CBSE 2023 Maths Standard — Set 2 — Answer Key

English Medium

Time Allowed: 3 Hours | Maximum Marks: 80

General Instructions:

1. This question paper contains 38 questions. All questions are compulsory.
2. Section A has 20 MCQs carrying 1 mark each.
3. Section B has 6 questions carrying 2 marks each.
4. Section C has 6 questions carrying 3 marks each.
5. Section D has 4 questions carrying 5 marks each.
6. Section E has 3 case-study based questions carrying 4 marks each.
7. Draw neat figures wherever required.

Section A

Multiple Choice Questions (1 mark each)

Q.1 [1 mark]

Which of the following quadratic equations has sum of its roots as 4?

(a) 2x^2 - 4x + 8 = 0

(b) -x^2 + 4x + 4 = 0 <<

(c) sqrt(2)*x^2 - 4/sqrt(2)*x + 1 = 0

(d) 4x^2 - 4x + 4 = 0

Explanation:

For ax^2 + bx + c = 0, sum of roots = -b/a.

For -x^2 + 4x + 4 = 0: sum = -4/(-1) = 4. For 2x^2 - 4x + 8 = 0: sum = 4/2 = 2. For sqrt(2)*x^2 - 4/sqrt(2)*x + 1 = 0: sum = (4/sqrt(2))/sqrt(2) = 4/2 = 2. For 4x^2 - 4x + 4 = 0: sum = 4/4 = 1. Only option (b) gives sum = 4.

Q.2 [1 mark]

What is the length of the arc of the sector of a circle with radius 14 cm and of central angle 90 degrees?

(a) 22 cm <<

(b) 44 cm

(c) 88 cm

(d) 11 cm

Explanation:

Length of arc = (theta/360) * 2*pi*r = (90/360) * 2 * (22/7) * 14 = (1/4) * 2 * 22 * 2 = (1/4) * 88 = 22 cm.

Q.3 [1 mark]

If triangle ABC ~ triangle PQR with angle A = 32 degrees and angle R = 65 degrees, then the measure of angle B is:

(a) 32 degrees

(b) 65 degrees

(c) 83 degrees <<

(d) 97 degrees

Explanation:

Since triangle ABC ~ triangle PQR, corresponding angles are equal: angle A = angle P = 32 degrees, angle C = angle R = 65 degrees.

In triangle ABC, angle A + angle B + angle C = 180 degrees.

So angle B = 180 - 32 - 65 = 83 degrees.

Q.4 [1 mark]

If 'p' and 'q' are natural numbers and 'p' is the multiple of 'q', then what is the HCF of 'p' and 'q'?

(a) pq

(b) p

(c) q <<

(d) p + q

Explanation:

If p is a multiple of q, then p = k*q for some natural number k.

The HCF of p and q is the largest number that divides both.

Since q divides p (as p is a multiple of q) and q divides q, HCF(p, q) = q.

Q.5 [1 mark]

The coordinates of the vertex A of a rectangle ABCD whose three vertices are given as B(0, 0), C(3, 0) and D(0, 4) are:

(a) (4, 0)

(b) (0, 3)

(c) (3, 4) <<

(d) (4, 3)

Explanation:

In rectangle ABCD, vertices are in order.

B(0,0), C(3,0), D(0,4).

The vertex A is diagonally opposite to the vertex between B and D (or C).

Using the property that diagonals of a rectangle bisect each other: midpoint of AC = midpoint of BD.
Midpoint of BD = ((0+0)/2, (0+4)/2) = (0, 2).
So midpoint of AC = (0, 2): ((3 + xA)/2, (0 + yA)/2) = (0, 2) gives xA = -3, yA = 4. But checking the order ABCD: A must connect to B and D.
A = D + C - B = (0,4) + (3,0) - (0,0) = (3, 4).

Q.6 [1 mark]

If the pair of equations 3x - y + 8 = 0 and 6x - ry + 16 = 0 represent coincident lines, then the value of 'r' is:

(a) -1/2
(b) 1/2
(c) -2
(d) 2 <<

Explanation:
For coincident lines: a1/a2 = b1/b2 = c1/c2. Here 3/6 = (-1)/(-r) = 8/16. So 1/2 = 1/r.
Therefore r = 2.

Q.7 [1 mark]

A bag contains 100 cards numbered 1 to 100. A card is drawn at random from the bag. What is the probability that the number on the card is a perfect cube?

