## www.basicsinmaths.com

## 'TS

## X CLASS

# Mathematics 

SOLVED QUESTION PAPERS - 4

## By Satyam

```
    PART - A
SECTION - I (6 < 2 = 12)
```

1. If $A=\{x: x \in N, x<5\}$ and $B=\{x: x \in N, 2<x<7\}$ then draw Venn diagram for AUB.

Answer:
Given $A=\{x: x \in N, x<5\}$ and $B=\{x: x \in N, 2<x<7\}$
$A=\{1,2,3,4\}$ and $B=\{3,4,5,6\}$
$\mathrm{AUB}=\{1,2,3,4\} \cup\{3,4,5,6\}=\{1,2,3,4,5,6\}$

2. Check whether the given pair of linear equations $x+2 y-4=0$ and $2 x+4 y-12=0$ is intersecting lines or parallel lines.
Answer:
Given are equations $x+2 y-4=0$ and $2 x+4 y-12=0$
$\mathrm{a}_{1}=1, \mathrm{~b}_{1}=2, \mathrm{c}_{1}=-4 ; \mathrm{a}_{2}=2, \mathrm{~b}_{2}=4, \mathrm{c}_{2}=-12$
$\frac{\mathrm{a}_{1}}{\mathrm{a}_{2}}=\frac{1}{2} ; \frac{\mathrm{b}_{1}}{\mathrm{~b}_{2}}=\frac{2}{4}=\frac{1}{2} ; ; \frac{\mathrm{c}_{1}}{\mathrm{c}_{2}}=\frac{-4}{-12}=\frac{1}{3}$

$$
\frac{a_{1}}{a_{2}}=\frac{b_{1}}{b_{2}} \neq \frac{c_{1}}{c_{2}}
$$

$\therefore$ Given equations are parallel lines
3. Give one example each for an Arithmetic progression and Geometric progression

Answer:
Example for Arithmetic progression
2, 4, 6, 8 , $\qquad$
Example for Geometric progression
$2,4,8,16$,
4. Find the probability of getting a 'vowel' if a letter is chosen randomly from English alphabet.

Answer:
Total number of English alphabets $=26$
Vowels in English alphabet are: a, e, I, o, u
Number of Vowels in English alphabet = 5
Probability of getting a Vowel in English alphabet $=5 / 26$
5. Find the volume of a sphere whose radius is 2.8 cm .

Answer:
Given radius of sphere $=2.8 \mathrm{~cm}$
Volume of sphere $=\frac{4}{3} \pi r^{3}$

$$
\begin{aligned}
& =\frac{4}{3} \times \frac{22}{7} \times(2.8)^{3} \\
& =\frac{4}{3} \times \frac{22}{7} \times 2.8 \times 2.8 \times 2.8 \\
& =\frac{4}{3} \times 22 \times 2.8 \times 2.8 \times 0.4 \\
& =\frac{275.968}{3}=91.99 \mathrm{~cm}^{3}
\end{aligned}
$$

6. If $A=60^{\circ}, B=30^{\circ}$ then is it right to say $\sin (A+B)=\sin A+\sin B$ ?

## Answer:

$$
\text { Given } A=60^{\circ}, B=30^{\circ}
$$

$$
\mathrm{LHS}=\sin (\mathrm{A}+\mathrm{B})
$$

$$
=\sin \left(600+30^{\circ}\right)
$$

$$
=\sin \left(90^{\circ}\right)
$$

$$
=1
$$

$$
\mathrm{RHS}=\sin 60^{\circ}+\sin 30^{\circ}
$$

$$
\begin{aligned}
& =\frac{\sqrt{3}}{2}+\frac{1}{2} \\
& =\frac{\sqrt{3}+1}{2} \\
\operatorname{LHS} & \neq R H S \\
\sin (A & +B) \neq \sin A+\sin B
\end{aligned}
$$

## SECTION - II $(6 \times 4=24)$

7. If $\log (1+\tan \theta+\sec \theta)+\log (1+\cot \theta+\operatorname{cosec} \theta)=\log k$, then find the value of $k$.

