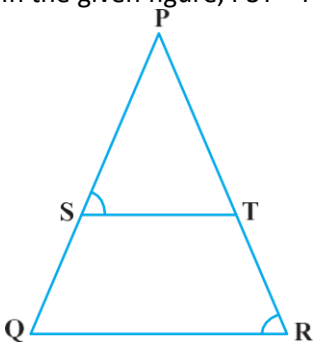
CLASS X
SAMPLE PAPER
MATHS

SECTION - A

1. Every composite number can be expressed as a product of primes, and this factorisation is [1]
   a) Unique and in order
   b) Unique and not in order
   c) Not Unique and in order
   d) Not Unique and not in order
2. If the zeroes of $4s^2 - 4s + 1$ quadratic polynomial is α and β then $\frac{1}{\alpha} + \frac{1}{\beta}$ is [1]
   a) $\frac{1}{4}$
   b) -4
   c) 4
   d) None of the above
3. the lines representing the following pairs of linear equations intersect at a point, or parallel or coincident: [1]
   $5x - 4y + 8 = 0$ and $18x + 6y + 24 = 0$
   a) intersect at a point
   b) parallel
   c) coincident
   d) all of the above
4. In the given figure, PST = PRQ, and ST // QR, then TR is equal to [1]



   a) PS
   b) PT

c) SQ
d) ST

5. One card is drawn from a well-shuffled deck of 52 cards. The probability that the card will not be an ace [1]
   a) $\frac{1}{26}$
   b) $\frac{1}{13}$
   c) $\frac{1}{12}$
   d) None of these

6. A chord of a circle of radius 15 cm subtends an angle of 60° at the centre. Find the areas of the corresponding minor (Use π = 3.14 and 3 = 1.73) [1]
   a) 20.44
   b) 20.43
   c) 20.45
   d) None of the above

7. Consider Δ ACB, right-angled at C, in which AB = 29 units, BC = 21 units and ∠ ABC = θ Determine the values of cos θ + sin θ [1]
   a) $\frac{41}{29}$
   b) $\frac{21}{29}$
   c) $\frac{20}{29}$
   d) $\frac{8}{29}$

8. Given that HCF (306, 657) = 9, find LCM (306, 657). [1]
   a) 22338
   b) 23338
   c) 23258
   d) 22328

9. If the first polynomial is a factor of the second polynomial $(t^2 - 3)$,$(2t^4 + 3t^3 - 2t^2 - 9t - 12)$ then the degree of the quotient is [1]
   a) 1
   b) 2
   c) 3
   d) None of the above

10. If we add 1 to the numerator and subtract 1 from the denominator, a fraction reduces to 1. It becomes $\frac{1}{2}$ if we only add 1 to the denominator. The fraction is [1]

a) $\frac{2}{7}$

b) $\frac{5}{2}$

c) $\frac{2}{5}$

d) None of these

11. Savita and Hamida are friends. The probability that both have different birthdays is [1]

a) $\frac{1}{7}$

b) $\frac{5}{7}$

c) $\frac{6}{7}$

d) None of the above

12. From each corner of a square of side 4 cm a quadrant of a circle of radius 1 cm is cut and also a circle of diameter 2 cm is cut as shown in Fig. 12.23. Find the area of the remaining portion of the square. [1]

a) $\frac{68}{7}$

b) $\frac{7}{68}$

c) $\frac{5}{68}$

d) $\frac{69}{5}$

13. If cot θ = $\frac{8}{7}$ the value of $\frac{1-sin\theta}{1+sin\theta}$ is [1]

a) $\frac{81+7\sqrt{113}}{32}$

b) $\frac{81-7\sqrt{113}}{32}$

c) $\frac{81-\sqrt{113}}{32}$

d) None of the above

14. The condition under which two similar triangles are congruent is [1]
    a) Corresponding angles are equal
    b) Corresponding sides are not equal
    c) One pair of corresponding sides are equal
    d) None of the above

15. sin 2A = 2 sin A is true when A = [1]
    (a) 0°
    (b) 30°
    (c) 45°
    (d) 60°

16. If AD and PM are medians of triangles ABC and PQR, respectively where Δ ABC ~ Δ PQR, [1] $\frac{AB}{AD} =$
    a) $\frac{PM}{BC}$
    b) $\frac{PQ}{PM}$
    c) $\frac{AB}{PR}$
    d) $\frac{AB}{QR}$

