



Octahedral classes, kharadi

2nd floor, yashwant plaza, near bank of India,

Class 10 - Mathematics

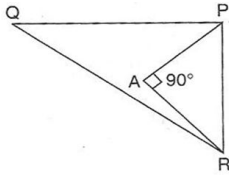
Maths Test Chapter 1,2,3,7

Maximum Marks: 50

Time Allowed: 1 hour and 30 minutes

Section A

1. $7 \times 11 \times 13 + 13$ is a/an: 1
 - a) odd number but not composite
 - b) Square number
 - c) prime number
 - d) composite number
2. For any positive integer 'a' and 3, there exist unique integers 'q' and 'r' such that $a = 3q + r$ where 'r' must satisfy 1
 - a) $1 < r < 3$
 - b) $0 < r \leq 3$
 - c) $0 \leq r < 3$
 - d) $0 < r < 3$
3. If $a - b$, a and $a + b$ are zeroes of the polynomial $x^3 - 3x^2 + x + 1$, then the value of $a + b$ is 1
 - a) $-1 - \sqrt{2}$
 - b) 3
 - c) $-1 + \sqrt{2}$
 - d) $1 \pm \sqrt{2}$
4. If a real number ' α ' is a zero of a polynomial, then _____ is a factor of $f(x)$. 1
 - a) $x + \alpha$
 - b) $x \times \alpha$
 - c) $x - \alpha$
 - d) $x \pm \alpha$
5. If $(x + 1)$ is a factor of $2x^3 + ax^2 + 2bx + 1$, then the values of 'a' and 'b', given that $2a - 3b = 4$ are 1
 - a) $a = -5$ and $b = -2$
 - b) $a = 5$ and $b = 2$
 - c) $a = -5$ and $b = 2$
 - d) $a = 5$ and $b = -2$
6. Determine graphically the co-ordinates of the vertices of the triangle, the equations of whose sides are: $y = x$, $3y = x$, $x + y = 8$ 1
 - a) 13 sq. units
 - b) 21 sq. units
 - c) 11 sq. units
 - d) 12 sq. units
7. In the given figure, if $PQ = 24$ cm, $QR = 26$ cm, $\angle PAR = 90^\circ$, $PA = 6$ cm and $AR = 8$ cm, then $\angle QPR$ is 1



a) 45°

b) 30°

c) 90°

d) 60°

8. If then which $\triangle ABC \sim \triangle DEF$ of the following is true? 1

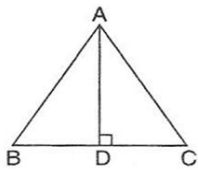
a) $BC \cdot DE = AB \cdot FD$.

b) $AB \cdot EF = AC \cdot DE$.

c) $BC \cdot EF = AC \cdot FD$.

d) $BC \cdot DE = AB \cdot EF$

9. If D is a point on side BC of $\triangle ABC$ such that $BD = CD = AD$, and the AD is 1
perpendicular to BC, then



a) $AB^2 + AC^2 = BC^2$

b) $BD^2 + AC^2 = AB^2$

c) $CD^2 + BC^2 = AC^2$

d) $AB \cdot AC = AD^2$

10. A man goes 15 metre due west and then 8 m due north. How far is he from the 1
starting point?

a) 23 m

b) 7 m

c) 20 m

d) 17 m

Section B

11. Find the HCF of 180, 252 and 324 by using Euclid's division lemma. 2

12. Prove that $\sqrt{2}$ is an irrational number. 2

13. Find a cubic polynomial with the sum, sum of the product of its zeroes taken 2
two at a time, and product of its zeroes are 5, -6 and -20 respectively.

14. What must be added to $f(x) = 4x^4 + 2x^3 - 2x^2 + x - 1$ so that the resulting 2
polynomial is divisible by $g(x) = x^2 + 2x - 3$?

15. Two years ago, Salim was thrice as old as his daughter and six years later, he 2
will be four years older than twice her age. How old are they now?

16. A and B have certain number of oranges A says to B " If you give me 10 of 2
yours oranges I will have twice the number of oranges left with you". B
replies, " If you give me 10 of your oranges I will have the same number of
oranges as left with you". Find the number of oranges that A and B have
separately.

17. Solve: 2

$$37x + 41y = 70$$

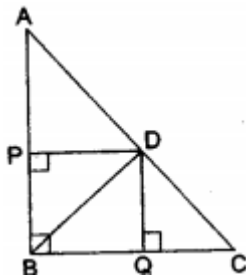
$$41x + 37y = 86$$

18. ABCD is a trapezium in which $AB \parallel DC$ and $AB = 2DC$. If the diagonals of the trapezium intersect each other at point O, find the ratio of the areas of $\triangle AOB$ and $\triangle COD$. 2

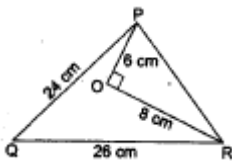
19. In a right triangle ABC, right-angled at B, D is point on hypotenuse such that $BD \perp AC$. If $DP \perp AB$ and $DQ \perp BC$ then prove that 2

a. $DQ^2 = DP \cdot QC$

b. $DP^2 = DQ \cdot AP$.



20. In the given figure, O is a point inside a $\triangle PQR$ such that $\angle POR = 90^\circ$, $OP = 6$ cm and $OR = 8$ cm. If $PQ = 24$ cm and $QR = 26$ cm, prove that $\triangle PQR$ is right-angled. 2



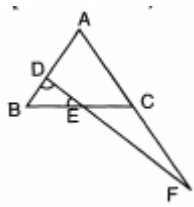
21. If α and β are the zeroes of polynomial $p(x) = 3x^2 + 2x + 1$, find the polynomial whose zeroes are $\frac{1-\alpha}{1+\alpha}$ and $\frac{1-\beta}{1+\beta}$. 4

22. Formulate the following problem as a pair of equations, and hence find their solutions : 4

2 women and 5 men can together finish an embroidery work in 4 days, while 3 women and 6 men can finish it in 3 days. Find the time taken by 1 woman alone to finish the work, and also that taken by 1 man alone.

23. P and Q are the mid-points of the sides CA and CB respectively of a $\triangle ABC$, right angled at C. Prove that $4AQ^2 = 4AC^2 + BC^2$. 4

24. In the figure, $\angle BED = \angle BDE$ and In the figure, E is the midpoint of BC. Prove that $\frac{AF}{CF} = \frac{AD}{BE}$ 4



25. In Fig. $\angle ACB = 90^\circ$ and $CD \perp AB$. Prove that $\frac{CB^2}{CA^2} = \frac{BD}{AD}$.

4