## Answer:

$$
\text { Given } \log (1+\tan \theta+\sec \theta)+\log (1+\cot \theta+\operatorname{cosec} \theta)=\log k
$$

$$
\log (1+\tan \theta+\sec \theta)(1+\cot \theta+\operatorname{cosec} \theta)=\log k
$$

$$
(1+\tan \theta+\sec \theta)(1+\cot \theta+\operatorname{cosec} \theta)=k
$$

$$
\left(1+\frac{\sin \theta}{\cos \theta}+\frac{1}{\cos \theta}\right)\left(1+\frac{\cos \theta}{\sin \theta}+\frac{1}{\sin \theta}\right)=\mathrm{k}
$$

$$
\left(\frac{\cos \theta+\sin \theta+1}{\cos \theta}\right)\left(\frac{\sin \theta+\cos \theta-1}{\sin \theta}\right)=\mathrm{k}
$$

$$
\frac{(\cos \theta+\sin \theta)^{2}-1^{2}}{\sin \theta \cos \theta}=\mathrm{k}
$$

$$
\frac{\sin ^{2} \theta+\cos ^{2} \theta+2 \sin \theta \cos \theta-1}{\sin \theta \cos \theta}=\mathrm{k}
$$

$$
\frac{1+2 \sin \theta \cos \theta-1}{\sin \theta \cos \theta}=\mathrm{k}
$$

$$
\frac{2 \sin \theta \cos \theta}{\sin \theta \cos \theta}=\mathrm{k}
$$

$$
\mathrm{k}=2
$$

8. Write the formula for mode of a grouped data and explain each term of it.

## Answer:

Mode $=l+\frac{f_{1}-f_{0}}{2 f_{1}-f_{0}-f_{2}} \times h$
Where $\mathrm{l}=$ lower boundary of modal class
$\mathrm{f}_{0}=$ frequency of the class preceding the modal class
$\mathrm{f}_{1}=$ frequency of the modal class
$\mathrm{f}_{2}=$ frequency of the class succeeding the modal class
$\mathrm{h}=$ class size
9. The angle of elevation of the top of a building from the foot of the tower is $30^{\circ}$ and the angle of elevation of the top of the tower from the foot of the building is $60^{\circ}$. If the tower is 100 m high, then find the height of the building.

## Answer:

Let AB is the building and CD is the tower $C D=100 \mathrm{~m}$
$\angle \mathrm{DAC}=60^{\circ}$ and $\angle \mathrm{ACB}=30^{\circ}$
From $\triangle$ ABC
Tan $30^{\circ}=\frac{A B}{A C}$
$\frac{1}{\sqrt{3}}=\frac{\mathrm{AB}}{\mathrm{AC}}$
$A C=\sqrt{3} A B$
From $\triangle \mathrm{ACD}$
Tan $60^{\circ}=\frac{D C}{A C}$
$\sqrt{3}=\frac{100}{\mathrm{AC}}$
$\sqrt{3} \mathrm{AC}=100$
$\mathrm{AC}=\frac{100}{\sqrt{3}}$
From (1)


Height of the building $=33.33 \mathrm{~m}$
10. Prove that $\mathrm{x}^{2}+2 \mathrm{x}+1$ divides $\mathrm{x}^{4}-2 \mathrm{x}^{3}-4 \mathrm{x}^{2}+2 \mathrm{x}+3$ exactly.

## Answer:

$$
\begin{gathered}
\left.x^{2}+2 x+1\right) \frac{x^{4}-2 x^{3}-4 x^{2}+2 x+3\left(x^{2}-4 x+3\right.}{\frac{x^{4}+2 x^{3}+x^{2}}{-4 x^{3}-5 x^{2}+2 x}} \begin{array}{c}
\frac{-4 x^{3}-8 x^{2}-4 x}{++^{2}+} \\
\frac{3 x^{2}+6 k+3}{3 x^{2}+6 x+3} \\
-9 x^{2}
\end{array} \\
\frac{0}{4}
\end{gathered}
$$

$\therefore \mathrm{x}^{2}+2 \mathrm{x}+1$ divides $\mathrm{x}^{4}-2 \mathrm{x}^{3}-4 \mathrm{x}^{2}+2 \mathrm{x}+3$ exactly
11. In a circle of radius 3.5 cm , a chord subtends right angle at the center. Find the are of the corresponding major segment.

