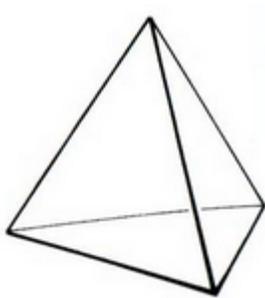


Class: VI
Subject: Mathematics
Topic: OASK1506SA103
No. of Questions: 30
Duration: 90 Min
Maximum Marks: 90

1) How many faces a tetrahedron has?

- (A) 12
- (B) 14
- (C) 6
- (D) 4

Sol.(D)



In geometry, a tetrahedron is a polyhedron composed of four triangular faces, three of which meet at each corner or vertex

2) Subtract XLV from L?

- (A) V
- (B) VI
- (C) IV
- (D) VIII

Sol.(A)

$$XLV = XL + V = 40 + 5 = 45$$

$$L = 50$$

Subtracting 50 from 45, we get $50 - 45 = 5$

So, answer is 5 or V

3) Which of the following number is divisible by 9?

- (A) 95109476
- (B) 92106345
- (C) 10349576
- (D) 9076185

SOL. (D)

In 9076185

Sum of digits = $9 + 0 + 7 + 6 + 1 + 8 + 5 = 36$

Since 36 is divisible by 9, 90769185 is divisible by 9

4) Geometrical figure which has no dimension is?

- (A) line segment
- (B) point
- (C) plane
- (D) line

SOL. (D)

A Point has no dimensions, only position

A Line is one-dimensional

A Plane is two dimensional (2D)

5) John owes Rs.3, Vir owes Rs.5 but Ali doesn't owe anything, in fact he has Rs.3 in his pocket. Using number line, find who is poorest?

- (A) John
- (B) Vir
- (C) Ali
- (D) None

SOL. (B)

Having money in your pocket is positive. But owing money is negative.

So John has “-3”, Vir = “-5” and Ali”+3”

Vir is poorest as -5 is smaller than -3 and 3

- 6) In the international system, there is only one comma in the six digit number which is placed after the _____ place?
- (A) Thousands
 - (B) Hundreds
 - (C) Ones
 - (D) Tens

Sol.(A)

In the international system, there is only one comma in the six digit number which is placed after the thousands place

- 7) Whole numbers are closed under _____ and _____?
- (A) addition, subtraction
 - (B) addition, division
 - (C) addition, multiplication
 - (D) subtraction, division

Sol.(C)

Whole numbers are closed under addition and multiplication

- 8) The ratio of two numbers is 3 : 4 and their HCF is 4.Their LCM is ?
- (A) 12
 - (B) 16
 - (C) 24
 - (D) 48

Sol. (D)

Two numbers are $3 \times \text{HCF}$ and $4 \times \text{HCF}$

i.e. $3 \times 4 = 12$ and $4 \times 4 = 16$

L.C.M of 12 and 16

2	12, 16
2	6, 8
2	3, 4
2	3, 2
2	3, 1
3	1, 1

\therefore L.C.M = 48

SECTION

- 9) If Q is the mid-point of \overline{PR} and R is the mid-point of \overline{QS} , where P, Q, R, S lie on straight line, why $PR = RS$?

Sol. Q is the mid-point of \overline{PR}

$$\therefore PR = QR \quad (i)$$

And R is the mid-point of \overline{QS}

$$\therefore QR = RS \quad (ii)$$

From eq. (i) and (ii),

$$PR = RS$$

- 10) Find the product by suitable rearrangement:

(a) $8 \times 1769 \times 125$

(b) $4 \times 4957 \times 25$

Sol. (a) we can observe that $8 \times 125 = 1000$. So, we can rearrange the numbers

$$\begin{aligned}8 \times 1769 \times 125 &= (8 \times 125) \times 1769 \\ &= 1000 \times 1769 \\ &= 1769000\end{aligned}$$

(b) We can observe that $4 \times 25 = 100$. So, we can rearrange the numbers

$$\begin{aligned}4 \times 4957 \times 25 &= (4 \times 25) \times 4957 \\ &= 100 \times 4957 = 495700\end{aligned}$$

11) (a) In an election, the winning candidate got 1, 23, 12, 505 votes which are 7,842 votes more than the losing candidate. How many votes did the losing candidate get?

