**Model Question set 1**

**Time: 2 Hrs Full Mark: 50**

**All the questions are compulsory.**

U

A

B

a

b

d

e

f

c

1. Study the given Venn-diagram and answer the following questions.

(a) Define improper subset.

(b) Write the improper subset of set B.

(c) If a, b are only the members of set A, then what type of set are A and B? Write with reason.

2. The marked price of a watch is Rs. 2000. If is. 200 the shopkeeper allows 15% discount in it, then,

(a) Write the formula to find the discount percent if discount amount and marked price are given.

(b) Find the discount amount given in the watch.

(c) Find the profit or loss of the shopkeeper if he had bought the watch with Rs. 1500.

3. Dipesh deposited Rs. 18,000 in a bank at an interest rate of 4% per annum for 2 years in simple interest.

(a) What is the formula to find the simple interest? Write it.

(b) Calculate the interest earned by Dipesh after 2 years.

(c) If Dipesh deposited the same amount for 3 years at the same interest rate, what would be the difference in the total amount compared to the amount after 2 years?

4. The budget of Nepal in fiscal year 2080/81 is Rs. 170000000000.

(a) Write down the budget amount in scientific notation.

(b) Write 987 in quinary number system.

(c) Convert 0.31 in the fraction.

(d) If and denote 1 and 0 respectively, which of the given circles will have to be shaded to denote 18 in binary number system.

10 ft.

66 ft.

5. The Gautam Buddha International Cricket Stadium is circular in shape, as shown in the figure, with a diameter of 450 feet. In the center of the ground lies the pitch, which is rectangular, measuring 66 feet in length and 10. feet in breadth. Then,

(a) What is the formula to find the area of the rectangle.

(b) Find the area of the cricket pitch.

(c) If there is green grass grown everywhere except on the pitch, calculate the area covered by the grown grass in the ground.

(d) How much would it cost to watering the grass at a rate of Rs. 10 per square feet?

6. (a) If x=3° + 2, find the value of x.

(b) Simplify

7. Two equations are given as 3x + y = 4 and 2x - y = 1.

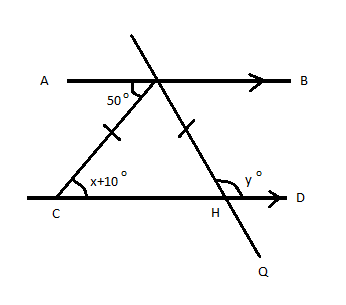
(a) What are the system of equations called?

(b) Solve the above equations by graphical method.

8. (a) Find the Highest Common Factor (HCF) of.

y2 – 25 and y2 + 2y - 15

(b) At what value of x, the value of 3x2 - 8x-16 becomes zero?



9. In the given figure, AB//CD and CG = GH. If AGC = 50°,<GCH = (x + 10)° and <GHD = y°, then,

(a) Which is the corresponding angle of <PGB?

(b) Find the value of x and y.

(c) What is the sum of <BGH and <GHD?

10. In the figure, a diagonal QS is drawn in the rectangle PQRS having length 7 cm and breadth 5 cm.

P

Q

(a) According to the given measurement, construct the rectangle PQRS by using compass.

5cm

(b) By which axiom, triangles PQS and RSQ are congruent? Justify with facts and reasons.

7 cm

S

R

11. (a) Define regular tessellation.

(b) The bearing of B from A is 065°. What is the bearing of A from B?

(c) Find the vertices of image of square A'B'C'D' formed by reflecting a square ABCD having co-ordinate of vertices A(2, –3), B(6,-3), C(6, -7) and D(2, 7).

12. The monthly expenditure of the Dipesh's family is given below in the table.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Heading | Food | Education | Health | Others |
| Amount Rs. | 12000 | 6000 | 3000 | 3000 |

(a) What is the monthly average expenditure of Dipesh's family?

(b) Present Dipesh's family expenditure in a pie-chart.

**Model Question set 2**

**Time: 2 Hrs Full Mark: 50**

**All the questions are compulsory.**

U

1. Study the Venn-diagram given alongside and answer the following questions.

5

1

2

3

4

Q

P

(a) Define proper subset.

3

4

(b) Write all the possible proper subsets with two members of set Q.