## Answer:

Given radius of the circle $r=3.5 \mathrm{~cm}$
Area of sector $=\frac{x^{0}}{360^{0}} \pi r^{2}$
Area of sector $\mathrm{OAXB}=\frac{90}{360} \pi(3.5)^{2}$

$$
\begin{aligned}
& =\frac{1}{4} \times \frac{22}{7} \times 3.5 \times 3.5 \\
& =\frac{19.25}{2}=9.625 \mathrm{~cm}^{2}
\end{aligned}
$$

Area of $\Delta \mathrm{OAB}=\frac{1}{2} \times 3.5 \times 3.5$

$$
=\frac{12.25}{2}=6.125 \mathrm{~cm}^{2}
$$



Area of minor segment $=$ Area of sector $0 A X B-$ Area of $\triangle \mathrm{OAB}$

$$
\begin{aligned}
& =9.625-6.125 \\
& =3.5 \mathrm{~cm}^{2}
\end{aligned}
$$

Now area of circle $=\pi r^{2}$

$$
\begin{aligned}
& =\frac{22}{7} \times 3.5 \times 3.5 \\
& =38.5 \mathrm{~cm}^{2}
\end{aligned}
$$

Area of manor segment $=$ Area of circle - Area of minor segment

$$
\begin{aligned}
& =38.5-3.5 \\
& =35 \mathrm{~cm}^{2}
\end{aligned}
$$

12. Find the area of the triangle whose vertices are $(5,2),(3,-5)$ and $(-3,-4)$.

## Answer:

$$
\begin{aligned}
& \left(x_{1}, y_{1}\right)=(5,2),\left(x_{2}, y_{2}\right)=(3,-5)\left(x_{3}, y_{3}\right)=(-3,-4) . \\
& \text { Area of the triangle }
\end{aligned}=\frac{1}{2}\left|x_{1}\left(y_{2}-y_{3}\right)+x_{2}\left(y_{3}-y_{1}\right)+x_{3}\left(y_{1}-y_{2}\right)\right|, ~=\frac{1}{2}|5(-5-(-4))+3(-4-2)+(-3)(2-(-5))|
$$

$$
\text { SECTION - III }(4 \times 6=24)
$$

13. Find the mean for the following data

| C.I | $60-70$ | $70-80$ | $80-90$ | $90-100$ | $100-110$ | $110-120$ | $120-130$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| f | 2 | 5 | 12 | 31 | 36 | 10 | 4 |

## Answer:

| C.I | f | x | $\mathrm{d}_{\mathrm{i}}=\mathrm{x}_{\mathrm{i}}-\mathrm{a}$ | $\mu_{\mathrm{i}}$ | $\mathrm{f}_{\mathrm{i}} \mu_{\mathrm{i}}$ |
| :---: | :---: | :---: | :---: | :---: | :---: |
| $60-70$ | 2 | 65 | -30 | -3 | -6 |
| $70-80$ | 5 | 75 | -20 | -2 | -10 |
| $80-90$ | 12 | 85 | -10 | -1 | -12 |
| $90-100$ | 31 | $95(\mathrm{a})$ | 0 | 0 | 0 |
| $100-110$ | 36 | 105 | 10 | 1 | 36 |
| $110-120$ | 10 | 115 | 20 | 2 | 20 |
| $120-130$ | 4 | 125 | 30 | 3 | 12 |
|  | $\sum \mathrm{f}_{\mathrm{i}}=100$ |  |  |  | $\sum \mathrm{f}_{\mathrm{i}} \mu_{\mathrm{i}}=40$ |

$$
\begin{aligned}
\overline{\mathrm{x}} & =\mathrm{a}+\frac{\sum \mathrm{f}_{\mathrm{i}} \mu_{\mathrm{i}}}{\sum \mathrm{f}_{\mathrm{i}}} \times \mathrm{h} \\
\overline{\mathrm{x}} & =95+\frac{40}{100} \times 10 \\
\overline{\mathrm{x}} & =95+\frac{40}{10} \\
& =95+4 \\
& =99
\end{aligned}
$$

$\therefore$ mean of the given data is 99
14. Prove that $\frac{\tan \theta+\sec \theta-1}{\tan \theta-\sec \theta+1}=\frac{1+\sin \theta}{\cos \theta}$

