Board Paper of Class 10 Maths (Standard)
Term-I 2021 Delhi(Set 4)

Total Time: 90

Total Marks: 40.0

Section A

Q.No.1: The exponent of 5 in the prime factorisation of 3750 is
(a) 3
(b) 4
(c) 5
(d) 6

Marks:[1.00]

Q.No.2: The graph of a polynomial P(x) cuts the x-axis at 3 points and touches it at 2 other points. The number of zeroes of P(x) is
(a) 1
(b) 2
(c) 3
(d) 5

Marks:[1.00]

Q.No.3: The values of x and y satisfying the two equations $32x + 33y = 34$, $33x + 32y = 31$ respectively are :
(a) –1, 2
(b) –1, 4
(c) 1, –2
(d) –1, –4

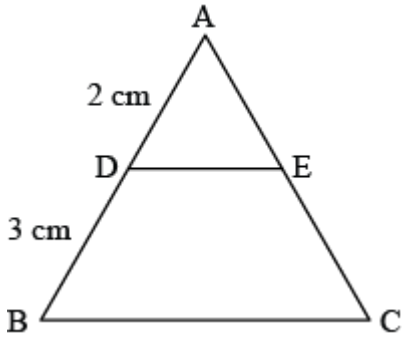
Marks:[1.00]

Q.No.4: If A(3, $\sqrt{3}$), B(0, 0) and C(3, k) are the three vertices of an equilateral triangle ABC, then the value of k is
(a) 2
(b) –3

(c) $-\sqrt{3}$
(d) $-\sqrt{2}$

Marks:[1.00]

Q.No.5: In figure, DE || BC, AD = 2 cm and BD = 3 cm, then ar (ΔABC) : ar (ΔADE) is equal to



(a) 4 : 25
(b) 2 : 3
(c) 9 : 4
(d) 25 : 4

Marks:[1.00]

Q.No.6: If $\cot\theta = \frac{1}{\sqrt{3}}$, the value of $\sec^2\theta + \text{cosec}^2\theta$ is

(a) 1
(b) $\frac{40}{9}$
(c) $\frac{38}{9}$
(d) $5\frac{1}{3}$

Marks:[1.00]

Q.No.7: The area of a quadrant of a circle where the circumference of circle is 176 m, is

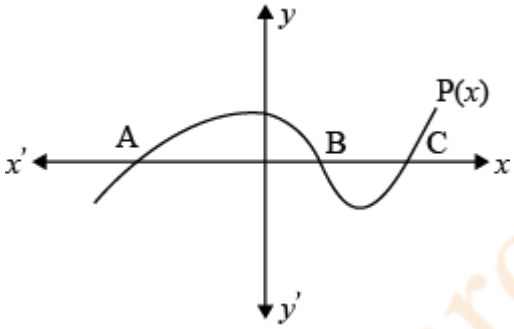
(a) 2464 m^2
(b) 1232 m^2
(c) 616 m^2
(d) 308 m^2

Marks:[1.00]

Q.No.8: For an event E, P(E) + $\mathrm{P}(\overline{\mathrm{E}})$ = x, then the value of $x^3 - 3$ is
(a) –2
(b) 2
(c) 1
(d) –1 **Marks:[1.00]**

Q.No.9: What is the greatest possible speed at which a girl can walk 95 m and 171 m in an exact number of minutes?
(a) 17 m/min
(b) 19 m/min
(c) 23 m/min
(d) 13 m/min **Marks:[1.00]**

Q.No.10: In figure, the graph of a polynomial P(x) is shown. The number of zeroes of P(x) is



(a) 1
(b) 2
(c) 3
(d) 4 **Marks:[1.00]**

Q.No.11: Two lines are given to be parallel, The equation of one of the lines is $3x - 2y = 5$. The equation of the second line can be
(a) $9x + 8y = 7$
(b) $-12x - 8y = 7$
(c) $-12x + 8y = 7$
(d) $12x + 8y = 7$ **Marks:[1.00]**

