

UNIT - I

Arithmetic

NUMBER SYSTEM

- If $x > y > 0$, which of the following is lesser than $\frac{y}{x}$?
 A) 2 B) 6 C) 3 D) -3 E) -6
- If $a^2 - 81 = 0$ then which of the following could be a value of a ?
 A) -9 B) 6 C) 3 D) -3 E) -6
- If x, y and z are positive integers and $0.2x = 3y = 2z$, what could be the ordering of x, y and z ?
 A) $x > y > z$ B) $y > x > z$ C) $x > z > y$ D) $x < y < z$ E) $z < y < x$
- If n is a negative integer, what is the ordering of p, q and r from greatest to least. $p = n^2 - 2.1$; $q = n^3 - 2.1$; $r = (n - 2.1)^2$
 A) $p > q > r$ B) $p > r > q$ C) $q > p > r$ D) $q < r < p$ E) $r < p < q$
- If x, y and z are three prime numbers and $19 < x < y < z < 35$, find $x + y - z$
 A) 21 B) 12 C) 23 D) 29 E) 52
- If the product of three consecutive integers is 60, and one of them is a perfect square, find the first integer
 A) 3 B) 4 C) 5 D) 9 E) 12
- If x, y and z are three consecutive integers, and $z > y > x$, If $z = x^2$, which of the following could be the value of x ?
 I. 2 II. 0 III. -1
 A) only I B) only II C) only III D) only I and II E) only I and III
- Which of these is not a divisor (factor) of 112?
 A) 7 B) 8 C) 12 D) 14 E) 28
- How many positive three-digit integers have the hundreds digit equal to 3 and the units digit (ones digit) equal to 4 ?
 A) 10 B) 19 C) 20 D) 190 E) 200

AVERAGES

- Average of first five multiples of 3 is
 A) 6 B) 4 C) 3 D) 9
- A ship sails out to a mark at a rate of 10 kmph and sails back at the rate of 15 kmph. What is the average rate of sailing? (in kmph)
 A) 13 B) 12 C) 14 D) 12.5
- The average of 50 numbers is 38. If two numbers namely 45 and 55 are discarded, then the average of the remaining numbers is
 A) 36.5 B) 37 C) 37.5 D) 37.25

4. The average temperature on Tuesday, Wednesday and Thursday was 37°C . Average of Wednesday, Thursday, Friday was 38°C . If temperature on Friday was 39°C , find temperature on Tuesday
 A) 60°C B) 55°C C) 43°C D) 36°C
5. There are 2 sections in a class A & B. Section A scored an average of 25 marks in an exam, Section B scored an average of 20 marks in the exam. Calculate the average of the entire class if there are 4 students & 5 students respectively.
 A) 26 B) 21.2 C) 22.2 D) 29
6. The average weight of 15 students in a class is 20kg. When teacher's weight is included the average increases by 1. Find the weight of teacher?
 A) 36 B) 34 C) 33 D) 28
7. A batsman makes a score of 75 runs for 14 innings & thus increases his average by 2 runs. Find his average after 14 innings.
 A) 56 B) 49 C) 38 D) 29

PERCENTAGES

1. Which is greatest in
 A) B) C) 0.17 D) All are equal
2. Rama's salary was decreased by 50% & subsequently increased by 50%. What is % change?
 A) 25% increase B) 25% decrease C) No change D) None
3. In an examination, 35% of the students passed and 455 failed. How many students appeared for the examination ?
 A) 160 B) 240 C) $350\frac{2}{3}$ D) 700
4. The value of a machine depreciates at the rate of $10\frac{2}{3}\%$ per annum. If its present value is Rs. 1,62,000. What will be its worth (in Rs.) after 2yrs?
 A) 150000 B) 145000 C) 131220 D) None
5. A man spends 35% of his income on food, 25% on children's education and 80% of remaining on house rent. What % of his income is he left with?
 A) 6 B) 7 C) 8 D) 9
6. The population of a town is 27648. If it decreases by 4% per annum, find out the population 3 years ago.
 A) 31250 B) 32400 C) 35000 D) None
7. A number decreased by 15% gives 51. Find the number
 A) 46 B) 60 C) 30 D) 59

RATIO AND PROPORTION

1. $a : b = 5 : 9$, $b : c = 4 : 7$, find $a : b : c$?
 A) 20 : 36 : 63 B) 36 : 63 : 20 C) 36 : 20 : 63 D) None
2. Find mean proportional between 0.08 & 0.18 ?
 A) 0.6 B) 0.12 C) 0.13 D) 0.19
3. If $x:y = 2:1$, then $x^2 - y^2 : x^2 + y^2$ is ?
 A) 6:5 B) 4:3 C) 3:5 D) 9 : 3
4. If 76 is divided into four parts proportional to 7,5,3,4 then smallest part is?
 A) 6 B) 8 C) 10 D) 12

2.

- A) B) C) D) y E)

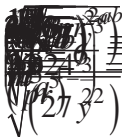
3.

- A) B) C) D) E)

4.