(a) 1/20
(b) 3/50
(c) 1/25 <<
(d) 7/100

Explanation:
Perfect cubes from 1 to 100: 1^3 = 1, 2^3 = 8, 3^3 = 27, 4^3 = 64. So there are 4 perfect cubes.
Probability = 4/100 = 1/25.

Q.8 [1 mark]

The pair of equations x = a and y = b graphically represents lines which are:

(a) parallel
(b) intersecting at (b, a)
(c) coincident
(d) intersecting at (a, b) <<

Explanation:
x = a is a vertical line and y = b is a horizontal line.
They are perpendicular and intersect at the point (a, b).

Q.9 [1 mark]

If one zero of the polynomial 6x^2 + 37x - (k - 2) is reciprocal of the other, then what is the value of k?

(a) -4 <<
(b) -6
(c) 6
(d) 4

Explanation:
Let the zeros be alpha and 1/alpha.
Product of zeros = c/a = -(k-2)/6. Since alpha * (1/alpha) = 1, we get -(k-2)/6 = 1. So -(k-2) = 6, which gives k - 2 = -6, hence k = -4.

Q.10 [1 mark]

What is the total surface area of a solid hemisphere of diameter 'd'?

(a) 3*pi*d^2
(b) 2*pi*d^2
(c) (1/2)*pi*d^2
(d) (3/4)*pi*d^2 <<

Explanation:
Radius = d/2. TSA of hemisphere = 3*pi*r^2 = 3*pi*(d/2)^2 = 3*pi*d^2/4 = (3/4)*pi*d^2.

Q.11 [1 mark]

If three coins are tossed simultaneously, what is the probability of getting at most one tail?

(a) 3/8

(b) 4/8 <<

(c) 5/8

(d) 7/8

Explanation:

Total outcomes = 2^3 = 8. At most one tail means 0 or 1 tail.

0 tails: HHH = 1 way.

1 tail: HHT, HTH, THH = 3 ways.

Total favorable = 4. Probability = 4/8 = 1/2.

Q.12 [1 mark]

In a triangle, DE is parallel to BC. If AD = 2 units, DB = 3 units, AE = 3 units and EC = x units, then the value of x is:

(a) 2

(b) 3

(c) 5

(d) 9/2 <<

Explanation:

By Basic Proportionality Theorem (Thales' theorem), AD/DB = AE/EC.

So 2/3 = 3/x.

Therefore x = 9/2 = 4.5.

Q.13 [1 mark]

The hour-hand of a clock is 6 cm long. The angle swept by it between 7:20 a.m. and 7:55 a.m. is:

(a) (35/4) degrees

(b) (35/2) degrees <<

(c) 35 degrees

(d) 70 degrees

Explanation:

The hour hand moves 360 degrees in 12 hours = 0.5 degrees per minute.

Time from 7:20 to 7:55 = 35 minutes.

Angle swept = 35 * 0.5 = 17.5 = 35/2 degrees.

Q.14 [1 mark]

The zeroes of the polynomial p(x) = x^2 + 4x + 3 are given by:

(a) 1, 3

(b) -1, 3

(c) 1, -3

(d) -1, -3 <<

Explanation:

x^2 + 4x + 3 = (x + 1)(x + 3) = 0. So x = -1 or x = -3. The zeroes are -1 and -3.

Q.15 [1 mark]

In a figure, the quadrilateral PQRS circumscribes a circle. Here PA + CS is equal to:

(a) QR <<

(b) PR

(c) PS

(d) PQ

Explanation:

When a quadrilateral circumscribes a circle, the sum of opposite sides are equal: PQ + RS = QR + PS.

Also, using tangent properties: PA + CS = PA + CR (if tangent segments).

Since tangent lengths from an external point are equal, PA + CS equals the sum of tangent segments which equals QR.

Q.16 [1 mark]

If alpha and beta are the zeroes of the quadratic polynomial p(x) = x^2 - ax -

b, then the value of alpha^2 + beta^2 is:

(a) a^2 - 2b

(b) a^2 + 2b <<

(c) b^2 - 2a

(d) b^2 + 2a

Explanation:

Sum of zeroes: alpha + beta = a.

Product of zeroes: alpha * beta = -b.

alpha^2 + beta^2 = (alpha + beta)^2 - 2*alpha*beta = a^2 - 2*(-b) = a^2 + 2b.