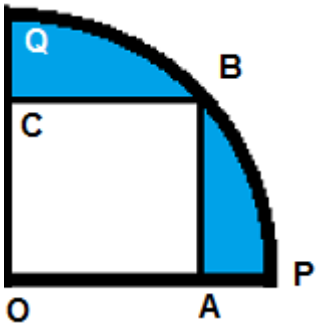
17. The difference between two numbers is 26 and one number is three times the other. Find them. [1]
    a) 13,39
    b) 38, 12
    c) 37,11
    d) 36, 10

18. Let x = $\frac{p}{q}$ be a rational number, such that the prime factorisation of q is not of the form 2^n5^m, where n, m are non-negative integers. Then, x has a decimal expansion which is [1]
    a) terminating decimal
    b) non-terminating repeating
    c) non-terminating non-repeating
    d) None of the above

19. Harpreet tosses two different coins simultaneously (say, one is of ` 1 and other of ` 2). The probability that she gets at least one head is [1]
    a) 0.25
    b) 0.5
    c) 0.75
    d) 1

20. A square OABC is inscribed in a quadrant OPBQ. If OA = 20 cm, find the area of the [1]

shaded region



a) 282 cm^2
b) 228 cm^2
c) 882 cm^2
d) None of the above

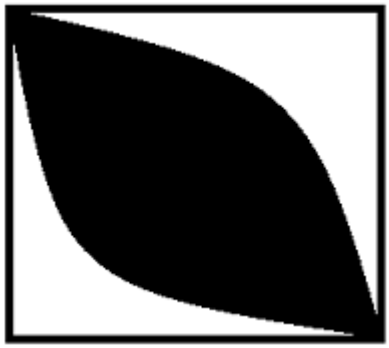
SECTION - B

21. A rational number $\frac{13}{25x}$ will terminate after 8 decimal places for x equal to which of the following digit [1]
    a) 6
    b) 4
    c) 2
    d) 1

22. If the sum of the squares of zeroes of the quadratic polynomial $f(x) = x^2 - 8x + k$ is 40. Find the value of k. [1]
    a) 11
    b) 12
    c) 13
    d) 14

23. Two dice, one blue and one grey, are thrown at the same time. The probability that the sum of the two numbers appearing on the top of the dice is 8 is [1]
    a) $\frac{5}{36}$
    b) $\frac{1}{6}$
    c) $\frac{2}{9}$
    d) None of the above

24. Calculate the area of the designed region common between the two quadrants of circles of radius 8 cm each. [1]



a) $18\frac{2}{7}$

b) $36\frac{4}{7}$

c) $54\frac{6}{7}$

d) None of these

25. Solve for x and y : $23x - 29y = 98$, $29x - 23y = 110$ [1]

a) x = 3 and y = 1

b) x = -3 and y = -1

c) x = 3 and y = -1

d) None of these

26. If $\operatorname{cosec}\theta - \sin\theta = m^3$ and $\sec\theta - \cos\theta = n^3$, the value of $m^2 n^2 (m^2 + n^2)$ is [1]

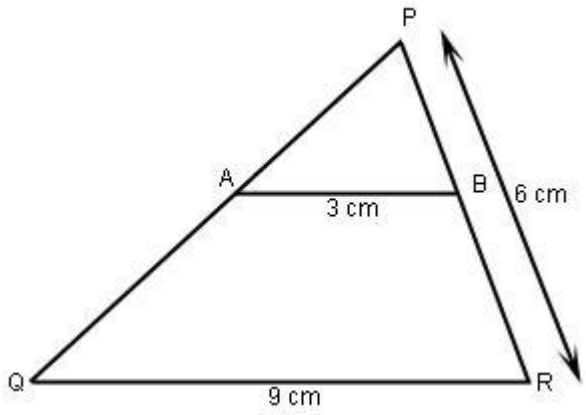
a) 1

b) 2

c) 3

d) 4

27. In figure, AB || QR.The length of PB. [1]



a) 2 cm

b) 1cm
c) 3 cm
d) None of the above

28. A and B are the mid points of the sides PQ and RQ respectively of a $\triangle$PQR right angled at Q. then $4PQ^2 + RQ^2$ is equal to [1]

a) $4RB^2$
b) $4PB^2$
c) $4PQ^2$
d) $4QB^2$

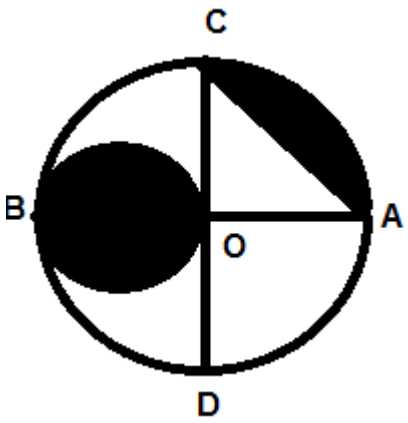
29. The value of *x* for which the points (*x*, -1), (2, 1) and (4, 5) lie on a line is [1]
a) 1
b) -1
c) 0
d) None of these