- A) B) C) D) $3pr$ E) $3p^2r^2$

5. If _____, then

- A) B) C)  = 48 D) E) 36

6. What is the value of _____, if $a =$ _____ and $b = 9$?

- A) B) C) 1 D) 3 E) 9

7. If _____ and $c = 2$, what is the value of d ?

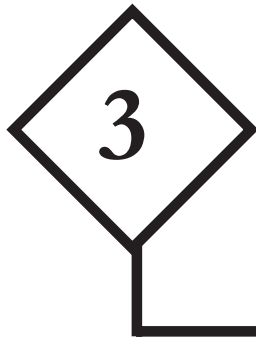
- A) B) C) 6 D) E) 12

8. What is the value of $(x^y)(2x^y)(3y^x)$, if $x = 2$ and $y = -2$?

- A) 6 B) 8 C) 12 D) 24 E) 384

9. If a is positive, and $a^2 = b = 4$, what is the value of _____ ?

- A) B) C) D) E)

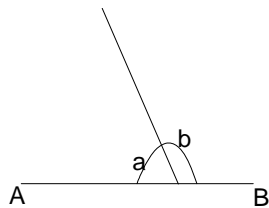


UNIT - III

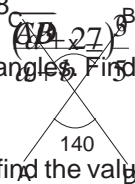
Geometry

LINES AND ANGLES

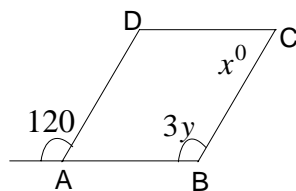
1. In the given figure, \overline{AB} is a line segment and, if $\angle a$ and $\angle b$ are adjacent angles. Find the value of b ?



- A) 36 B) 72 C) 108 D) 135 E) 180
2. If $\angle a$ and $(a + 13)^\circ$ are supplementary angles. Find the value of a ?
- A) 25 B) 50 C) 60 D) 70 E) 90
3. In the given figure, \overline{AB} and \overline{CD} intersect at 'O', find the value of x ?

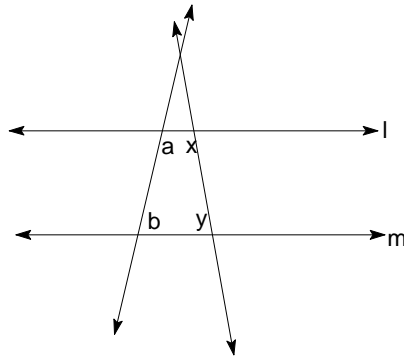


- A) 40 B) 50 C) 60 D) 80 E) 100
4. In the figure above, if PQRS is a parallelogram, then find the value of y ?



- A) 10 B) 20 C) 30 D) 40 E) 50

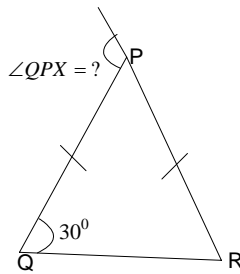
10. In the given figure, l is parallel to m , find the value of $a + b + x + y$.



- A) 90° B) 120° C) 180° D) 300° E) 360°

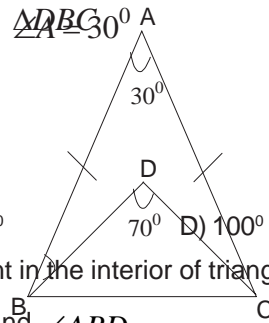
TRIANGLES

1. PQR is an isosceles triangle with $PQ = PR$. $\angle Q = 30^\circ$, find the measure of exterior angle QPX.



- A) 30° B) 60° C) 90° D) 100° E) 120°

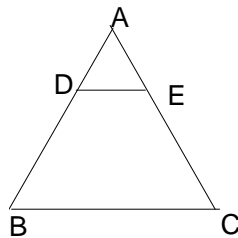
2. $\triangle ABC$ is isosceles with $AB=AC$ and D is a point in the interior of triangle ABC . with $DB = DC$. If $\angle BDC = 70^\circ$ find $\angle ABD$.



- A) 20° B) 30° C) 45° D) 60° E) 70°

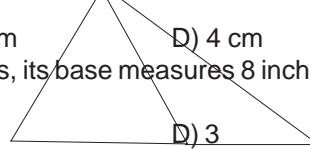
3. In $\triangle PQR$, $\angle P = 45^\circ$ and $\angle Q = 80^\circ$. Which of the two sides of the triangle are equal? Find $\angle R$.
4. Find the area of an equilateral triangle with side 4cm.
5. Find the area of a right angled triangle with sides 9, 12 and 15 unit
6. In the given figure $\triangle ABC$ is equilateral, if $\angle ADE = 35^\circ$ what is the measure of $\angle BDC$?

7. In the given figure if $DB = 5AD$ and $EC = 5AE$ and $DE \parallel BC$. Find length of DE if $BC = 24$ cm.

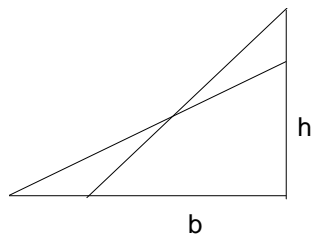


8. The perimeter of an isosceles triangle is 20 inches, its base measures 8 inches. Find the length of each of its equal side.
9. A 25 foot ladder is kept against a wall. If the ladder slips down 4 feet along the wall so that the bottom of the ladder is now 15 feet away from the base of the wall, how far away from the wall was the foot of the ladder originally?