Q.No.12: Three vertices of a parallelogram ABCD are A(1, 4), B(–2, 3) and C(5, 8). The ordinate of the fourth vertex D is
(a) 8

(b) 9
(c) 7
(d) 6 **Marks:[1.00]**

Q.No.13: In ΔABC and ΔDEF, ∠F = ∠C, ∠B = ∠E and AB = $\frac{1}{2}$ DE. Then, the two triangles are
(a) Congruent, but not similar.
(b) Similar, but not congruent.
(c) Neither congruent nor similar.
(d) Congruent as well as similar. **Marks:[1.00]**

Q.No.14: In ΔABC right angled at B, sinA = $\frac{7}{25}$ then the value of cosC is
(a) $\frac{7}{25}$
(b) $\frac{24}{25}$
(c) $\frac{7}{24}$
(d) $\frac{24}{7}$ **Marks:[1.00]**

Q.No.15: The minute hand of a clock is 84 cm long. The distance covered by the tip of minute hand from 10:10 am to 10:25 am is
(a) 44 cm
(b) 88 cm
(c) 132 cm
(d) 176 cm **Marks:[1.00]**

Q.No.16: The probability that the drawn card from a pack of 52 cards is neither an ace nor a spade is
(a) $\frac{9}{13}$
(b) $\frac{35}{52}$
(c) $\frac{10}{13}$
(d) $\frac{19}{26}$ **Marks:[1.00]**

Q.No.17: Three alarm clocks ring their alarms at regular intervals of 20 min, 25 min and 30 min respectively. If they first beep together at 12 noon, at what time will they beep again for the first time?

(a) 4 : 00 pm
(b) 4 : 30 pm
(c) 5 : 00 pm
(d) 5 : 30 pm **Marks:[1.00]**

Q.No.18: A quadratic polynomial, the product and sum of whose zeroes are 5 and 8 respectively is
(a) $k\left[x^2-8x+5\right]$
(b) $k\left[x^2+8x+5\right]$
(c) $k\left[x^2-5x+8\right]$
(d) $k\left[x^2+5x+8\right]$ **Marks:[1.00]**

Q.No.19: Point A (–1, *y*) and B (5, 7) lie on a circle with centre O (2, –3*y*). The value of *y* are
(a) 1, –7
(b) –1, 7
(c) 2, 7
(d) –2, –7 **Marks:[1.00]**

Q.No.20: Given that $\sec\theta=\sqrt{2}$, the value of $\frac{1+\tan\theta}{\sin\theta}$ is
(a) $2\sqrt{2}$
(b) $\sqrt{2}$
(c) $3\sqrt{2}$
(d) 2 **Marks:[1.00]**

Section B

Q.No.21: The greatest number which when divides 1251, 9377 and 15628 leaves remainder 1, 2 and 3 respectively is
(a) 575
(b) 450
(c) 750
(d) 625 **Marks:[1.00]**

Q.No.22: Which of the following cannot be the probability of an event?
(a) 0.01

(b) 3%
(c) $\frac{16}{17}$
(d) $\frac{17}{16}$

Marks:[1.00]

Q.No.23: The diameter of a car wheel is 42 cm. The number of complete revolutions it will make in moving 132 km is
(a) 10^4
(b) 10^5
(c) 10^6
(d) 10^3

Marks:[1.00]

Q.No.24: If θ is an acute angle and tan θ + cot θ = 2, then the value of $\sin^3\theta + \cos^3\theta$ is
(a) 1
(b) $\frac{1}{2}$
(c) $\frac{\sqrt{2}}{2}$
(d) $\sqrt{2}$

Marks:[1.00]

Q.No.25: The ratio in which the line $3x + y - 9 = 0$ divides the line segment joining the points (1, 3) and (2, 7) is
(a) 3 : 2
(b) 2 : 3
(c) 3 : 4
(d) 4 : 3

Marks:[1.00]