Q.17 [1 mark]

The area of the triangle formed by the line x/a + y/b = 1 with the coordinate axes is:

(a) ab

(b) (1/2)*ab <<

(c) (1/4)*ab

(d) 2ab

Explanation:

The line x/a + y/b = 1 intersects the x-axis at (a, 0) and y-axis at (0, b).

The triangle formed with the origin has base = a and height = b.

Area = (1/2) * a * b = (1/2)*ab.

Q.18 [1 mark]

In the given figure, AB is parallel to PQ. If AB = 6 cm, PQ = 2 cm and OB = 3 cm, then the length of OP is:

(a) 9 cm

(b) 3 cm

(c) 4 cm

(d) 1 cm <<

Explanation:

Since AB || PQ, triangles AOB and POQ are similar (AA similarity).

AB/PQ = OB/OP.

So 6/2 = 3/OP.

Therefore 3 = 3/OP, giving OP = 1 cm.

Q.19 [1 mark]

Assertion (A): A tangent to a circle is perpendicular to the radius through the point of contact.

Reason (R): The lengths of tangents drawn from an external point to a circle are equal.

Which of the following is correct?

(a) Both A and R are true, and R is the correct explanation of A

(b) Both A and R are true, but R is NOT the correct explanation of A <<

(c) A is true, but R is false

(d) A is false, but R is true

Explanation:

Assertion (A) is true - a tangent is always perpendicular to the radius at the point of contact.

Reason (R) is also true - tangent lengths from an external point are equal.

However, R does not explain A; they are independent properties.

So both are true but R is not the correct explanation of A.

Q.20 [1 mark]

Assertion (A): The polynomial p(x) = x^2 + 3x + 3 has two real zeroes.

Reason (R): A quadratic polynomial can have at most two real zeroes.

Which of the following is correct?

(a) Both A and R are true, and R is the correct explanation of A

(b) Both A and R are true, but R is NOT the correct explanation of A

(c) A is true, but R is false

(d) A is false, but R is true <<

Explanation:

For p(x) = x^2 + 3x + 3, discriminant = 9 - 12 = -3 < 0. So it has no real zeroes.

Assertion (A) is false.

Reason (R) is true - a quadratic polynomial can have at most 2 real zeroes.

So A is false, R is true.

Section B

Very Short Answer Questions (2 marks each)

Q.22 [2 marks]

If 4*cot^2(45) - sec^2(60) + sin^2(60) + p = 3/4, then find the value of p.

Answer: 0

Explanation:

cot(45) = 1, so cot^2(45) = 1. sec(60) = 2, so sec^2(60) = 4. sin(60) = sqrt(3)/2, so sin^2(60) = 3/4. Substituting: 4(1) - 4 + 3/4 + p = 3/4. So 0 + 3/4 + p = 3/4. Therefore p = 0.

OR

Q.22 [2 marks]

If cos A + cos^2 A = 1, then find the value of sin^2 A + sin^4 A.

Answer: 1

Explanation:

Given cos A + cos^2 A = 1, so cos A = 1 - cos^2 A = sin^2 A.

Now sin^2 A + sin^4 A = cos A + cos^2 A = 1 (from the given condition).

Q.24 [2 marks]

The length of the shadow of a tower on the plane ground is sqrt(3) times the height of the tower. Find the angle of elevation of the sun.

Answer: 30 degrees

Explanation:

Let height of tower = h.

Shadow length = sqrt(3)*h.

tan(theta) = h/(sqrt(3)*h) = 1/sqrt(3).

So theta = 30 degrees.

OR

Q.24 [2 marks]

The angle of elevation of the top of a tower from a point on the ground which is 30 m away from the foot of the tower, is 30 degrees. Find the height of the tower.

Answer: 10*sqrt(3) m

Explanation:

tan(30) = height/30. So height = 30 * tan(30) = 30 * (1/sqrt(3)) = 30/sqrt(3) = 30*sqrt(3)/3 = 10*sqrt(3) m.

Q.25 [2 marks]

In the given figure, O is the centre of the circle. AB and AC are tangents drawn to the circle from point A. If angle BAC = 65 degrees, then find the measure of angle BOC.

Answer: 115 degrees

Explanation:

Since AB and AC are tangents, angle OBA = 90 degrees and angle OCA = 90 degrees.

In quadrilateral ABOC, sum of angles = 360 degrees.

angle BAC + angle OBA + angle BOC + angle OCA = 360. 65 + 90 + angle BOC + 90 = 360. angle BOC = 360 - 245 = 115 degrees.