6 7 8

(c) Are the sets P and Q disjoint or overlapping? Write with the reason.

2. Samata marks a laptop with a price of Rs. 1,20,000. She offers 20% discount on the laptop, then she still makes a profit of Rs. 6000.

(a) Write the formula to find discount percent.

(b) What is the selling price of the laptop?

(c) What is profit percent from the laptop? Find.

3. The simple interest on Rs. 7200 for five years is Rs.1080.

(a) Write the formula to find the simple interest.

(b) Find the rate of interest.

(c) Divide the interest into two parts in the ratio 7:5

4. The capacity of a water tank for workers to drink water to a company is 15300 l.

(a) Write the capacity of a water tank in scientific notation.

(b) The workers of that company has consumed 23100l of water in a month. If the cost of 1 liter water is 20 paisa, how much rupees have to be paid for the consumption of water in one month.

\_\_

(c) Convert 1.57 into fraction.

(d) If and denote 1 and 0 respectively, which of the given boxes will have to be shaded to denote 53 in binary number system?

5. The trapezium-shaped land shown in the figure, belongs to Kasis. She made the workers dig a circular well with diameter 4.2m to irrigate her land.

40m

24m

>

33m

(a) Write the formula to find the area of top of well.

>

(b) What is the area of the top of well? Find it out.

(c) What is the rea of land except the well?

(d) Kasis wanted to fence the wire at once on the land. If she asks you whether 125 m wire is enough or not, write your answer with reason.

6. If x = 2(a + b)°, then find the value of x.

(b) Simplify

7. The sum of two numbers is 15 and difference is 3.

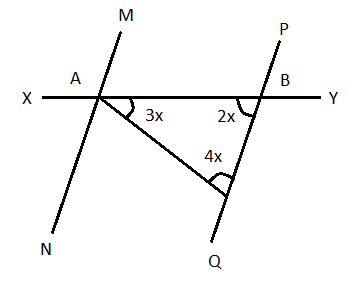
(a) Make equations supposing x for big number and y for small number.

(b) Solve the above equations by using graphical method.

8. If two algebraic expressions are x2 - 5x + 6 and x2 - 9,

(a) Find the Highest Common Factor of given algebraic expressions.

(b) At what values of x, the value of expression x2 – 5x + 6 is zero?

9. In the adjoining figure, XY intersects straight lines MN and PQ at A and B respectively. Observe the figure and answer the following questions.

(a) In a pair of co- interior angles, one angle is MAB. What is the other angle?

b) Find the value of x

(c) At what value of <MAB, the given line segment MN and PQ will become parallel?

10. (a) Construct a parallelogram ABCD in which AB = 5cm, BC = 4cm and ABC = 60°.

E

A

(b) In the given figure, AB//ED then, prove that : ABC DEC. in the given figure, AB ¤ ¤ ED then, prove that:

D

C

B

ABC DEC.

11. (a) Write the distance between any two points P (X1, y1) and Q(x2, y2).

R

(b) In PQR, if the bearing of point Q from the point P is 090°, then find the bearing of point P from Q.

=

(c) P (-1, 3), Q(3, 1) and R(5, 2) are vertices of a triangle PQR. Plot the vertices in a graph and reflect it about y-axis. Show the image P'Q'R' with its co-ordinates of vertices in the same graph.

=

Q

P

12. The marks obtained in mathematics by 12 students of class 8 in their first terminal examination are given below.

23, 30, 25, 26, 24, 28, 29, 28, 31, 33, 34, 28

(a) Find the mode of the above data.

(b) Find the median marks of the students of class 8.

**Model Question set 3**

**Time: 2 Hrs Full Mark: 50**

**All the questions are compulsory.**

1. A = {x : × ≤ 3, x ∈ N} and B = {y: y ≤ 4, y ∈ N} are the subsets of the universal set U = {z : z ≠ 6, z ∈ W}.

(a) Write the members of sets U, A and B by listing method.

(b) Write a proper subset of set A.

(c) Which element of set B is to be removed so that sets A and B become improper sub-set of each other?

2. The marked price of a camera is Rs. 60,000. The shopkeeper allows 10% discount on it.

(a) Find the discount

(b) Find the selling price after giving discount.