Q.No.26: If $x - 1$ is a factor of the polynomial $p(x) = x^3 + ax^2 + 2b$ and $a + b = 4$, then
(a) $a = 5, b = -1$
(b) $a = 9, b = -5$
(c) $a = 7, b = -3$
(d) $a = 3, b = 1$

Marks:[1.00]

Q.No.27: If a and b are two coprime numbers, then a^3 and b^3 are
(a) Coprime

(b) Not coprime
(c) Even
(d) Odd **Marks:[1.00]**

Q.No.28: The area of a square that can be inscribed in a circle of area $\frac{1408}{7}$ cm^2 is
(a) 321 cm^2
(b) 642 cm^2
(c) 128 cm^2
(d) 256 cm^2 **Marks:[1.00]**

Q.No.29: If A(4, –2), B(7, –2) and C(7, 9) are the vertices of a ΔABC, then ΔABC is
(a) equilateral triangle
(b) isosceles triangle
(c) right angled triangle
(d) isosceles right angled triangle **Marks:[1.00]**

Q.No.30: If α, β are the zeros of the quadratic polynomial $p(x) = x^2 - (k + 6)x + 2(2k - 1)$, then the value of k, if $\alpha + \beta = \frac{1}{2}\alpha\beta$, is
(a) –7
(b) 7
(c) –3
(d) 3 **Marks:[1.00]**

Q.No.31: If n is a natural number, then $2(5^n + 6^n)$ always ends with
(a) 1
(b) 4
(c) 3
(d) 2 **Marks:[1.00]**

Q.No.32: The line segment joining the points P(–3, 2) and Q(5, 7) is divided by the y-axis in the ratio
(a) 3 : 1
(b) 3 : 4
(c) 3 : 2
(d) 3 : 5 **Marks:[1.00]**

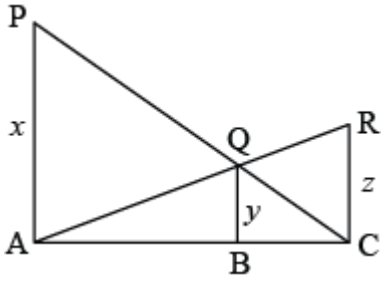
Q.No.33: If $a\cot\theta + b\operatorname{cosec}\theta = p$ and $b\cot\theta + a\operatorname{cosec}\theta = q$, then $p^2 - q^2 =$
(a) $a^2 - b^2$
(b) $b^2 - a^2$
(c) $a^2 + b^2$
(d) $b - a$ **Marks:[1.00]**

Q.No.34: If the perimeter of a circle is half to that of a square, then the ratio of the
area of the circle to the area of the square is
(a) 22 : 7
(b) 11 : 7
(c) 7 : 11
(d) 7 : 22 **Marks:[1.00]**

Q.No.35: A dice is rolled twice. The probability that 5 will not come up either time is
(a) $\frac{11}{36}$
(b) $\frac{1}{3}$
(c) $\frac{13}{36}$
(d) $\frac{25}{36}$ **Marks:[1.00]**

Q.No.36: The LCM of two numbers is 2400. Which of the following CANNOT be their HCF?
(a) 300
(b) 400
(c) 500
(d) 600 **Marks:[1.00]**

Q.No.37: In the given figure, PA, QB and RC are each perpendicular to AC. If x = 8 cm and z = 6 cm, then y is equal to



(a) $\frac{56}{7}$ cm

(b) $\frac{7}{56}$ cm

(c) $\frac{25}{7}$ cm

(d) $\frac{24}{7}$ cm

Marks:[1.00]

Q.No.38: In a ΔABC, ∠A = x°, ∠B = (3x – 2)°, ∠C = y°, Also ∠C – ∠B = 9°. The sum of the greatest and the smallest angles of this triangle is

(a) 107°

(b) 135°

(c) 155°

(d) 145°

Marks:[1.00]

Q.No.39: If secθ + tanθ = p, then tanθ is

(a) $\frac{p^2+1}{2p}$

(b) $\frac{p^2-1}{2p}$

(c) $\frac{p^2-1}{p^2+1}$

(d) $\frac{p^2+1}{p^2-1}$

Marks:[1.00]

Q.No.40: The base BC of an equilateral ΔABC lies on the *y-axis*. The co-ordinates of C are (0, –3). If the origin is the mid-point of the base BC, what are the co-ordinates of A and B?