## Answer:

$$
\begin{aligned}
\frac{\tan \theta+\sec \theta-1}{\tan \theta-\sec \theta+1} & =\frac{\tan \theta+\sec \theta-\left(\sec ^{2} \theta-\tan ^{2} \theta\right)}{\tan \theta-\sec \theta+1} \\
& =\frac{\tan \theta+\sec \theta-(\sec \theta+\tan \theta)(\sec \theta-\tan \theta)}{\tan \theta-\sec \theta+1} \\
& =\frac{(\tan \theta+\sec \theta)[1-(\sec \theta-\tan \theta)]}{\tan \theta-\sec \theta+1} \\
& =\frac{(\tan \theta+\sec \theta)[1-\sec \theta+\tan \theta)]}{\tan \theta-\sec \theta+1} \\
& =\tan \theta+\sec \theta \\
& =\frac{\sin \theta}{\cos \theta}+\frac{1}{\cos \theta} \\
& =\frac{1+\sin \theta}{\cos \theta}
\end{aligned}
$$

Hence proved
15. Use Euclid's division lemma to show that the square of any positive integer of the form $5 n, 5 n+1$ or $5 n+4$

## Answer:

Let 'a' be any positive integer and $\mathrm{b}=5$.
Using Euclid Division Lemma,
$a=b q+r \quad[0 \leq r<b]$
$\Rightarrow a=5 q+r \quad[0 \leq r<5]$
Now, possible value of $r$ :
$r=0, r=1, r=2, r=3, r=4$
CASE I:
If we take, $\mathrm{r}=0$
$\Rightarrow \mathrm{a}=5 \mathrm{q}+0$
$\Rightarrow \mathrm{a}=5 \mathrm{q}$
On squaring both sides;
$\Rightarrow \mathrm{a}^{2}=(5 \mathrm{q})^{2}$
$\Rightarrow a^{2}=25 q^{2}$
$\Rightarrow \mathrm{a}^{2}=5\left(5 \mathrm{q}^{2}\right)$
$\Rightarrow \mathrm{a}^{2}=5 \mathrm{n} . \quad\left[\right.$ Here, $\left.\mathrm{n}=5 \mathrm{q}^{2}\right]$
CASE II :
If we take, $\mathrm{r}=1$
$\Rightarrow \mathrm{a}=5 \mathrm{q}+1$
On squaring both sides;
$\Rightarrow a^{2}=(5 q+1)^{2}$
$\Rightarrow a^{2}=(5 q)^{2}+2(5 q)(1)+1^{2}$
$\Rightarrow a^{2}=25 q^{2}+10 q+1$
$\Rightarrow \mathrm{a}^{2}=5\left(5 \mathrm{q}^{2}+2 \mathrm{q}\right)+1$
$\Rightarrow \mathrm{a}^{2}=5 \mathrm{n}+1 \quad\left[\right.$ Here, $\left.\mathrm{n}=5 \mathrm{q}^{2}+2 \mathrm{q}\right]$
CASE III :
If we take, $\mathrm{r}=2$
$\Rightarrow a=5 q+2$
On squaring both sides;
$\Rightarrow \mathrm{a}^{2}=(5 \mathrm{q}+2)^{2}$
$\Rightarrow \mathrm{a}^{2}=(5 \mathrm{q})^{2}+2(5 \mathrm{q})(2)+2^{2}$
$\Rightarrow a^{2}=25 q^{2}+20 q+4$
$\Rightarrow \mathrm{a}^{2}=5\left(5 \mathrm{q}^{2}+4 \mathrm{q}\right)+4$
$\Rightarrow \mathrm{a}^{2}=5 \mathrm{n}+4$ [Here, $\left.\mathrm{n}=5 \mathrm{q}^{2}+4 \mathrm{q}\right]$
CASE IV:
If we take, $\mathrm{r}=3$
$\Rightarrow \mathrm{a}=5 \mathrm{q}+3$
On squaring both sides;
$\Rightarrow a^{2}=(5 q+3)^{2}$
$\Rightarrow \mathrm{a}^{2}=(5 \mathrm{q})^{2}+2(5 \mathrm{q})(3)+3^{2}$
$\Rightarrow a^{2}=25 q^{2}+30 q+5+4$
$\Rightarrow \mathrm{a}^{2}=5\left(5 \mathrm{q}^{2}+6 \mathrm{q}+1\right)+4$
$\Rightarrow a^{2}=5 n+4\left[\right.$ Here, $\left.n=5 q^{2}+6 q+1\right]$