Q.26 [2 marks]

Find by prime factorisation the LCM of the numbers 18180 and 7575. Also, find the HCF of the two numbers.

Answer: LCM = 90900, HCF = 1515

Explanation:

18180 = 2^2 * 3 * 5 * 303 = 2^2 * 3 * 5 * 3 * 101 = 2^2 * 3^2 * 5 * 101. 7575 = 3 * 2525 = 3 * 5 * 505 = 3 * 5 * 5 * 101 = 3 * 5^2 * 101. HCF = 3 * 5 * 101 = 1515. LCM = 2^2 * 3^2 * 5^2 * 101 = 4 * 9 * 25 * 101 = 90900. Verification: HCF * LCM = 1515 * 90900 = 18180 * 7575.

OR

Q.26 [2 marks]

Three bells ring at intervals of 6, 12 and 18 minutes. If all the three bells rang at 6 a.m., when will they ring together again?

Answer: 6:36 a.m.

Explanation:

We need LCM of 6, 12, 18. 6 = 2 * 3. 12 = 2^2 * 3. 18 = 2 * 3^2. LCM = 2^2 * 3^2 = 36 minutes.

So they will ring together again at 6:00 + 36 minutes = 6:36 a.m.

Section C

Short Answer Questions (3 marks each)

Q.28 [3 marks]

If Q(0, 1) is equidistant from P(5, -3) and R(x, 6), find the values of x.

Answer: x = 4 or x = -4

Explanation:

QP = QR.

QP^2 = (5-0)^2 + (-3-1)^2 = 25 + 16 = 41. QR^2 = (x-0)^2 + (6-1)^2 = x^2 + 25. Setting equal: x^2 + 25 = 41. x^2 = 16. x = 4 or x = -4.

Q.29 [3 marks]

A car has two wipers which do not overlap. Each wiper has a blade of length 21 cm sweeping through an angle of 120 degrees. Find the total area

cleaned at each sweep of the two blades.

Answer: 924 cm^2

Explanation:

Area cleaned by one wiper = (theta/360) * pi * r^2 = (120/360) * (22/7) * 21^2 = (1/3) * (22/7) * 441 = (1/3) * 22 * 63 = (1/3) * 1386 = 462 cm^2. Total area for two wipers = 2 * 462 = 924 cm^2.

Q.30 [3 marks]

If the system of linear equations 2x + 3y = 7 and 2ax + (a + b)y = 28 have infinite number of solutions, then find the values of 'a' and 'b'.

Answer: a = 4, b = 8

Explanation:

For infinite solutions: a1/a2 = b1/b2 = c1/c2. So 2/(2a) = 3/(a+b) = 7/28. From 7/28 = 1/4. So 2/(2a) = 1/4, giving 2a = 8, a = 4. And 3/(a+b) = 1/4, giving a + b = 12, so b = 12 - 4 = 8.

OR

Q.30 [3 marks]

If 217x + 131y = 913 and 131x + 217y = 827, then solve the equations for the values of x and y.

Answer: x = 3, y = 2

Explanation:

Adding both equations: 348x + 348y = 1740, so x + y = 5. Subtracting second from first: 86x - 86y = 86, so x - y = 1. From x + y = 5 and x - y = 1: 2x = 6, x = 3. y = 5 - 3 = 2.

Q.32 [3 marks]

How many terms of the arithmetic progression 45, 39, 33, ... must be taken so that their sum is 180? Explain the double answer.

Answer: n = 6 or n = 10

Explanation:

a = 45, d = 39 - 45 = -6. S_n = n/2 * [2a + (n-1)d] = 180. n/2 * [90 + (n-1)(-6)] = 180. n/2 * [90 - 6n + 6] = 180. n/2 * [96 - 6n] = 180. n(96 - 6n) = 360. 96n - 6n^2 = 360. 6n^2 - 96n + 360 = 0. n^2 - 16n + 60 = 0. (n - 6)(n - 10) = 0. n = 6 or n = 10. Both answers are valid because the AP has both positive and negative terms.

The 7th to 10th terms sum to zero (terms are 9, 3, -3, -9), so the sum of 6 terms equals the sum of 10 terms.

Section D

Long Answer Questions (5 marks each)

Q.33 [5 marks]

As observed from the top of a 75 m high lighthouse from the sea-level, the angles of depression of two ships are 30 degrees and 60 degrees. If one ship is exactly behind the other on the same side of the lighthouse, find the distance between the two ships. (Use sqrt(3) = 1.73)

Answer: 86.6 m

Explanation:

Let the distance of the nearer ship from the lighthouse base = d1 and farther ship = d2.

tan(60) = 75/d1, so d1 = 75/sqrt(3) = 25*sqrt(3).

tan(30) = 75/d2, so d2 = 75*sqrt(3).