30. Given LCM (306, x) = 22338 and HCF (306, x) = 9 then the value of x is [1]
a) 756
b) 657
c) 567
d) None of these

31. Five cards—the ten, jack, queen, king and ace of diamonds, are well-shuffled with their face downwards. One card is then picked up at random, the probability that the card is a queen is [1]
a) 0.2
b) 0.4
c) 0.6
d) 0.8

32. A positive number when divided by 88 gives the remaiinder 8. What will be the remainder when this number is divided by 11. [1]
a) 11
b) 22
c) 8
d) 16

33. AB and CD are two diameters of a circle (with centre O) perpendicular to each other and OB is the diameter of the smaller circle. If OA = 7 cm, find the area of the shaded region. [1]



a) 129.5 cm^2
b) 154 cm^2
c) 24.5 cm^2
d) None of the above

34. A father says to his son, "7 years ago I was 7 times as old as you were and after 3 years I shall be 3 times as old as you will be, then the ages of father is [1]
    a) 12 years
    b) 48 years
    c) 21 years
    d) 84 years

35. Evaluate: [1]
$$\frac{4}{3}\tan^2 30^\circ + \sin^2 60^\circ - 3\cos^2 60^\circ + \frac{3}{4}\tan^2 60^\circ - 2\tan^2 45^\circ$$
    a) $\frac{5}{6}$
    b) $\frac{25}{6}$
    c) $\frac{2}{36}$
    d) $\frac{25}{36}$

36. ABC is an isosceles triangle with AB = AC and D is a point on AC such that $BC^2 = AC \times CD$. Then BD is equal to [1]
    a) BC
    b) AB
    c) AC
    d) None of these

37. Find the co-ordinates of the point which divides the line-segment joining the points (3, 5) and (7, 9) internally in the ratio of 2 : 3. [1]

a) $\left(\frac{23}{5}, \frac{33}{5}\right)$

b) $\left(-\frac{23}{5}, -\frac{33}{5}\right)$

c) $\left(\frac{23}{5}, -\frac{33}{5}\right)$

d) None of the above

38. If area of a concentric circular ring is 100.48 cm^2 and width of the ring is 2 cm, then sum of the radii of the two circles is [1]

a) 14 cm
b) 10 cm
c) 16 cm
d) 18 cm

39. If $\tan\theta = \frac{12}{13}$, evaluate $\frac{2\sin\theta\cos\theta}{\cos^2\theta - \sin^2\theta}$ [1]

a) $\frac{321}{25}$

b) $\frac{312}{52}$

c) $\frac{312}{25}$

d) $\frac{-312}{25}$

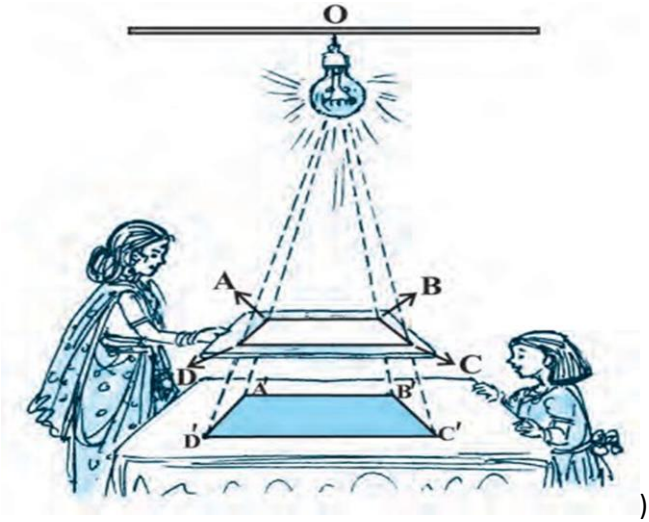
40. Find the ratio in which the point (5, 4) divides the line joining points (2, 1) and (7, 6). [1]

a) 3 : 2
b) 2 : 3
c) 3 : 4
d) 4 : 3

CASE STUDY -01 [1]