(c) Find the cost price of the camera for shopkeeper.

3. Geeta deposits a sum of Rs. 6,00,000 in a development bank; the annual rate of interest is 8%. She plans to keep it from January 1, 2024 to the end of December 2025.

(a) Write the relationship between the amount, principal and interest.

(b) What will be the simple interest on that time period?

(c) If the interest rate is 10% instead of 8%, how much more interest will get for the same time period? Find it.

4. A water tank can hold 213200 liters of water.

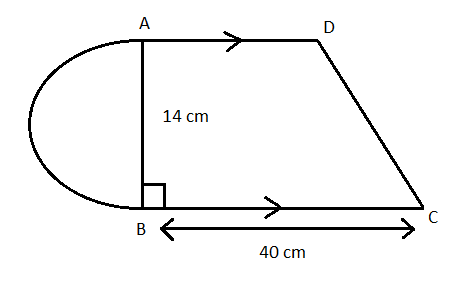
(a) Write the capacity of the water tank in scientific notation.

(b) Convert 1.22 into fraction.

(c) In a game, Raman got (100011) 2 points and Ishan got (123) 5 points. The player with the highest points is the winner, who is the winner? Find it.

(d) Convert 25 into two numeration system.

5. In the given figure, a shape of semi-circle is shown left side of the trapezium. The lengths of two parallel sides of trapezium are 18 cm and 40 cm respectively with its height of 14 cm.

(a) Write the formula for finding area of circle having radius 'r' cm. (b) Find the area of trapezium.

(c) How much the area of the trapezium more or less than the area of semi-circle? Calculate it.

(d) Compare the areas of two triangles ADC and ABC formed by drawing a diagonal AC in a trapezium ABCD

6. (a) Write the expanded form of (x + 2)2

(b) Simplify:

7. Two equations are given below: 2x - y = 5 and x-y=1

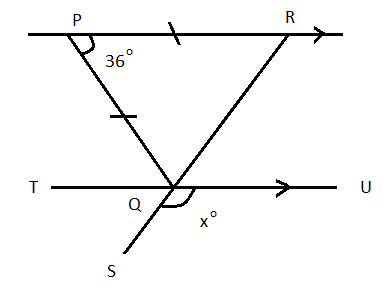
(a) What are the systems of equations called?

(b) Solve the given equation by using graph.

8. (a) Find the Lowest Common Multiples (LCM) of the given expressions.

x2 – 25 and x2 – 9x + 20

(b) For what value of m, the value of 2m 2 – 9m + 10 is zero ?

9. In the figure, PQR is a isosceles triangle, PR//TU, ZRPQ = 36° and ZUQS = x° are given.

(a) Write the name of alternate angle that is equal with <PRQ.

(b) What is the value of x°? Find it.

(c) Experimentally verify that the base angles PQR and <PRQ of an isosceles iangle PQR are equal by making two different size of isosceles triangle.

10. (a) Construct a rectangle ABCD having sides AB = 5 cm and BC = 4 cm by using compass.

(b) Find the values of x and y in the given figure.

24

31

4y + 8

7x - 4

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=

=

=

11. (a) Find the distance between the point A(3,1) and B(5,3).

(b) In the given triangle ABC, if the bearing of point C from the point B is 090, then find the bearing of point B from point C.

(c) Rotate the ABC at negative 90° about the centre at origin (0, 0). Write the coordinates of the image A', B' and C' after rotation.

12. In a test exam, 9 students obtained the following marks.

19, 15, 18, 14, 12, 13, 11, 16, 17

1. What is the average mark?
2. By finding the median, also find the number of students above and below the median.

**Model Question set 4**

**Time: 2 Hrs Full Mark: 50**

**All the questions are compulsory.**

1. Two subsets of the universal set U {Whole numbers less than 7} are P = {Even numbers less than 7} and Q = {Prime numbers less than 7}

(a) Define overlapping set.

(b) Write the common elements of set P and Q.

(c) Show the above information in a Venn-diagram.

2. A mobile set of marked price Rs. 25,000 is sold on a discount of 10%.

(a) Write the formula to find discount amount.

(b) Find discount amount.

(c) How much should a customer pay this mobile with 13% VAT?