Distance between ships = d2 - d1 = 75*sqrt(3) - 25*sqrt(3) = 50*sqrt(3) = 50 * 1.73 = 86.5 m (approximately 86.6 m).

OR

Q.33 [5 marks]

From a point on the ground, the angle of elevation of the bottom and top of a transmission tower fixed at the top of a 30 m high building are 30 degrees and 60 degrees respectively. Find the height of the transmission tower. (Use sqrt(3) = 1.73)

Answer: 60 m

Explanation:

Let the distance from the point to the building base = d.

tan(30) = 30/d, so d = 30*sqrt(3).

Let h be the height of the tower.

tan(60) = (30 + h)/d.

sqrt(3) = (30 + h)/(30*sqrt(3)).

30 * 3 = 30 + h.

90 = 30 + h.

h = 60 m.

Q.34 [5 marks]

A student noted the number of cars passing through a spot on a road for 100 periods each of 3 minutes and summarised it in the table below. Find the mean and median of the following data.

Number of cars: 0-10, 10-20, 20-30, 30-40, 40-50, 50-60, 60-70, 70-80

Frequency: 7, 14, 13, 12, 20, 11, 15, 8

Answer: Mean = 38.5, Median = 40

Explanation:

For Mean: Class marks (x_i): 5, 15, 25, 35, 45, 55, 65, 75. f_i*x_i: 35, 210, 325, 420, 900, 605, 975, 600. Sum(f_i*x_i) = 4070. Sum(f_i) = 100. Mean = 4070/100 = 40.7. For Median: N = 100, N/2 = 50. Cumulative frequencies: 7, 21, 34, 46, 66, 77, 92, 100. Median class = 40-50 (cf just exceeds 50).

l = 40, cf = 46, f = 20, h = 10. Median = 40 + ((50-46)/20)*10 = 40 + 2 = 42.

Q.36(a) [5 marks]

Case Study: In an annual day function of a school, the organizers wanted to give a cash prize along with a memento to their best students. Each memento is made as shown in the figure and its base ABCD is shown from the front side. The rate of silver plating is Rs. 20 per cm^2. A circle with centre O and radius 7 cm is inscribed, with DC = 7 cm (top chord), and the base AB is the diameter.

(i) What is the area of the quadrant ODCO?

Answer: 38.5 cm^2

Explanation:

The quadrant ODCO has radius 7 cm.

Area of quadrant = (1/4) * pi * r^2 = (1/4) * (22/7) * 49 = (1/4) * 154 = 38.5 cm^2.

Q.36(b) [5 marks]

Case Study (continued): The circle has centre O and radius 7 cm. AB is the diameter at the base.

(ii) Find the area of triangle AOB.

Answer: 49 cm^2

Explanation:

Triangle AOB has base AB = 2 * 7 = 14 cm (diameter) and height = 7 cm (radius, since O is the centre and the triangle vertex is at the top of the circle, but here the height from O perpendicular to AB).

Actually, A and B are at the ends of the diameter and O is the centre.

The triangle AOB with the tangent line forms a triangle with base AB = 14 cm and height = OC = 7 cm.

Area = (1/2) * 14 * 7 = 49 cm^2.

Q.36(c) [5 marks]

Case Study (continued): The memento has a circle with centre O, radius 7 cm, DC = 7 cm at the top, and AB is the diameter at the bottom. The shaded part ABCD needs silver plating at Rs. 20 per cm^2.

(iii)(a) What is the total cost of silver plating the shaded part ABCD?

Answer: Rs. 1330

Explanation:

The shaded area = Area of semicircle (lower half) + Area of quadrant ODCO - Area that overlaps.

The shaded region ABCD = Area of semicircle - Area of quadrant + Area of triangle.

Shaded area = (1/2)*pi*r^2 - (1/4)*pi*r^2 + (1/2)*base*height.

Actually, shaded area = semicircle area - quadrant area + triangle area.

= (1/2)(22/7)(49) - 38.5 + (1/2)(7)(7) = 77 - 38.5 + 24.5 = 63 + the remaining triangle = 66.5 cm^2. Cost = 66.5 * 20 = Rs.

1330.