~~14/03/23~~ $\angle BQR = 50^\circ$



10. In a right triangle one angle measures 30° and its hypotenuse measures 15 inches, find the length of the shortest side of the triangle.
11. If square of one side and hypotenuse of a right triangle are 64 and 17 respectively find the length of the third side of the triangle

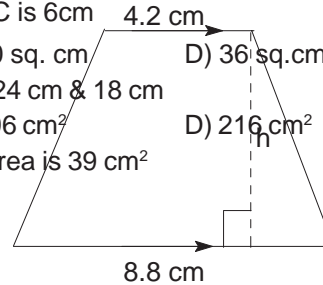




UNIT - IV

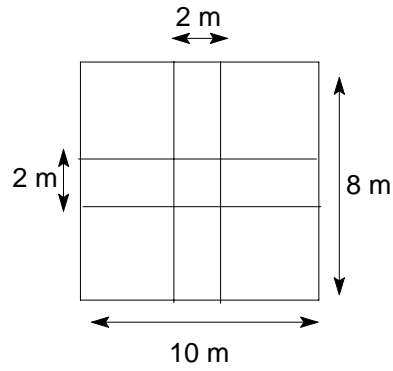
Mensuration - 2D

1. The floor of an auditorium is in the shape of a rectangle around which vertical walls are raised. If the perimeter of the floor is 110 m and the height of auditorium is 15 m. Find the cost of painting the four walls at the rate of Rs. 720/- per 100 sq. m
 A) Rs. 11880 B) Rs. 81180 C) Rs. 98890 D) None
2. A path of 1.5m width runs around and inside an rectangular plot of 30 m x 18 m. Find the cost of leveling the path at the rate of Rs. 1.25 per sq. m
 A) Rs. 125.25 B) Rs. 168.75 C) Rs. 149 D) None
3. The outer dimensions of a tank are 5m, 4m & 3m respectively. Find the cost of plastering the outer walls at the rate of Rs. 15 per sq. m
 A) Rs. 760 B) Rs. 810 C) Rs. 860 D) Rs. 950
4. The edge of a cube is 12 cm. Find its volume (in cubic cm)
 A) 125 B) 625 C) 1331 D) 1728
5. In a $\triangle ABC$, $BC=8\text{cm}$. The altitude from A to BC is 6cm
 A) 20 sq. cm B) 24 sq. cm C) 30 sq. cm D) 36 sq. cm
6. Find the area of rhombus whose diagonals are 24 cm & 18 cm
 A) 121 cm^2 B) 169 cm^2 C) 196 cm^2 D) 216 cm^2
7. Find the height of the adjacent trapezium if its area is 39 cm^2



- A) 2 cm B) 4 cm C) 6 cm D) 8 cm
8. Find the area of circle whose diameter is 11 cm
 A) 94 cm^2 B) 94.99 cm^2 C) 95 cm^2 D) None
9. Find the length of the arc of a sector with radius 5 m area 20 m^2
 A) 4 m B) 6 m C) 7 m D) 8 m

10. A path 2 m of uniform width runs across the rectangular plot of dimensions 10 m & 8 m. find the area of the path



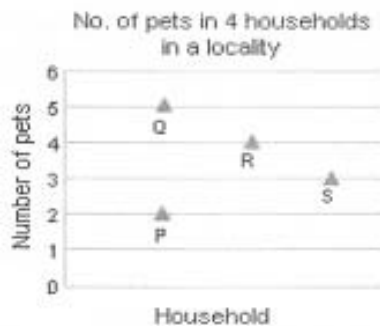
- A) 24 sq.m B) 28 sq.m C) 32 sq.m D) 36 sq.m

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UNIT - V

Data Interpretation

1. What if the total no. of pets in the 4 households?

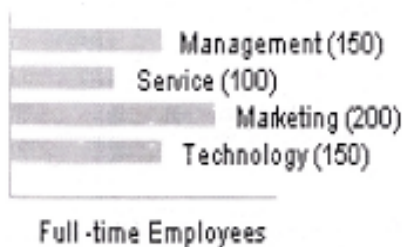
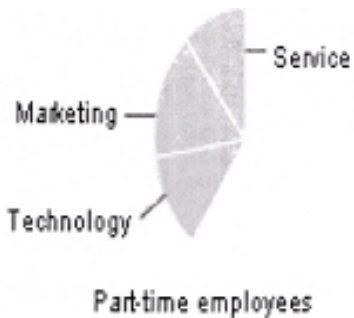


- A) 14 B) 16 C) 15 D) 20
2. The given table shows credit points scored by five students in a six week course

Weeks	I	II	III	IV	V	VI
Students						
A	10	24	20	11	6	18
B	10	16	11	21	22	25
C	12	23	22	21	18	26
D	10	12	16	20	22	23
E	24	15	16	13	12	8

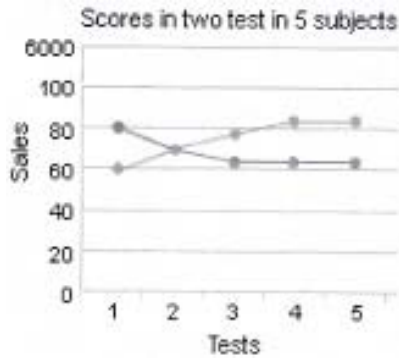
Which student has steady rate of progress in the course?