(b) Find the smallest and the greatest numbers which are rounded off to the nearest thousand as 6000

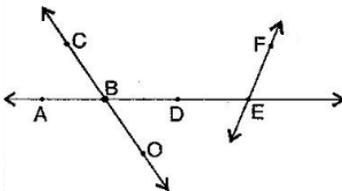
Sol.(a) Votes in favour of the winning candidate = 1,23,12,505

Winning margin = 7842

$$\begin{aligned}\text{Votes in favour of the losing candidate} &= 1, 23, 12,505 - 7,842 \\ &= 1, 23, 04,663\end{aligned}$$

(b) Clearly, all numbers from 6001 to 6499 are rounded off to 6000. Also, all numbers from 5500 to 5999 are rounded off to 6000. Thus, the smallest and the greatest numbers which are rounded off to the nearest hundreds as 6000 are 5500 and 6499 respectively.

12) Use the figure to name:



(a) Line containing point E.

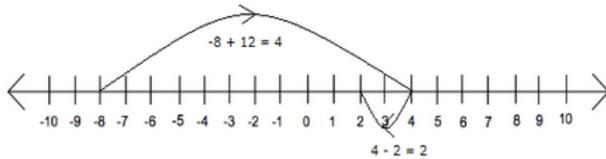
(b) Two pairs of intersecting lines?

Sol. (a) A line containing E = \overline{AE} or \overline{FE}

(b) Two pairs of intersecting lines are : \overline{AD} , \overline{CO} and \overline{AE} , \overline{FE}

13) Solve $(-8 + 12 - 2)$ using number line?

Sol. To solve using number line start with -8 , move 12 steps right and then back 2 steps as shown below.



So, we reach at 2, therefore $(-8 + 12 - 2) = 2$

14) Write the greatest 4 –digit number and express it terms of its prime factors.

Sol. The greatest four digit number is 9999 and its factors are

3	9999
3	3333
11	1111
	101

Hence the greatest 4 digit number 9999 can be expressed in the form of its prime factors as

$$3 \times 3 \times 11 \times 101$$

SECTION

15) Determine the product of the greatest of four digits and the greatest number of three digits?

Sol. We know that :

Greatest number of four digits = 9999

Greatest number of three digits = 999

∴ Required product = 9999×999

$$= 9999 \times (1000 - 1)$$

$$= 9999 \times 1000 - 9999 \times 1$$

$$[\because a \times (b - c) = a \times b - a \times c]$$

$$\begin{aligned}
 &= (10000 - 1) \times 1000 - 1000 (10000 - 1) \times 1 \\
 &= 10000 \times 1000 - 1000 \times 1 - (10000 \times 1 - 1 \times 1) \\
 & \qquad \qquad \qquad [\because (a-b) \times c = a \times c - b \times c] \\
 &= 10000000 - 1000 - 10000 + 1 \\
 &= 10000001 - 11000 = 9989001
 \end{aligned}$$

16) Define the different types of triangles based on sides.

Sol. Triangles based on sides:

- a) Scalene triangle: A triangle in which no two sides are equal is called a scalene triangle.
- b) Isosceles triangle: A triangle in which two sides are equal is called an isosceles triangle.
- c) Equilateral triangle: A triangle in which all the sides are equal is called an equilateral triangle.

17) Determine the number nearest to 100000 but greater than 100000 which is exactly divisible by each of 8, 15, and 21.