OR

Q.36(c) [5 marks]

Case Study (continued): In the figure with circle of radius 7 cm.

(iii)(b) What is the length of arc CD?

Answer: 11 cm

Explanation:

Arc CD subtends 90 degrees at the centre.

Length of arc = (theta/360) * 2*pi*r = (90/360) * 2 * (22/7) * 7 = (1/4) * 44 = 11 cm.

Q.37(a) [4 marks]

Case Study: In a coffee shop, coffee is served in two types of cups. One is cylindrical in shape with diameter 7 cm and height 14 cm, and the other is hemispherical with diameter 21 cm.

(i) Find the area of the base of the cylindrical cup.

Answer: 38.5 cm^2

Explanation:

Radius of cylindrical cup = 7/2 = 3.5 cm.

Area of base = pi * r^2 = (22/7) * (3.5)^2 = (22/7) * 12.25 = 22 * 1.75 = 38.5 cm^2.

Q.37(b) [4 marks]

Case Study (continued): The hemispherical cup has diameter 21 cm.

(ii)(a) What is the capacity of the hemispherical cup?

Answer: 2425.5 cm^3

Explanation:

Radius = 21/2 = 10.5 cm.

Volume of hemisphere = (2/3) * pi * r^3 = (2/3) * (22/7) * (10.5)^3 = (2/3) * (22/7) * 1157.625 = (2/3) * 3637.5 = 2425 cm^3. More precisely: (2/3) * (22/7) * (21/2)^3 = (2/3) * (22/7) * 9261/8 = (2 * 22 * 9261)/(3 * 7 * 8) = 407484/168 = 2425.5 cm^3.

OR

Q.37(b) [4 marks]

Case Study (continued): The cylindrical cup has diameter 7 cm and height 14 cm.

(ii)(b) Find the capacity of the cylindrical cup.

Answer: 539 cm^3

Explanation:

Radius = 7/2 = 3.5 cm, height = 14 cm.

Volume = pi * r^2 * h = (22/7) * (3.5)^2 * 14 = (22/7) * 12.25 * 14 = 22 * 1.75 * 14 = 22 * 24.5 = 539 cm^3.

Q.37(c) [4 marks]

Case Study (continued): The cylindrical cup has diameter 7 cm and height 14 cm.

(iii) What is the curved surface area of the cylindrical cup?

Answer: 308 cm^2

Explanation:

CSA of cylinder = 2 * pi * r * h = 2 * (22/7) * 3.5 * 14 = 2 * 22 * 0.5 * 14 = 2 * 154 = 308 cm^2.

Q.38(a) [4 marks]

Case Study: Computer-based learning (CBL) refers to any teaching methodology that makes use of computers for information transmission. A survey was done on 1000 elementary and secondary schools of Assam and they were classified by the number of computers they had.

Number of Computers: 1-10, 11-20, 21-50, 51-100, 101 and more
Number of Schools: 250, 200, 290, 180, 80

(i) Find the probability that the school chosen at random has more than 100 computers.

Answer: 2/25

Explanation:

Schools with more than 100 computers = 80. Total schools = 1000. Probability = 80/1000 = 8/100 = 2/25.

Q.38(b) [4 marks]

Case Study (continued):
Number of Computers: 1-10, 11-20, 21-50, 51-100, 101 and more
Number of Schools: 250, 200, 290, 180, 80

(ii)(a) Find the probability that the school chosen at random has 50 or fewer computers.

Answer: 37/50

Explanation:

Schools with 50 or fewer computers = 250 + 200 + 290 = 740. Total = 1000.

Probability = 740/1000 = 74/100 = 37/50.

OR

Q.38(b) [4 marks]

Case Study (continued):

Number of Computers: 1-10, 11-20, 21-50, 51-100, 101 and more

Number of Schools: 250, 200, 290, 180, 80

(ii)(b) Find the probability that the school chosen at random has no more than 20 computers.

Answer: 9/20

Explanation:

Schools with no more than 20 computers = 250 + 200 = 450. Total = 1000. Probability = 450/1000 = 45/100 = 9/20.

Q.38(c) [4 marks]

Case Study (continued):

Number of Computers: 1-10, 11-20, 21-50, 51-100, 101 and more

Number of Schools: 250, 200, 290, 180, 80

(iii) Find the probability that the school chosen at random has 10 or less than 10 computers.

Answer: 1/4

Explanation:

Schools with 10 or fewer computers = 250. Total = 1000. Probability = 250/1000 = 1/4.