(a)A $\left(\sqrt{3},\ 0\right)$, B$\left(0,\ 3\right)$

(b) A $\left(\pm 3\sqrt{3},\ 0\right)$, B$\left(3,\ 0\right)$

(c) $\mathrm{A}\left(\pm 3\sqrt{3},\ 0\right),\ \mathrm{B}\left(0,\ 3\right)$

(d) $\mathrm{A}\left(-\sqrt{3},\ 0\right),\ \mathrm{B}\left(3,\ 0\right)$

Marks:[1.00]

Section C

Q.No.41: Case Study-I

A book store shopkeeper gives books on rent for reading. He has variety of books in his store related to fiction, stories and quizzes etc. He takes a fixed charge for the first two days and an additional charge for subsequent day. Amruta paid ₹22 for a book and kept for 6 days; while Radhika paid ₹16 for keeping the book for 4 days.

Assume that the fixed charge be ₹x and additional charge (per day) be ₹y. Based on the above information, answer any four of the following questions:

The situation of amount paid by Radhika, is algebraically represented by

(a) $x - 4y = 16$

(b) $x + 4y = 16$

(c) $x - 2y = 16$

(d) $x + 2y = 16$

Marks:[1.00]

Q.No.42: Case Study-I

A book store shopkeeper gives books on rent for reading. He has variety of books in his store related to fiction, stories and quizzes etc. He takes a fixed charge for the first two days and an additional charge for subsequent day. Amruta paid ₹22 for a book and kept for 6 days; while Radhika paid ₹16 for keeping the book for 4 days.

Assume that the fixed charge be ₹x and additional charge (per day) be ₹y.
Based on the above information, answer any four of the following questions:
The situation of amount paid by Amruta, is algebraically represented by
(a) $x - 2y = 11$
(b) $x - 2y = 22$
(c) $x + 4y = 22$
(d) $x - 4y = 11$ **Marks:[1.00]**

Q.No.43: Case Study-I
A book store shopkeeper gives books on rent for reading. He has variety of books in his store related to fiction, stories and quizzes etc. He takes a fixed charge for the first two days and an additional charge for subsequent day. Amruta paid ₹22 for a book and kept for 6 days; while Radhika paid ₹16 for keeping the book for 4 days.

Assume that the fixed charge be ₹x and additional charge (per day) be ₹y.
Based on the above information, answer any four of the following questions:
What are the fixed charges for a book?
(a) ₹9
(b) ₹10

(c) ₹13
(d) ₹15 **Marks:[1.00]**

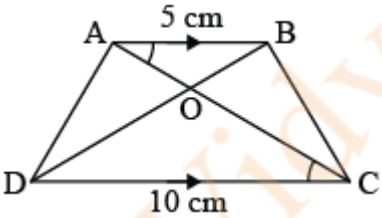
Q.No.44: Case Study-I
A book store shopkeeper gives books on rent for reading. He has variety of books in his store related to fiction, stories and quizzes etc. He takes a fixed charge for the first two days and an additional charge for subsequent day. Amruta paid ₹22 for a book and kept for 6 days; while Radhika paid ₹16 for keeping the book for 4 days.

Assume that the fixed charge be ₹x and additional charge (per day) be ₹y.
Based on the above information, answer any four of the following questions:
What are the additional charges for each subsequent day for a book?
(a) ₹6
(b) ₹5
(c) ₹4
(d) ₹3 **Marks:[1.00]**

Q.No.45: Case Study-I
A book store shopkeeper gives books on rent for reading. He has variety of books in his store related to fiction, stories and quizzes etc. He takes a fixed charge for the first two days and an additional charge for subsequent day. Amruta paid ₹22 for a book and kept for 6 days; while Radhika paid ₹16 for keeping the book for 4 days.