- A) A B) B C) C D) D E) E
3. In the given graphs, read the information and answer the question given. Employees in various departments at company ABC. Total no employees in the company were 1000. What percentage of all the employees at company ABC work in the service department?



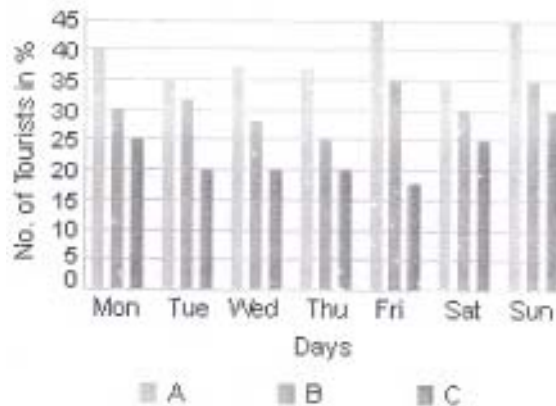
- A) 16% B) 40% C) 14% D) 60% E) 25%

4. Scores in two test in 5 subjects. The graph shows the scores of a student in two tests in 5 subjects. What is the difference in percent of marks in the two?



- A) 6 % B) 15 % C) 10 % D) 7% E) 12 %
5. The following table gives the number of tourists visiting a city in a week and the bar-diagram shows the occupancy percents in three different hotels A,B and C.

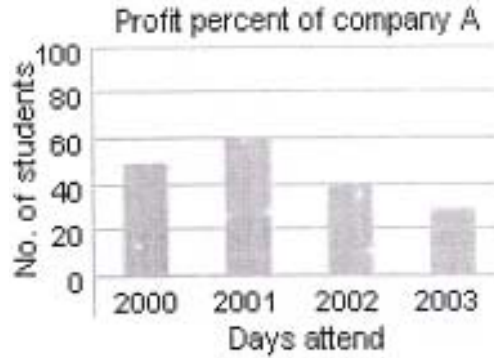
Day	Number of tourists
Mon	1750
Tue	1800
Wed	1700
Thu	1650
Fri	1950
Sat	1900
Sun	1600



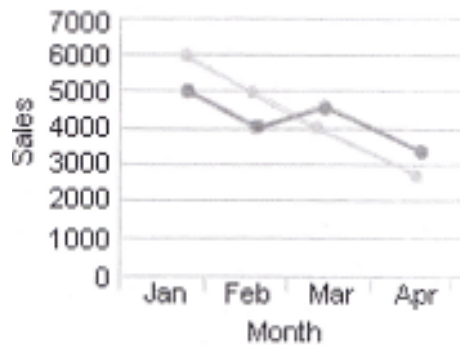
The number of tourists stayed in hotel B was how much more than the number of tourists in hotel A on Saturday ?

- A) 390 B) 450 C) 285 D) 855 E) 570

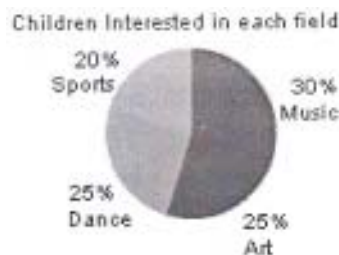
6. The given bar graph represents the profit percent of a company A. If the income of company A in 2000 was 35,000 dollars and in 2002 was 29,000 dollars. What is the ratio of the expenditures of the company for these two years?



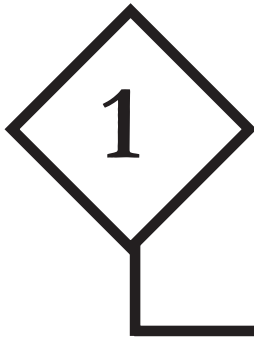
- A) 75:74 B) 65:69 C) 174:175 D) 175:174 E) 35 : 29
7. In the given figure, sales of two products are given, what is the ratio of the total sale of the two products



- A) 34:35 B) 35:34 C) 43:45 D) 45:43 E) 55 : 49
8. The given pie-chart shows the percentage of children interested in each field, find the number of students who are interested in music from a group of 120 students



- A) 48 B) 50 C) 25 D) 36 E) 30



UNIT - I

Arithmetic

TIME, SPEED AND DISTANCE

- Express a speed of 36 kmph in metres per second
 A) 10 B) 12 C) 14 D) 17
- The speed of a train is 90 kmph. What is the distance (in km.) covered by it in 10 minutes?
 A) 15 B) 12 C) 10 D) 5
- The speed of a bicycle is 36 kmph. Find the time taken (in sec) to cover a distance of 200m.
 A) 18 B) 19 C) 20 D) 21
- A man covers half of the journey at 70 kmph and the rest at 30 kmph. What is the average speed (in kmph) of the car for the whole journey?
 A) 42 B) 4.2 C) 40 D) None