3. Purnima has planned to deposit Rs. 2,00,000 in the ratio of 3:2 to bank A and B.

(a) How much amount did she deposit in bank A and B?

(b) If bank A gives 5% per annum interest and bank B gives 6% per annum interest, then find the interest received from bank A and B in one year.

(c) Find the difference of interest given by bank A and B.

4. The monthly income of Tulsi is Rs. 35975.

(a) Write 35975 ' in scientific notation.

(b) Convert the given number in quinary number system.

(c) Simplify:

4.5 x 1025

1.5 x 1023

(d) A worker can do a piece of work in 14 days, how much does he work in 7 days.

5. The rectangular-shaped land shown in the figure belong to Tanij. In one corner of the land, he wants to make a cottage in

(a) Write the formula to find the area of square.

D

C

=

=

=

(b) Find the area of the cottage.

25m

=

(c) Find the area of field excluding the cottage.

6m

(d) How much does it cost to fence the land at the rate of Rs. 50 per meter ? Find it.

30m

A

B

6. (a) What is the product of ap and a-P? Write.

(b) Simplify:

7. Two equations are given as: 2x + y = 7 and x + y = 4.

(a) If y = 1 in the equation x + y = 4, find the value of x.

(b) Solve the above equations by using graph.

8. An algebraic expression is given below.

2x2 + 5X + 2

1. Make the algebraic tiles from the above algebraic expressions and present it in a rectangular form.
2. What should be the values of 'x' to be 2x 2 + 5x + 2 = 0?

H

G

B

A

9. (a) Find an interior angle of regular pentagon.

3x+13o

(b) In the given figure, AB//CD, find the value of x.

2x-23o

H

D

(c) By which axiom the given triangles are congruent? Write it.

P

F

C

\_

\_

=

=

C

A 

Q

B

R

10. (a) Construct a parallelogram PQRS in which side PQ = 8 cm, QPR = 30° and diagonal PR = 9 cm.

(b) In the given figure, PQC the value of QC.

Q

P

12 cm

4 cm

B

A

C

18 cm

11. (a) A tessellation is formed by using two or more than two types of regular geometrical shapes. Write the name of the tessellation.

(b) In the graph, the bearing of point C from a point B is 45°. Write the bearing of the point B from the point C.

(c) In the graph, translate AABC by 4 units left and 2 units down. Write the co-ordinates of images of AABC.

12. Study the given pie- chart whose index are defined as follows.

If there are 720 students in total, then

(a) Find the number of students who liked each of the given subjects.

(b) Find the average number of students who liked maths and science.

**Model Question set 5**

**Time: 2 Hrs Full Mark: 50**

**All the questions are compulsory.**

1. If A = {x : x is prime number, 2 < x ≤ 15} and B = {y: y is odd number, 2 < y ≤ 15} then,
2. Write the numbers of set A by listing method.
3. Show the elements of set A and B in a Venn-diagram.
4. Is a set 'A' a proper subset of B? Write with reason.
5. Sabina went to market to buy a new refrigerator. The marked price of the refrigerator of Yasuda company is Rs. 70,000 with 10% discount and the marked price of Samsung company is Rs. 76,000 with 15%.

(a) If the marked price of the machine is Rs. M and discount is Rs. D, find the selling price of the machine.

(b) Find the discount amount of the both companies.

(c) Which company's refrigerator is cheaper after provided discount?

3. Rahul took a loan of Rs. 12,000 from his friend at an interest rate of 12% per annum.

(a) How much interest did he pay for 2 years?

(b) Determine the total amount paid after 2 years.

(c) Rahul's friend plans to use the received interest to buy pants and shirts. He divided the interest in a 3:2 ratio. Find out how much he has allocated for each item.

4. Write the answers of the following questions.

(a) Write down the digits used in binary number system

(b) Express the number 0.000000372 in scientific notation.

(c) Convert 0.44 into fraction.

(d) If in Saraswati S.S. Kailali, out of 520 students, 130 are girls, find the number of boys and the ratio of the total number of students.

5. A circular pond of diameter 14m is inside a rectangular piece of land of length 40m and breadth 30m.

(a) Write the formula to find the area of the pond.

(b) Find the area of land and pond.

(c) Find the area of land excluding the pond.