Assume that the fixed charge be ₹x and additional charge (per day) be ₹y.
Based on the above information, answer any four of the following questions:
What is the total amount paid by both, if both of them have kept the book for 2 more days?
(a) ₹35
(b) ₹52
(c) ₹50
(d) ₹58 **Marks:[1.00]**

Q.No.46:
Case Study - II
A farmer has a field in the shape of trapezium, whose map with scale 1 cm = 20 m, is given below:
The field is divided into four parts by joining the opposite vertices.

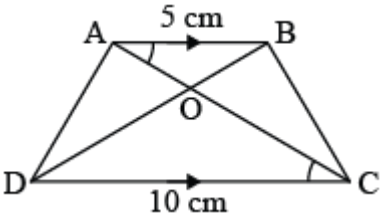


Based on the above information, answer any **four** of the following questions:

The two triangular regions AOB and COD are
(a) Similar by AA criterion
(b) Similar by SAS criterion
(c) Similar by RHS criterion
(d) Not similar **Marks:[1.00]**

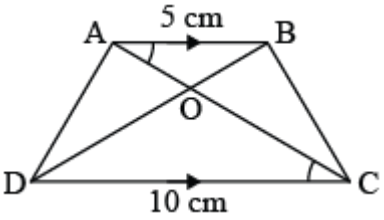
Q.No.47:
Case Study - II
A farmer has a field in the shape of trapezium, whose map with scale 1 cm 20

m, is given below:
The field is divided into four parts by joining the opposite vertices.



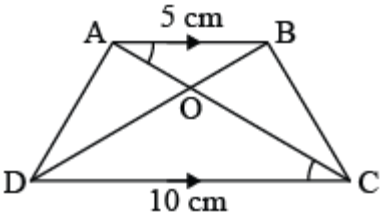
Based on the above information, answer any **four** of the following questions:
The ratio of the area of the ΔAOB to the area of ΔCOD, is
(a) 4 : 1
(b) 1 : 4
(c) 1 : 2
(d) 2 : 1 **Marks:[1.00]**

Q.No.48:
Case Study - II
A farmer has a field in the shape of trapezium, whose map with scale 1 cm 20 m, is given below:
The field is divided into four parts by joining the opposite vertices.



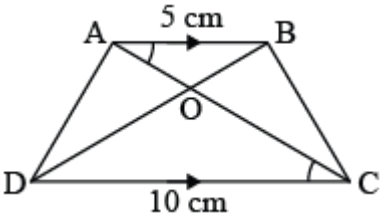
Based on the above information, answer any **four** of the following questions:
If the ratio of the perimeter of ΔAOB to the perimeter of ΔCOD would have been 1 : 4, then
(a) AB = 2 CD
(b) AB = 4 CD
(c) CD = 2 AB
(d) CD = 4 AB **Marks:[1.00]**

Q.No.49:
Case Study - II
A farmer has a field in the shape of trapezium, whose map with scale 1 cm 20 m, is given below:
The field is divided into four parts by joining the opposite vertices.



Based on the above information, answer any **four** of the following questions:
If in ΔAOD and BOC, $\frac{AO}{BC} = \frac{AD}{BO} = \frac{OD}{OC}$, then
(a) ΔAOD ~ ΔBOC
(b) ΔAOD ~ ΔBCO
(c) ΔADO ~ ΔBCO
(d) ΔODA ~ ΔOBC **Marks:[1.00]**

Q.No.50:
Case Study - II
A farmer has a field in the shape of trapezium, whose map with scale 1 cm 20 m, is given below:
The field is divided into four parts by joining the opposite vertices.



Based on the above information, answer any **four** of the following questions:
If the ratio of areas of two similar triangles AOB and COD is 1 : 4, then which of the following statements is true?
(a) The ratio of their perimeters is 3 : 4
(b) The corresponding altitudes have a ratio 1 : 2
(c) The medians have a ratio 1 : 4
(d) The angle bisectors have a ratio 1 : 16 **Marks:[1.00]**