TRAINS

- How many seconds will a train 200 m long running at the speed of 72 kmph takes to pass a tree?
 A) 10 B) 20 C) 24 D) 60
- How long (in second) does a train 125m long running at 72kmph take to cross a bridge of 75m?
 A) 3 B) 10 C) 14 D) 15
- In the above problem, if the trains are running in the same direction, In what time (in seconds) will they be completely clear of each other?
 A) 26 B) 50 C) 67 D) 99

TIME AND WORK

- P, Q and R can do a work in 20, 15 and 112 days respectively, in how many days can they together complete the work?
 A) 16 B) 9 C) 5 D) 7
- P and Q can do a piece of work in 12 days. Q and R can do it in 15 days, R and P in 20 days. In how many days all of them can do the work?
 A) 10 B) 20 C) 15 D) 47
- Akhil and Nihil can do a work in 30 days and 36 days respectively. They work together for 10 days and then Akhil goes away. In how many days will Nihil finish the work?
 A) 17 B) 19 C) 12 D) 14
- P can do a work in 40 days and Q can do it in 30 days. They together undertook to do a piece of work for Rs. 840. What is the share of R (in Rs.)
 A) 160 B) 360 C) 340 D) 440
- Sixteen men can complete a work in 8 days. Three days after they started the work, 4 more men joined them. In how many days will all of them together complete the remaining work?
 A) 4 B) 5 C) 6 D) 7

PIPES & CISTERNS

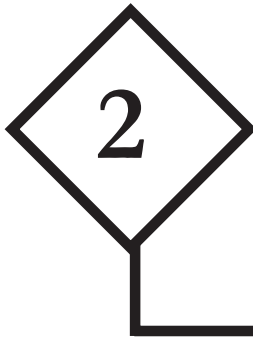
- Pipe P can fill a tank in 24 hours and pipe Q can empty it in 36 hours. In how many hours the tank will be filled if they work together?
 A) 24 B) 36 C) 72 D) 40
- Pipe P can fill an empty tank in 4 hours while another tap can empty it in 6 hours. If both the pipes are opened at the same time, then how many hours it will take to fill up the cistern?
 A) 24 B) 32 C) 20 D) 14
- A pipe can fill a cistern in 12 minutes and another pipe in 15 minutes, but a third pipe can empty it in 6 minutes. The three pipes are kept opened together. Find (in min.) when the cistern will be emptied?
 A) 15 B) 30 C) 60 D) Never

SETS

- If A and B are disjoint sets and $n(A) = 10$, $n(B) = 5$ then $n(A \cup B) =$
 A) 5 B) 10 C) 15 D) None
- If $A = \{1,2,3,5\}$ then how many subsets does A have?
 A) 12 B) 32 C) 24 D) 8
- The cardinality of A if set A has 256 subset is
 A) 1 B) 5 C) 8 D) 27
- The symmetric difference of sets A and B is
 A) $(A \cup B) \cap (A \cap B)$ B) $(A \cap B) \cup (A \cap B)$
 C) $(A - B) \cup (B - A)$ D) None
- Out of 50 staff members in an office 20 members prefer to drink tea only. 10 prefer to drink coffee only and 5 prefer to drink neither tea nor coffee. The number of members who prefer to take atleast one of the two drinks is
 A) 45 B) 15 C) 44 D) 11

PERMUTATION AND COMBINATION

- If A and B are disjoint sets and $n(A) = 10$, $n(B) = 5$ then =
 A) 5 B) 10 C) 15 D) None
- If $A = \{1,2,3,4,5\}$ then how many subsets does A have ?
 A) 12 B) 32 C) 24 D) 8
- The cardinality of A if set A has 256 subsets is
 A) 1 B) 5 C) 8 D) 27
- The symmetric difference of sets A and B is
 A) $(A \cup B) \cap (A \cap B)$ B) $(A \cap B) \cup (A \cap B)$
 C) $(A - B) \cup (B - A)$ D) None
- Out of 50 staff members in an office 20 members prefer to drink tea only. 10 prefer to drink coffee only and 5 prefer to drink neither tea nor coffee. The number of members who prefer to take atleast one of the two drinks is
 A) 45 B) 15 C) 44 D) 11