(d) Find the cost of fencing the land at the rate of Rs. 200 per meter.

6. (a) Express as power of y.

(b) Simplify:

7. The sum of two numbers is 6 and their difference is 2.

(a) Make an equation by supposing x as the first number and y as the second number.

(b) Solve the above equations by using graph.

8. (a) Factorize: 1–49(a + b)2

(b) Simplify:

9. In the given figure, AB//CD//PQ, ABO = 110° and DCO=120°. Answer the following questions.

>

D

C

(a) Write a pair of alternate angles.

B

A

(b) Find the values of x, y and z.

>

1100

y

(c) If line segment AB is produced to any point 'R' on CO, then what will be the measure of angle CRB? Find it.

>

x

z

P

Q

10. (a) Construct the parallelogram having adjacent sides 3 cm and 5 cm and the angle made by adjacent side is 60°.

(b) Given triangles are pair of congruent triangles. By finding the value of x, find the value of remaining angles and sides.

40o

95o

95o

45o

3x-6.9

1.7x-3

Z

X

Y

C

B

A

11. (a) Find the distance between the points P(-2,-4) and Q(10, 1).

(b) If the bearing of your school from your home is 045°, then find the bearing of your house from the school drawing the figure.

(c) The points P(2, 3), Q(5, 6) and R (7, 3) are the vertices of PQR. Translate PQR with translation vector to get image P'Q'R' and also write the co-ordinate of the vertices of P'Q'R'.

12. In the table given below, the expenses of family in a month on food, education, health and miscellaneous are given.

|  |  |
| --- | --- |
| Titles | Amount of expenditure in Rs. |
| Food | 12,000 |
| Education | 15,000 |
| Health | 8,000 |
| Miscellaneous | 10,000 |

(a) Represent the above information in the pie-chart.

(b) The average expenditure of the family according to the above table is Rs. 11,250. How much money should be reduced from miscellaneous expenses to make average expenses Rs. 10,000?

**Model Question set 6**

**Time: 2 Hrs Full Mark: 50**

**All the questions are compulsory.**

1. A and B are the sub-sets of the universal set U. If U = {x : x is a natural number less than 20}, A = {multiples of 2} and B = {prime numbers)

(a) List the elements of sets A and B, then write whether these two sets are overlapping sets or disjoint sets.

(b) Show the above sets in a Venn diagram.

(c) Make four sub-sets of set A having four members.

2. A laptop costing Rs. 45,000 is sold at a discount of 20%.

(a) Write the formula to find discount percent.

(b) Find the discount amount.

(c) If the laptop is sold at a loss of 10%, find the cost price

3. Rajaram deposited Rs. 20,000 in a bank at the rate of 18% p.a. simple interest for 2 years.

(a) Write the formula to find simple interest.

(b) Find the interest of the two years.

(c) If Rajaram divided the interest between his two sons in the ratio 3:2, how much would each of them get?

4. Answer the following questions.

(a) Write the number 0.0000325 in scientific notation.

(b) What should be added to both 12 and 21 so that they are in the ratio 5:8?

(c) Convert the number 0.24 into fraction.

(d) Convert the decimal 435 number into binary number system.

C

D

5. In the given figure, ABCD is a square and a circle is drawn inside it.

(a) If one side of the square AB = 14 cm, find its area.

(b) How much is the radius of the circle?

AB

B

(c) Find the area of the shaded portion.

(d) Find the length of the circumference of the circle.

6. (a) Simplify: xa-b × xb-c × Xc-a

(b) Simplify :

X

2

x2 + 3x + 2 ® x2 - 1

[2U]

7. (a) What type of equations are called simultaneous equations?

(b) Solve graphically :

x + y = 5, x – y = 3

8. (a) Find the H. C. F. of :

a 2 - 4 and a2 + 5a +6.

(b) For what value of x, the value of 2x2-x-6 is zero?

9.(a) What is the relation between the co-interior angles which are formed when a transversal cuts two parallel lines?

(b) Find the value of x in the given figure.

(c) Find the distance between the points P (2, 3) and Q(5, 7).

10. (a) Construct a rectangle ABCD in which AB = 6 cm and

BC = 5 cm.

1. In the adjoining figure AB||CD, prove that AAOB ~ ACOD.

11. (a) What type of polygons are used in regular tessellation?