Place a lighted bulb at a point O on the ceiling and directly below it a table in your classroom. Let us cut a polygon, say a quadrilateral ABCD, from a plane cardboard and

place this cardboard parallel to the ground between the lighted bulb and the table. Then a shadow of ABCD is cast on the table. Mark the outline of this shadow as A'B'C'D' (see Fig.6.4). Note that the quadrilateral A'B'C'D' is an enlargement (or magnification) of the quadrilateral ABCD. This is because of the property of light that light propogates in a straight line. You may also note that A' lies on ray OA, B' lies on ray OB, C' lies on OC and D' lies on OD. Thus,)



41. If ABCD is similar to A'B'C'D' then the symbolic notation is
    a) ABCD = A'B'C'D'
    b) ABCD ~ A'B'C'D'
    c) ABCD ≅ A'B'C'D'
    d) None of these

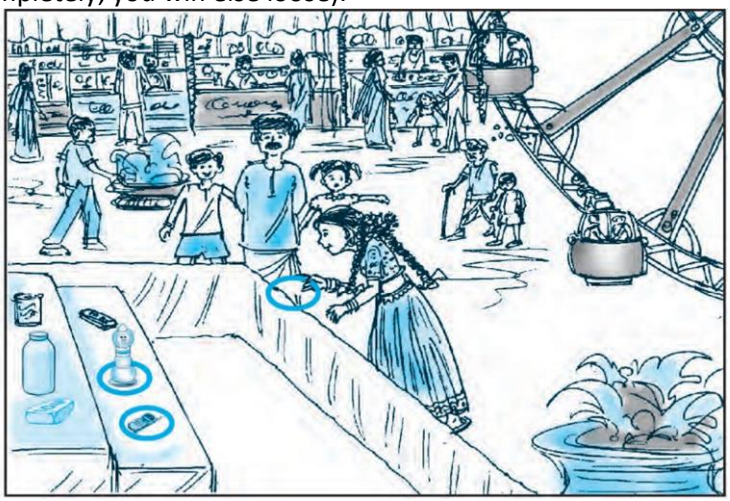
42. By actually measuring the angles and the sides of the two quadrilaterals, you may verify that (i) ∠ A =,∠ C =, ∠ D =,∠ B = [1]
    a) ∠ A'∠ D'∠ C'∠ B' b) ∠ A'∠ C'∠ D'∠ B' c) ∠ A'∠ C'∠ B' ∠ D' d) ∠ B'∠ A'∠ C'∠ D'

43. If the bulb is at a distance of 3 meter from the point A and AA' = 2m, then the length of QA' is [1]
    a) 1m
    b) 3m
    c) 5m
    d) 7m

44. Two polygons are said to be similar if [1]
    a) all the corresponding angles are equal
    b) all the corresponding sides are in the same ratio
    c) Both have equal number of sides
    d) All of the above

45. Quadrilaterals A'B'C'D' and ABCD are of the same shape and of equal size, then the two figures are [1]
    a) Similar
    b) Congruent
    c) Can't determine
    d) None of these

You must have come across situations like the one given below : Akhila went to a fair in her village. She wanted to enjoy rides on the Giant Wheel and play Hoopla (a game in which you throw a ring on the items kept in a stall, and if the ring covers any object completely, you win else loose).



46. You have to throw a ring onto the objects kept at a distance if the object remains completely within the ring the stall owner will pay you Rs. 5 else you have to pay Rs. 2/- to him. At the end of 20 trials, if you have Rs. 44/- with you, then number times you have lose to put correctly is [1]
    a) 12
    b) 8
    c) 13
    d) 7

47. The probability of losing the game in question number 46 is [1]
    a) 0.2
    b) 0.4
    c) 0.6
    d) 0.8

48. Akhila ride the gaint wheel once for 5 round, the distance covered by her in all if the radius of the wheel 21m is [1]
    a) 132m
    b) 231 m
    c) 660 m

d) None of these

49. The number of times she played Hoopla is half the number of rides she had on the Giant Wheel. If she had covered a distance of 1584 m on the gaint wheel, then the number o times she had played the Hoopla is [1]
    a) 12 times
    b) 6 times
    c) 3 times
    d) 24 times

50. If the radius of the ring is 7.5cm, then dimension of the objects must be [1]
    a) less than 7.5cm
    b) less than 15 cm
    c) equal to 7.5 cm
    d) equal to 15 cm