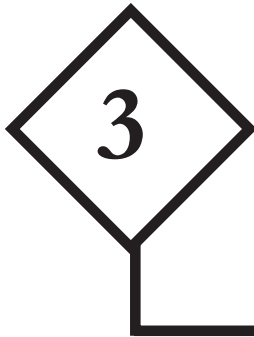
UNIT - II

Algebra

FUNCTIONS

1. If $f(x) = x^2 - 10$ and $g(x) = 2f(x) + 3$, what is ?
A) 5 B) 9 C) 10 D) 16 E) 19
2. If $F(x-3) = x$, what is $F(14)$?
A) 0 B) 11 C) 14 D) 17 E) 21

$$g(\sqrt{2})$$



UNIT - III

Geometry

POLYGONS

- Find the length of the rectangle whose area is 4984 square units and width is 56 units.
 A) 60 units B) 69 units C) 79 units D) 80 units E) 93 units
- The length of a rectangle is twice its width. Find the dimensions of the rectangle in inches if its area is 288 square inches
 A) 24,12 B) 20,10 C) 16,8 D) 32,16 E) 50,25
- The area of a square is 16 square units. Find the length of its diagonal
 A) $2\sqrt{2}$ B) 2 C) 4 D) E) 16
- Find the area of a parallelogram with base 8 units and altitude 4.5 units
 A) 36 sq. units B) 96 sq. units C) 18 sq. units D) 24 sq. units E) 48 sq. units
- Find the area of a right angled triangle (in square inches) with hypotenuse 25 inches and base 7 inches.
 A) 84 B) 42 C) 64 D) 80 E) 60

CIRCLES

- Find the circumference of a circle with diameter 42 units
 A) 84 B) 108 C) 132 D) 146 E) 168
- The diameter of a wheel of a vehicle is 70 inches. It moves slowly. How far will it go in inches in 48 revolutions?
 A) 18000 B) 33600 C) 20000 D) 10560 E) 24000
- The circumferences of two circles are in the ratio 2:3. Find the ratio of their areas
 A) 4:9 B) 9:4 C) 2:3 D) 3:2 E) 4:6
- A rectangular acrylic sheet is 34 inches long and 24 inches wide. From it, 64 circular buttons each of diameter 3.5 inches have been cut out. Find the area of the remaining sheet (in sq inch)
 A) 816 B) 200 C) 100 D) 616 E) 300
- If the circumference of a circle triples, the area of the circle becomes
 A) 9 times smaller B) 3 times smaller C) 3 times bigger D) 6 times bigger E) 9 times bigger
- If the area of a circle is $(121x)$ square units, what is the circumference of the circle?
 A) units B) units C) units D) units E) units



UNIT - IV

Mensuration - 3D

- The volume of a cube is 125 cubic cm Find its surface area
 A) 25 cm^2 B) 375 cm^2 C) 150 cm^2 D) 250 cm^2
- A cube of 6 cm side melted and smaller cubes of 2cm side are manufactured. Find the number of smaller cubes so formed.
 A) 12 B) 27 C) 24 D) 8
- The length, breadth & height of a cuboid are in the ratio of 4:3:2 and its volume is 3000 cubic m. Find its surface area
 A) 1300 m^2 B) 1500 m^2 C) 1333 m^2 D) 27000 cm^2
- The radius and height of a cylinder are in the ratio of 2:1 and its volume is 616 cubic cm. Find its curved surface area
 A) 1848 cm^2 B) 627 cm^2 C) 612 cm^2 D) 672 cm^2
- A cylinder of radius 2 cm is melted and 11 cubes of 2 cm side are manufactures. Find the height of the cylinder melted.
 A) 7 cm B) 15 cm C) 44 cm D) 11 cm
- Volumes of two spheres are in the ratio of 729 : 343. Find the ratio of their volumes
 A) 49 : 81 B) 343 : 729 C) 7 : 9 D) 81 : 49
- Find the volume of a hemisphere of diameter 14 cm.
 A) 19404 cm^3 B) 19600 cm^3 C) 9702 cm^3 D) none
- A cylinder of 10 cm radius and 10 cm height is melted and cones of 10cm diameter and 2.5cm height are manufactured. Find the number of cones formed.
 A) 48 B) 30 C) 75 D) 24
- If a solid sphere of radius is melted and cast into the shape of a solid cone of height, then the radius of the base of the cone is
 A) $2r$ B) r C) $4r$ D) $3r$
- A cone, a hemisphere and a cylinder stand on equal based and have the same height. The ratio of their volume is
 A) 1:2:3 B) 2:1:3 C) 2:3:1 D) 3:2:1