Sol. L.C.M of 8, 15 and 21

Prime factorization of 8 = $2 \times 2 \times 2$

Prime factorization of 15 = 3×5

Prime factorization of 21 = 3×7

The number nearest to 100000 but greater than 100000 which is exactly divisible by their

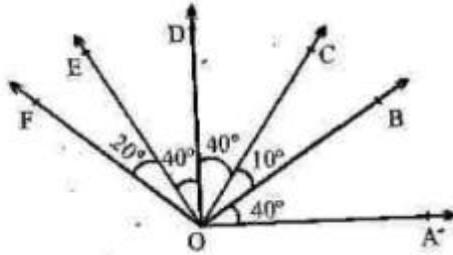
L.C.M (i.e., 840)

$$\begin{array}{r}
 840 \overline{) 100000} \quad (119 \\
 \underline{840} \\
 1600 \\
 \underline{840} \\
 7600 \\
 \underline{7560} \\
 40
 \end{array}$$

Remainder = 40

$$\begin{aligned} \therefore \text{Number just greater than 100000 and exactly divisible by 840} &= 100000 + (840 - 40) \\ &= 100000 + 800 \\ &= 100800 \end{aligned}$$

18) In the given figure:



- (a) $\angle AOC$ is a/an angle.
 (b) $\angle BOE$ is a/an angle.
 (c) $\angle COF$ is a/an angle.

Sol. (a) $\angle AOC$ is an Acute Angle.

$$\therefore \angle AOC = 40^\circ + 10^\circ = 50^\circ$$

An angle whose measure is greater than 0° but less than 90° is called an acute angle

(b) $\angle BOE$ is a Right angle.

$$\begin{aligned} \therefore \angle BOE &= \angle BOC + \angle COD + \angle DOE \\ &= 40^\circ + 40^\circ + 10^\circ = 90^\circ \end{aligned}$$

(c) $\angle COF$ is an Obtuse angle.

$$\begin{aligned} \therefore \angle COF &= \angle COD + \angle DOE + \angle EOF \\ &= 40^\circ + 40^\circ + 20^\circ \\ &= 100^\circ \end{aligned}$$

An angle whose measure is greater than 90° but less than 180° is called an obtuse angle

- 19) (a) The sum of two integers is 238. If one of the integers is -122, determine the other.
 (b) Find the sum of (-216), (+760), (500), and (+33).

Sol. (a) we have, Required integer = $238 - (-122)$

$$= 238 + 122$$
$$= 360$$

(b) We have,

$$= -216 + [760 + 500 + 33]$$
$$= -216 + 1293$$
$$= 1077$$

20) Alex has Rs.78592 with him. He placed an order for purchasing 39 radio sets at Rs1234 each. How many will remain with him after the purchase?

Sol. Alex's initial money = 78592

He purchased 39 radio sets = Rs1234

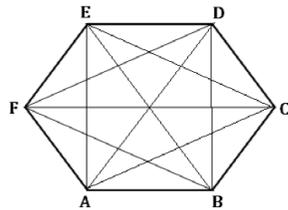
$$\therefore \text{Money spent by him on purchasing 39 radio sets} = 1234 \times 39$$
$$= 48,126$$

$$\therefore \text{Remaining money with Alex after the purchase} = \text{Initial money} - \text{Money spent on 39 radio sets}$$
$$= 78592 - 48126 = 30,466$$

Thus, Rs30466 is left with him after the purchase.

21) Draw a hexagon and write its sides and diagonals?

Sol. Hexagon



Sides of hexagon: AB, BC, CD, DE, EF and FA.

Diagonals of hexagon: AC, AD, AE, BD, BE, BF, CE, CF and DF

22) a) Estimate: $439 + 3346 + 43172$

b) Write the following in Roman numerals:

i) 16464

ii) 5839

Sol. (a) Estimating the numbers 439 , 3346 and 43172 to their nearest hundreds, we get,

$$439 \text{ rounds off} = 400$$

$$3346 \text{ rounds off} = 3300$$

$$43172 \text{ rounds off} = 43200$$

$$\Rightarrow \text{sum of } 400 + 3300 + 43200$$

$$= 46900$$

(b) we have,

$$(i) 16464 = 16000 + 400 + 60 + 4$$

$$= \overline{XVI} + CD + LX + IV$$

$$= \overline{XVICDLXIV}$$

$$(ii) 5839 = 5000 + 800 + 30 + 9$$

$$= \overline{V} + DCCC + XXX + IX$$

$$= \overline{VDCCCXXXIX}$$

SECTION

23) a) Subtract the sum of -1136 and 938 from the sum of 856 and -927.