(b) In ADEF, if DE = EF = DF = 6 cm, find its area and also write what will be the measurements of its angles.

(c) A ( 2,3), B( 4, 7) and C ( 8, 2) are the vertices of AABC. Write the co-ordinates of the image AA'B'C' obtained by reflecting AABC on Y-axis, then show AABC and AA'B'C' in a graph.

12. The number of students studying from class 5 to class 8 is given in the table below.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Class | 5 | 6 | 7 | 8 |
| No. of Students | 50 | 60 | 55 | 35 |

1. Represent the above data in a pie-chart.

(b) Find the mean of the data.

**Model Question set 3**

**Time: 2 Hrs Full Mark: 50**

**All the questions are compulsory.**

1. P{2, 3, 4} and Q{ 1, 2, 4} are sub-sets of the universal set U = { 1, 2, 3, 4, 5, 6}.
2. What type of sets are P and Q, overlapping or disjoints sets?
3. Write all the sub-sets of set P with two members.
4. Show the above sets in a Venn diagram.
5. A mobile set of marked price Rs. 25000 is sold on a discount of 10%.

(a) Write the formula to find the selling price (SP) when discount percent (D%) and the marked price (MP) are given.

(b) Find the selling price of the mobile.

(c) If the cost price of the mobile is Rs. 20,000, find the profit percent.

3. Sujata has deposited Rs. 45000 in a bank at the rate of Rs. 4 interest per annum on Rs. 100.

(a) What is the rate of interest per annum?

(b) In how many years the interest of the sum becomes Rs. 9000? Calculate it.

(c) Find the ratio of amount and interest.

4. (a) Write number 235000 in scientific notation.

(b) If the cost of 10kg of apples is Rs. 2750, what will be the cost of 15kg of apples?

(c) The ratio of the present ages of Reshma and Rekha is 2:3. After how many years, the ratio of their ages will be 5:7?

(d) Convert the quinary number 1235 into decimal number system.

5. In the adjoining figure, ABCD is a rectangle and OC is the radius of the circle.

(a) If AB = 8 cm and BC = 6 cm, what is the perimeter of the rectangle?

(b) If OC = 5 cm, what is the length of the diameter of the circle?

(c) Find the area of the shaded portion in the figure.

(d) Find the circumference of the circle in cm.

6. (a) Simplify using laws of indices:

*ax+2*

*ax-2.*

1. a2+b2 a – b

a2 - b2 a + b

7. (a) What type of equations are called quadratic equations?

(b) Solve graphically :

2x - 1 = y, 3x - 2y = 0.

8. (a) Find the L.C.M. of :

a2-1, a2+a-2

1. If the sum of two numbers is 25 and their difference is 15, find the numbers.

9. (a) Write the formulae to find the interior angles of a regular polygon?

(b) In the figure AB ||CD, find the value of x.

(c) In the given =====ABC, <B = 90°,according to Pythagoras theorem, what is the relation of its sides?

10. (a) Construct a square ABCD having one side AB = 5 cm.

(b) In the adjoining figure BC||PQ, show that AABC~ AAPQ.

11. (a) What type of quadrilateral is used to make regular tessellation?

(b) In equilateral APQR, if one side PQ = 6 cm, find its perimeter and area.

(c) Find the vertices of the image square 'A'B'C'D' formed by reflecting a square e ABCD with vertices A (2, 3), B(6, 3), C ( 6, 7 ) and D (2, 7) in X- axis. Also show square ABCD and its image in a graph paper.

12. (a) The monthly expenditure of a family is given in the table below.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Title | Food | Education | Clothing | Other expenses |
| Expenditure amount | 18,000 | 10,000 | 5,000 | 3,000 |

Show the above data in a pie-chart.

1. Find the median of the data given below.

10, 12, 8, 9, 17, 16, 18, 20, 22, 15, 13

**Model Question set 3**

**Time: 2 Hrs Full Mark: 50**

**All the questions are compulsory.**

1. Two sub- sets of the universal set U = {1, 2, 3, 4, 5, 6} are A = {1, 3, 4, 5} and B = {2, 3, 5}.

(a) Are sets A and B overlapping or disjoint sets? Write with reason.