## CASE V :

If we take, $\mathrm{r}=4$
$\Rightarrow a=5 q+4$
On squaring both sides;
$\Rightarrow \mathrm{a}^{2}=(5 \mathrm{q}+4)^{2}$
$\Rightarrow \mathrm{a}^{2}=(5 \mathrm{q})^{2}+2(5 \mathrm{q})(4)+4^{2}$
$\Rightarrow a^{2}=25 q^{2}+40 q+15+1$
$\Rightarrow a^{2}=5\left(5 q^{2}+8 q+3\right)+1$
$\Rightarrow \mathrm{a}^{2}=5 \mathrm{n}+1$ [Here, $\mathrm{n}=5 \mathrm{q}^{2}+8 \mathrm{q}+3$ ]
Hence, the square of any integer is either of the form $5 m, 5 m+1$ or $5 m+4$ for some integer $m$.
16. Solve $\frac{2}{x-1}+\frac{3}{y+1}=2$ and $\frac{3}{x-1}+\frac{2}{y+1}=\frac{13}{6}$

## Answer:

Given equations are $\frac{2}{x-1}+\frac{3}{y+1}=2$ and $\frac{3}{x-1}+\frac{2}{y+1}=\frac{13}{6}$

$$
\begin{aligned}
& \text { Let } \frac{1}{x-1}=a \text { and } \frac{1}{y+1}=b \\
& \Rightarrow 2 a+3 b=2----(1) \\
& 3 a+2 b=\frac{13}{6} \\
& \Rightarrow 18 a+12 b=13-\cdots--(2)
\end{aligned}
$$

Equation (1) $\times 4-$ Equation (2)

$$
\begin{aligned}
& 8 a+12 b=8 \\
& \frac{18 a \pm 12 b=13}{}=-5 \\
& \hline 10 a \\
& a=\frac{-5}{-10}=\frac{1}{2} \\
& \text { from }(1) \\
& 2 \times \frac{1}{2}+3 b=2 \\
& 3 b=1 \\
& b=\frac{1}{3} \\
& \text { now } \frac{1}{x-1}=a \text { and } \frac{1}{y+1}=b \\
& \frac{1}{x-1}=\frac{1}{2} \text { and } \frac{1}{y+1}=\frac{1}{3} \\
& x-1=2 \text { and } y+1=3 \\
& x=3 \text { and } y=2
\end{aligned}
$$

17. Find the coordinates of the points of trisection of the line segment joining $(4,-1)$ and $(-2,-3)$.

## Answer:

Let the points be $\mathrm{A}(4,-1)$ and $\mathrm{B}(-2,-3)$.
Let $P\left(x_{1}, y_{1}\right)$ and $Q\left(x_{2}, y_{2}\right)$ be the points of trisection of the line segment joining the given points.
Then, $\mathrm{AP}=\mathrm{PC}=\mathrm{CB}$
By Section formula,

$$
\mathrm{P}(\mathrm{x}, \mathrm{y})=\left(\frac{\mathrm{mx}_{2}+\mathrm{n} \mathrm{x}_{1}}{\mathrm{~m}+\mathrm{n}}, \frac{\mathrm{~m} \mathrm{y}_{2}+\mathrm{n} \mathrm{y}_{1}}{\mathrm{~m}+\mathrm{n}}\right)
$$

A $(4,-1)$ and $B(-2,-3)$,
$P\left(x_{1}, y_{1}\right)$ divides $A B$ internally in the ratio $1: 2$
Hence $m: n=1: 2$

$$
\begin{aligned}
\mathrm{P}\left(\mathrm{x}_{1}, \mathrm{y}_{1}\right) & =\left(\frac{1(-2)+2(4)}{1+2}, \frac{1(-3)+2(-1)}{1+2}\right) \\
& =\left(\frac{-2+8}{3}, \frac{-3-2}{3}\right) \\
& =\left(\frac{6}{3}, \frac{-5}{3}\right)
\end{aligned}
$$

Hence, $P\left(x_{1}, y_{1}\right)=\left(2, \frac{-5}{3}\right)$
$Q\left(x_{2}, y_{2}\right)$ divides $A B$ internally in the ratio $2: 1$
Hence $m: n=2: 1$

$$
\begin{aligned}
\mathrm{Q}\left(\mathrm{x}_{2}, \mathrm{y}_{2}\right) & =\left(\frac{2(-2)+1(4)}{1+2}, \frac{2(-3)+1(-1)}{1+2}\right) \\
& =\left(\frac{-4+4}{3}, \frac{-6-1}{3}\right) \\
& =\left(\frac{0}{3}, \frac{-7}{3}\right)
\end{aligned}
$$