b) Fill in the blanks:

i) $7 + \underline{\hspace{2cm}} = 0$

ii) $125 \times \underline{\hspace{2cm}} = -125$

iii) $0 \div (-11) = \underline{\hspace{2cm}}$

iv) $-118 + \underline{\hspace{2cm}} = -117$

Sol. (a) we have,

$$\text{Sum of } -1136 \text{ and } 938 = (-1136) + 938 = -198$$

$$\text{Sum of } 856 \text{ and } -927 = (-927) + 856 = -71$$

Now,

$$(-71) - (-198) = -71 + 198 = 127$$

(b) i) $7 + (-7) = 0$

ii) $125 \times (-1) = -125$

iii) $0 \div (-11) = 0$

iv) $-118 + 1 = -117$

- 24)** A vendor supplies 32 litres of milk to a hotel in the morning and 68 litres of milk in the evening. If the milk costs Rs 15 per litre, how much money is due to the vendor per day.

Sol. Milk supplied by the vendor to the hotel in the morning = 32 litres

Milk supplied by the vendor to the hotel in the evening = 68 litres

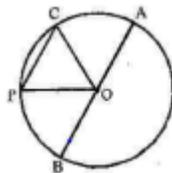
Total milk supplied in a day = $32 + 68 = 100$ litres

Cost of milk per litre = Rs 15

Hence cost of 100 litres of milk = $100 \times 15 = \text{Rs}1500$

Thus Rs 1500 is due to the vendor per day.

- 25)** Answer the following questions with the help of given figure in which 'O' is the centre of the circle.



- Name all chords of the circle.
- Name all radii of the circle.
- Name the smallest segment formed.
- Name the diameter.

Sol. (a) All chords of the circle = CP, AB

(b) All radii of the circle = AO, OB, OC, OP

(c) Smallest segment formed = CP

(d) Diameter = AB

26) a) Reduce $\frac{289}{391}$ to the lowest terms.

b) Rearrange the fraction $\frac{17}{18}, \frac{31}{36}, \frac{43}{45}, \frac{59}{60}$ in ascending order.

Sol.(a) In order to reduce a given fraction to the lowest terms, we divide its numerator and denominator by their H.C.F

$$\text{Prime factorization of } 289 = 17 \times 17$$

$$\text{Prime factorization of } 391 = 17 \times 23$$

H.C.F of 289 and 391 is 17

$$\text{Now, } \frac{289}{391} = \frac{289 \div 17}{391 \div 17} \quad [\text{dividing numerator and denominator by 17}]$$

$$\Rightarrow \frac{289}{391} = \frac{17}{23}$$

(b) $\frac{17}{18}, \frac{31}{36}, \frac{43}{45}, \frac{59}{60}$

L.C. M of 18, 36, 45, 60 is 180

$$\frac{17}{18} = \frac{17 \times 10}{18 \times 10} = \frac{170}{180}, \quad \frac{31}{36} = \frac{31 \times 5}{36 \times 5} = \frac{155}{180}$$

$$\frac{43}{45} = \frac{43 \times 4}{45 \times 4} = \frac{172}{180}, \quad \frac{59}{60} = \frac{59 \times 3}{60 \times 3} = \frac{177}{180}$$

Since, $155 < 170 < 172 < 177$, so, $\frac{155}{180} < \frac{170}{180} < \frac{172}{180} < \frac{177}{180}$

$$\text{Hence, } \frac{31}{36} < \frac{17}{18} < \frac{43}{45} < \frac{59}{60}$$