(b) Write all the sub-sets of set A having single element.

(c) Show sets U, A and B in a Venn diagram.

2. Rajan bought a sweater for Rs. 1075 at a discount of 14%.

(a) What is called the difference of marked price and selling price?

(b) Find the marked price of the sweater.

(c) If the sweater is sold at 7.5% profit, find the cost price.

1. The simple interest on Rs. 7200 for five years is Rs. 1080.

(a) What is called the difference of amount and the principal? Write it.

(b) Find the rate of interest.

(c) Divide the interest into two parts in the ratio

4. (a) Convert the number 1.525 x 10° in scientific notation into decimal number.

(b) If 5 pens can be bought for Rs. 60, find how many pens can be bought for Rs. 240.

(c) Convert the decimal number 0.41 into fraction.

d) 10100112 is a base two (binary) number. Convert the number into decimal number system.

5. A volleyball court of length 18m and breadth 9m is made inside a square garden of length 120m.

(a) Find the area of the garden.

(b) Find the area of the volleyball court.

(c) Find the area of the garden excluding the volleyball court.

(d) Find the cost of fencing the garden at the rate of Rs. 250 per meter.

6. (a) Simplify using laws of indices: x3m-2 x3m-4

(b) Simplify::

7. (a) Resolve into factors:

x2 – 1

64y2

(b) Solve by graphical method : x + y = 6, y = x - 4

8. (a) Find the H.C.F. of :

3x3 - 15x2 र 2x3 - 50x

1. For what value of x, the value of x2 – 5x + 6 is zero?

9. (a) Write the formula to find the distance between the points P (X1, y1 ) and Q (x2, y2).

(b) In the given figure, if AB||CD, what will be the value of x? Write with reason.

(c) In AXYZ, if 22X = 3ZY = 6ZZ, find the values of all the angles.

10. (a) Construct parallelogram ABCD having AB ZABC = 60°.

(b) In the given figure, if AABC = B APQR, find the values of x and y.

11. (a) What type of polygon is used in semi-regular tessellation?

(b) Draw a triangle with vertices M(-1, 1), N(-4, 2) and P(-3, 4) in a graph paper, then rotate the triangle through + 90° about the origin.

(c) Sketch to show the bearing of NO60°E.

12. (a) Annual expenditure of Arun's family is given below. Represent this information in a pie-chart.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Title | Education | Health | Clothing | Food |
| Expenditure | 96,000 | 40,000 | 64,000 | 1,20,000 |

(b) In a data, if £x = 77+m, n = 10 and mean (X) = 8, find the value of m.

**Model Question set 3**

**Time: 2 Hrs Full Mark: 50**

**All the questions are compulsory.**

1. The sub-sets of the universal set U = {x : × is a natural number less than 8} are F = {1, 2, 3} and G = {2, 3,5}.

(a) Write the universal set U in a listing method. Also write with reason that the sets F and G are disjoint or overlapping sets.

(b) How many sub-sets of set F and G can be made?

(c) What is the improper sub-set of a set ?

2 A television with marked price Rs. 70000 is sold at a discount of 20%.

(a) Write the selling price (SP) in terms of marked price (MP) and discount percent.

(b) Find the selling price.

(c) Find the cost price of the television if there is 12% profit.

3. Hari took a loan of Rs. 300000,from a bank for 2 years and 6 months at the rate of 12% p.a.

(a) In formula A = P + I, what do A, P and I represent? Write it.

(b) To clear the loan, how much amount is to be paid ?

(c) Divide interest money into two parts in the ratio 4:5.

4. (a) Find the ratio of 1 km and 700 meter.

(b) Convert the decimal number 0.3 into fraction.

(c) Simplify :

9.8 x 1010-5.18 x 1010

2.2 x 105

(d) Convert the binary number. 901100112 into decimal number system.

5. A circular pond of diameter 7m is inside a rectangular piece of land of length 20m and breadth 15m.

(a) Find the area of the land.

(b) Find the area of the pond.

(c) Find the area of the land excluding the pond.

(d) Find the cost of fencing the land at the rate of Rs. 175 per meter.

6. (a) Simplify using laws of indices.

