangle to the area of parallelogram is  
(A) 1 : 3 (B) 1 : 2 (C) 3 : 1 (D) 1 : 4
5. The sum of either pair of opposite angles of a cyclic quadrilateral is \_\_\_\_\_  
(A)  $60^\circ$  (B)  $45^\circ$  (C)  $90^\circ$  (D)  $180^\circ$

### (Application based)

6. A tangent to a circle (center O) drawn from an exterior point to the circle and touches the circle at a point P on the circumferences. Which of the following statement is TRUE?  
(A)  $\angle TPO < 90^\circ$  (B)  $\angle TPO > 90^\circ$  (C)  $\angle TPO = 90^\circ$  (D)  $\angle TPO = 180^\circ$
7. WXYZ is a parallelogram with  $XP \perp WZ$  and  $ZQ \perp WX$ . If  $WX=8 \text{ cm}$ ,  $XP = 8 \text{ cm}$  and  $ZQ = 2 \text{ cm}$ , find YX.  
(A) 3 cm (B) 4 cm (C) 1 cm (D) 2 cm
8. Two concentric circles are of radii 13 cm and 12 cm. What is the length of the chord of the larger circle which touches the smaller circle?  
(A) 8 (B) 6 (C) 10 (D) 4
9. ABCD is a quadrilateral whose diagonal AC divides it into two parts, equal in area, then ABCD  
(A) Is a rectangle (B) Is a rhombus (C) Is a parallelogram (D) none of these
10. Find the length of a chord which is at a distance of 4 cm from the centre of the circle of radius 6 cm.  
(A) 11.56 cm (B) 5.88 cm (C) 3.79 cm (D) 8.94 cm
11. ABCD is a parallelogram and AE DC. If AB is 20 cm and the area of parallelogram ABCD is  $80 \text{ cm}^2$ , Find AE.  
(A) 8 cm (B) 4 cm (C) 6 cm (D) 5 cm

12. The length of two parallel chords of a circle are 6 cm and 8 cm. If the smaller chord is at a distance of 4 cm from the centre, what is the distance of the other chord from the centre?  
 (A) 8 cm                      (B) 3 cm                      (C) 6 cm                      (D) 5 cm
13. In triangle ABC, D and E are points on side BC such that  $CD = DE = EB$ . Area of triangle ABC =  $27 \text{ cm}^2$ , find area of triangle ADE  
 (A)  $8 \text{ cm}^2$                       (B)  $10 \text{ cm}^2$                       (C)  $9 \text{ cm}^2$                       (D)  $5 \text{ cm}^2$
14. The angle subtended by the diameter of a semicircle is:  
 (A)  $60^\circ$                       (B)  $45^\circ$                       (C)  $90^\circ$                       (D)  $180^\circ$

**(Value based)**

15. Two parallelograms are on equal bases and between the same parallels. The ratio of their areas is  
 (A) 1 : 2                      (B) 1 : 1                      (C) 2 : 1                      (D) 3 : 1
16. If  $\angle A$  and  $\angle C$  are in the ratio 3 : 2, then we have  $\angle A = \dots\dots\dots$  and  $\angle B = \dots\dots\dots$   
 (A)  $108^\circ, 75^\circ$                       (B)  $120^\circ, 60^\circ$                       (C)  $105^\circ, 75^\circ$                       (D)  $125^\circ, 55^\circ$

**(Logical Reasoning)**

17. Some letters are given which are numbered 1, 2, 3, 4 and 5. Find the combination of numbers from the options so that the letters arranged accordingly form a meaningful word.  
 **E R P I C**  
 **1 2 3 4 5**  
 (A) 3, 2, 1, 4, 5                      (B) 3, 2, 4, 5, 1                      (C) 3, 2, 4, 1, 5                      (D) 3, 2, 1, 5, 4
18. Find out from the options which is the mirror-image of the given word, if the mirror is placed vertically right.  
 **CONTENTS**  
 (A) STNETNOC                      (B) STNETNOC                      (C) CONTENTS                      (D) STNETNOC
19. Pia walks a distance of 4 metres towards south. Then she turns to the left and walks 3 metres. After this she turns to the right and walks 4 metres. Now which direction is she facing ?  
 (A) South                      (B) North                      (C) South-West                      (D) North-East
20. If  $(k - 8)$  is the highest common factor of 56 and 77, then the value of k is \_\_\_\_\_.  
 (A) 15                      (B) 7                      (C) 11                      (D) 16