UNIT - V

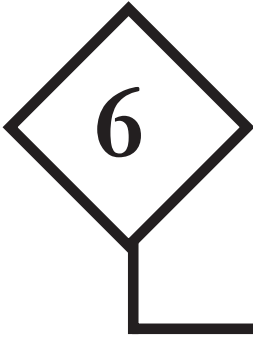
Data Analysis

STATISTICS

1. The mean of 9, 11, 13, P, 18 and 19 is P. Then find the value of P.
 A) 14 B) 15 C) 16 D) 17
2. Find the mode of the given data 32, 30, 32, 16, 32, 16, 32, 30, 19, 30.
 A) 32 B) 30 C) 32 & 30 D) 19
3. If $x < y < z$, $z = ky$, $x = 0$, and the average of the numbers x, y and z is 3 times the median what is the value of K ?
 A) 3 B) 5.5 C) -2 D) 8 E) 6
4. The average of x, y and z is 8 and the average of y and z is 4. What is the value of x ?
 A) 16 B) 4 C) 24 D) 8 E) 32
5. A class of 30 students had an average of 92 kpoints on a science test out of maximum 100. If 10 students had a perfect score, what was the average score for the remaining students?
 A) 88 B) 56 C) 89 D) 92 E) 90
6. If $2P-8$, $P+4$ and $3P-13$ are all integers and $P+4$ is the median of these integers which of the following could be a value of P ?
 A) 6 B) 11 C) 8 D) 15 E) 13
7. If the average of x, y and 7 is 13, what is the average of $x+3$, $y-5$ and 6?
 A) 7 B) 10 C) 12 D) 13 E) 6
8. A batsman makes a score of 87 runs in the 17th inning and thus increases his average by 3. Find his average after 17th inning.
 A) 30 B) 40 C) 39 D) 38 E) 87
9. The sum of three consecutive odd numbers is 38 more than the average of these numbers. What is the first of these numbers ?
 A) 13 B) 17 C) 19 D) Data inadequate E) None of these
10. Of the four numbers, whose average is 60, the first is one-fourth of the sum of the last three. The first number is ?
 A) 15 B) 45 C) 48 D) 60.25 E) 55

PROBABILITY

1. A coin is tossed six times. What is the probability of getting head at least once?
 A) $\frac{63}{64}$ B) $\frac{1}{64}$ C) $\frac{27}{64}$ D) $\frac{23}{64}$
2. Two coins are tossed, what is the probability of getting at least one head?
 A) $\frac{3}{4}$ B) $\frac{1}{3}$ C) $\frac{1}{4}$ D) None
3. A die is thrown. What is the probability of getting 6 ?
 A) $\frac{1}{2}$ B) $\frac{1}{3}$ C) $\frac{1}{6}$ D) 0
4. Two dice are thrown. What is the probability of getting a doublet?
 A) $\frac{5}{36}$ B) $\frac{7}{36}$ C) $\frac{11}{36}$ D) $\frac{1}{6}$
5. A bag contains 4 green, 6 black and 7 white balls. A ball is drawn at random. What is the probability that it is either a green or a black ball?
 A) $\frac{10}{17}$ B) $\frac{1}{7}$ C) $\frac{7}{17}$ D) $\frac{1}{3}$
6. In the above question, what is the probability that none of them will win
 A) $\frac{1}{20}$ B) $\frac{4}{9}$ C) $\frac{11}{20}$ D) $\frac{9}{20}$
7. Three mangoes and three apples are in a box. If 2 fruits are chosen at random. The probability that?
 A) $\frac{13}{22}$ B) $\frac{4}{17}$ C) $\frac{37}{66}$ D) $\frac{35}{36}$
8. A bag contains 6 red, 4 white, and 8 blue balls. Three balls are drawn at random. What is the probability of the balls being of different colors?
 A) $\frac{13}{66}$ B) $\frac{4}{17}$ C) $\frac{37}{66}$ D) $\frac{35}{36}$



UNIT - VI

Trigonometry

1. If $\triangle ABC$ is right angled at C, then the value of $\frac{a^2 + b^2}{c^2}$ is
 - a) 0
 - b) 1
 - c) $\frac{1}{2}$
 - d) $\frac{1}{4}$

2. Given that $\sin \theta = \frac{1}{2}$ and $\cos \theta = \frac{\sqrt{3}}{2}$, then the value of $\tan \theta$ is
 - a) $\frac{1}{\sqrt{3}}$
 - b) $\frac{\sqrt{3}}{2}$
 - c) $\frac{1}{2}$
 - d) $\frac{2}{\sqrt{3}}$

3. The value of the expression $\frac{\sin^2 60^\circ + \cos^2 60^\circ}{\sin^2 30^\circ + \cos^2 30^\circ}$ is
 - a) 3
 - b) 2
 - c) 1
 - d) $\frac{1}{2}$

4. If $\sin \theta = \frac{1}{2}$ then the value of $\frac{\sin^2 \theta + \cos^2 \theta}{\sin^2 27^\circ + \cos^2 27^\circ}$ is
 - a) 1
 - b) $\frac{3}{4}$
 - c) $\frac{4}{3}$
 - d) $\frac{3}{2}$

5. Value of $\frac{\sin^2 60^\circ + \cos^2 60^\circ}{\sin^2 30^\circ + \cos^2 30^\circ}$ is
 - a) 0
 - b) 1
 - c) 2
 - d) 3

6. If $3 \sin \theta = \sqrt{3} \cos \theta$ then value of $\tan 2\theta$ is
 - a) $\sqrt{2}$
 - b) $\frac{1}{\sqrt{2}}$
 - c) $\frac{\sqrt{2}}{2}$
 - d) 1

7. Which is not possible
 - a) $\sin \theta = \frac{1}{2}$
 - b) $\cos \theta = \frac{1}{2}$
 - c) $\tan \theta = 1$
 - d) $\cot \theta = 1$

8. If $\sin^2 \theta + \cos^2 \theta = 1$, then x is equal to
 - a) 1
 - b) $\frac{1}{2}$
 - c) $\frac{1}{4}$
 - d) $\frac{1}{8}$