(x3y-2)3. (−2x-2y3)4

(b) Simplify :

x2 – 2xy + y2 x + y

X

x2-y2

[2U]

7. (a) Solve by graphical method.

x + y = 6, 2x – y = 9

(b) What type of equations are given above?

8. (a) Find the L.C.M. of:

x2 + X - 20, x2 – 25

(b) Solve : 7x2 + 13x - 2 = 0

9. (a) Find the value of x in the given figure.

(b) In AABC in the adjoining figure ZB A = 90°, AB = 4 cm and BC = 3 cm, find the length of AC.

(c) What is the measurement of each interior angle of a regular pentagon ?

10. (a) Construct a rectangle ABCD having adjacent sides AB = 8 cm, BC = 6cm and diagonal AC = 10 cm..

(b) In the given figure, if AB//CD, prove AAOB and ACOD C

are similar.

11. (a) Find the distance between the points A(-3,-4) and O(0, 0).

(b) If the bearing of point B from point A is 060°, what is the being of A from B?

(c) Find the vertices of the image AE'F'G' of AEFG with vertices E ( 4, 6), F(−4, 3) र G(2, –5) under the reflection in X-axis. Also represent AEFG and AE'F'G' in graph.

12. Marks obtained by 30 students of a class in the first term examination in Mathematics are given in the table below.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Marks | 20 | 25 | 30 | 35 | 40 | 45 | 50 |
| No. of students | 3 | 4 | 5 | 8 | 5 | 4 | 1 |

(a) Find the average marks in Mathematics.

(b) Find the median

**Model Question set 3**

**Time: 2 Hrs Full Mark: 50**

**All the questions are compulsory.**

1. Study the given Venn diagram and answer the following questions.

(a) List the elements of the sets shown in the Venn diagram.

(b) What type of sets are A and B overlapping or disjoint sets? Write with reason.

(c) How many sub-sets of set A can be made ? Find using formula.

2. When a motorcycle is sold for 20% discount, it costs Rs. 120000.

(a) Write the formula to find the discount percent.

(b) Find the marked price of the motorcycle.

(c) If the cost price of the motorcycle is Rs. 125000, find the loss percent.

3. The simple interest on Rs. 2160 for 4 years is Rs. 648.

(a) What is the rate of interest? Write it.

(b) Find the rate of interest.

(c) At the same rate, how much will be the interest on Rs. 20000 for 5 years?

1. (a) What type of numbers are called rational numbers? Write with example.

(b) If the cost of 5 kg of oranges is Rs. 1125, find the cost of 10 kg of oranges.

(c) If 10 men can complete a work in 15 days, how long will 5 men take to complete the work? Find it.

(d) Write the decimal scientific notation.

5. The area of a circular land is 2464 square meters.

(a) Find the radius of the land.

(b) Find the length of the circumference of the land.

(c) Find the cost of fencing the land at the rate of Rs. 1200 per

(d) If there is a square pond of length 12m in the land, find the area of the pond.

6. (a) Find the value using laws of indices.

(b) Simplify:

7. (a) Find the quadratic equation in which values of x are 2 and 3.

(b) Solve graphically.

2x + y = 2 x - y = -5

8. (a) Find the H.C.F. of:

x2+7x+10, x2-x-6

(b) (Solve): (x – 7)2 – 64 = 0

9. (a) What is the name of the quadrilateral having only one pair of opposite sides in parallel?

(b) In the adjoining figure, if XY//BC, ZABC = 60° and ZCAY = 70°, find the values of x.

(c) In the figure, if PQRS is a parallelogram, find the value of x.

10. (a) Construct a rectangle ABCD in which the adjacent sides AB and BC are 6 cm and 5 cm respectively.

(b) In the given figure, BC//DE. Show that AABC and AADE are similar.

11. (a) Draw a net of a cube.

(b) If the distance between the points A (0, 9 ) and B (x, 0) is 15 units, find the value of x.

(c) Reflect the parallelogram ABCD with vertices A (2, 3), B(-2, 3), C (-4, −3) and D(0, −3) in Y-axis and find the vertices of the image quadrilateral A'B'C'D', then represent both quadrilaterals in a graph paper.

12. Solve the following questions on the basis of the data given below.

(a) Find the mean of the data.

(b) Find the median of the data.