Olympiad Aptitude Test
Mathematics Grade IX

1 If $25x^2 - 30x + K$ is a perfect square, then K is equal to

a 25 **b** 9
c 16 **d** 10

2. The side AC of a $\blacktriangle ABC$ is produced to D such that $BC = CD$. If $\blacktriangle ACB$ is 70°, then what is $\blacktriangle ADB$ equal to?

a 35° **b** 45°
c 70° **d** 110°

3. Consider the following statements:

I. The perpendicular bisector of a chord of a circle does not pass through the centre of the circle.
II. The angle in a semicircle is a right angle.

Which of the statements given above is/are correct?

a Only I
b Only II
c Both I and II
d Neither I nor II

4. The sides of a right angled triangle are equal to three consecutive numbers expressed in centimeters. What can be the area of such a triangle?

a 6 cm^2
b 8 cm^2
c 10 cm^2
d 12 cm^2

5. The area of a rectangle lies between 40 cm^2 and 45 cm^2. If one of the sides is 5 cm, then its diagonal lies between

a 8 cm and 10 cm
b 9 cm and 11 cm
c 10 cm and 12 cm
d 11 cm and 13 cm

6. ABC is a triangle right angled at B. If AB = 6 cm and BC =8 cm, then what is the length of the circum radius of the triangle ABC?

a 10 cm **b** 7 cm
c 6 cm **d** 5 cm

7. If K is any even positive integer, then $(K^2 + 2K)$is

a divisible by 24
b divisible by 8, but may not be divisible by 24
c divisible by 4, but may not be divisible by 8
d divisible by 2, but may not be divisible by 4

8. What is the radius of the circle inscribed in a triangle having side lengths 35 cm, 44 cm and 75 cm?

a 3 cm **b** 4 cm
c 5 cm **d** 6 cm

9. If $a + b + c$- 0, then what is the value

$$\frac{a^2}{bc}+\frac{b^2}{ca}+\frac{c^2}{ab}?$$

a -3 **b** 0
c I **d** 3

10. What are the factors of

$x^2 + 4y^2 + 4y - 4xy - 2x - 8$?

a. *(x — 2y — 4) and (x-2y+2)*
b. *(x-y+ 2) and (x-4y + 4)*
c. *(x-y* + 2) and *(x-4y-4)*
d. *(x+ 2y-4)* and *(x+2y* + 2)

11. If the expression $(px^3 + x^2 - 2x - q)$ is divisible by $(x - 1)$ and $(x + 1)$, what are the values of p and q, respectively?

a. 2 and -1 **b.** -2 and 1
c. -2 and -1 **d.** 2 and 1