UNIT - VII

Coordinate Geometry

EXERCISE

- A circle drawn with origin as the centre passes through $(4, 0)$ and $(0, 3)$. The point which does not lie in the interior of the circle is

a) $(-4, 0)$ b) $(0, -3)$ c) $(-4, -3)$ d) $(4, 3)$
- If the distance between the points $(4, 0)$ and $(0, 3)$ is 5, then the value of p is

a) 4 only b) 3 only c) 4 only d) 0
- The distance of the point $(4, 3)$ from the x-axis is $\frac{1}{2} AB$

a) 2 b) 3 c) 1 d) 5
- The distance of the point $P(-6, 8)$ from the origin is

a) 8 b) $2\sqrt{7}$ c) 10 d) 6
- The points $(-4, 0)$, $(0, 3)$ and $(4, 0)$ are the vertices of a

a) right triangle b) isosceles triangle
c) equilateral triangle d) scalene triangle
- The point which lies on the perpendicular bisector of the line segment joining the points $A(-2, -5)$ and $B(2, 1)$ is

a) $(0, 0)$ b) $(-2, -5)$ c) $(2, 1)$ d) $(-1, -2)$
- If the point $(2, 1)$ lies on the line segment joining points $A(-4, 0)$ and $B(4, 0)$, then

a) $AP = \frac{1}{3} AB$ b) $AP = PB$ c) $AP = 2PB$ d) $AP = \frac{1}{2} AB$

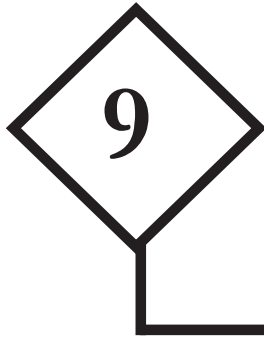
10. If _____, then domain of _____ can take values

- a) _____ b) $x \in (3, 6)$ c) $x \in R$ d) _____

Answers

1. b 2. b 3. b 4. b 5. c 6. a, c, d 7. a, c, d 8. a, b, c, d 9. a, b, c, d 10. a, d

$$f(x) = \sqrt{x-1} + \frac{1}{x-5}$$



UNIT - IX

Matrices

1. The inverse of $\begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$ is
 - a) $\begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$
 - b) $\begin{pmatrix} 1 & 1 \\ 0 & 1 \end{pmatrix}$
 - c) $\begin{pmatrix} 1 & 0 \\ 1 & 1 \end{pmatrix}$
 - d) $\begin{pmatrix} 1 & 1 \\ 1 & 1 \end{pmatrix}$

2. If $\begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix}$ and $\begin{pmatrix} 4 & 3 \\ 2 & 1 \end{pmatrix}$, then the values of x and y are respectively
 - a) 11,8
 - b) 8,11
 - c) $\begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix}$
 - d) cannot e found

3. If $\begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix}$ and $B^T = (3 \ 2 \ 1)$, then $\det (AB) =$
 - a) 14
 - b) 13
 - c) 4
 - d) cannot be computed

4. If the determinant of $\begin{pmatrix} a & b & c \\ b & c & a \\ c & a & b \end{pmatrix}$ is zero, then a,b,c are in
 - a) G.P
 - b) A.P
 - c) H.P
 - d) none of these

5. If $\begin{pmatrix} x & y & z \\ y & z & x \\ z & x & y \end{pmatrix}$, then the values of x,y,z are respectively
 - a) 2,6,12
 - b) 1,6,2
 - c) 3,2,6
 - d) 5,3,4

6. If $A^2 = 8A + kI$ where $A = \begin{pmatrix} 1 & 2 \\ 2 & 1 \end{pmatrix}$ then k is
 - a) 7
 - b) -7
 - c) 1
 - d) -1

7. If the matrix $\begin{pmatrix} 1 & 2 & 3 \\ 2 & 3 & 4 \\ 3 & 4 & 5 \end{pmatrix}$ then $\det A$ is
 - a) 0
 - b) $\begin{pmatrix} 1 & 2 \\ 2 & 1 \end{pmatrix}$
 - c) nonexistent
 - d) none of these

8. If $\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix} + \begin{bmatrix} 2 & 3 \\ 4 & 5 \end{bmatrix} = \begin{bmatrix} x & y \\ z & w \end{bmatrix}$ then the value of $x + y + z + w$ is equal to
 a) 5 b) 0 c) 1 d) none of these

9. If $\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix} \begin{bmatrix} x & y \\ z & w \end{bmatrix} = \begin{bmatrix} 5 & 6 \\ 7 & 8 \end{bmatrix}$ then x is
 a) 2 b) -2 c) 14 d) none of these

10. If $A = \begin{bmatrix} 3 & 1 \\ -1 & 2 \\ 0 & 6 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & 2 \\ 3 & 4 \\ 5 & 6 \end{bmatrix}$ then
 a) AB exists b) BA exists
 c) BA exists d) none of these

Answers

1. c 2. d 3. a 4. a 5. b 6. b 7. b 8. c 9. b 10. c

$$\begin{bmatrix} 1 & 2 \\ 3 & 4 \\ 5 & 6 \end{bmatrix} \begin{bmatrix} x & y \\ z & w \end{bmatrix} = \begin{bmatrix} 1 & 2 \\ 3 & 4 \\ 5 & 6 \end{bmatrix}$$