Hence, $\mathrm{Q}\left(\mathrm{X}_{2}, \mathrm{y}_{2}\right)=\left(0, \frac{-7}{3}\right)$
Hence, the points of trisection are $P\left(x_{1}, y_{1}\right)=\left(2, \frac{-5}{3}\right)$ and $Q\left(x_{2}, y_{2}\right)=\left(0, \frac{-7}{3}\right)$
18. Draw a circle of radius 5 cm , from a point 9 cm away from the its center, construct a pair of tangents to the circle.

## Answer:


(i) Draw a circle with center 0 and radius 5 cm .
(ii) Make a point P outside the circle such that O and P are 9 cm apart.
(iii) Join 0 and $P$.
(iv) Using rounder bisect the line OP.
(v) Mark the midpoint of OP as M.
(vi) Taking OM or PM as radius draw a circle with M as center.
(vii) Name the points A and B where the circle with center M intersects the Circle with center 0 .
(viii) Join PA and PB.

## Chose the correct answer

1. The value of $k$ for which the system of equations $4 x+y=3$ and $8 x+2 y=5 k$ has infinitely solutions
a) $\frac{-5}{6}$
b) $\frac{-6}{65}$
c) $\frac{5}{6}$
d) $\frac{6}{5}$
2. Which of the following statement is not true?
a) $\sin \theta=\sqrt{1-\cos ^{2} \theta}$
b) $\sec ^{2} \theta-\tan ^{2} \theta=1$
c) $\cos \theta \times \operatorname{cosec} \theta=1$
d) $\tan \theta \times \cot \theta=1$
3. The logarithmic form of $7 x=3$ is
a) $\log _{x} 3=7$
b) $\log _{7} 3=x$
c) $\log _{3} 7=x$
d) $\log _{7} x=3$
4. The decimal form of $\frac{3}{8}$ is
a) 3.75
b) 37.05
c) 0.0375
d) 0.375
5. If $72,63,54 \ldots \ldots .$. is an Ari thematic progression, then the term that becomes zero in it is
a) $11^{\text {th }}$
b) $10^{\text {th }}$
c) $9^{\text {th }}$
d) $8^{\text {th }}$
6. The equal set of $\mathrm{A}=\{\mathrm{x}: \mathrm{x}$ is a letter of the world "FOLLOW" $\}$
a) $\{F, L, O, W\}$
b) $\{\mathrm{F}, \mathrm{L}, \mathrm{L}, \mathrm{O}, \mathrm{W}\}$
c) $\{F, O, O, L, W\}$
d) $\{\mathrm{F}, \mathrm{O}, \mathrm{O}, \mathrm{L}, \mathrm{L}, \mathrm{W}\}$
7. If $n(A-B)=5, n(B-A)=7$ and $n(A \cap B)=3$, then $n(A \cup B)$ is
a) 9
b) 10
c) 12
d) 15
8. Among the following, the value which is not possible for the probability of an event is
a) $\frac{1}{3}$
b) 0.5
c) $25 \%$
d) $\frac{4}{3}$
9. Among the following, a linear polynomial is
a) $3 x^{2}+2 x-4$
b) $2 x+3$
c) 5
d) $x^{3}-3 x^{2}+5$
10. If $p(x)=x^{2}-2 x+2$ then the value of $p(0)$ is
a) 2
b) 1
c) 3
d) 0
11. The discriminant of $x^{2}+x+1=0$ is
a) -2
b) -3
c) -1
d) -4
12. A quadratic equation whose roots are -2 and -3 is
a) $x^{2}-5 x-6$
b) $x^{2}+5 x+6$
c) $x^{2}+5 x-6$
d) $x^{2}-5 x+6$
13. If the product of the $1^{\text {st }} 5$ terms of a GP is 243 , then its third side is
a) 9
b) 27
c) 3
d) 1
14. LCM of numbers $2^{7} \times 3^{4} \times 7$ and $2^{3} \times 3^{4} \times 11$ is
a) $2^{7} \times 3^{4} \times 7 \times 11$
b) $2^{3} \times 3^{7} \times 11$
c) $2^{3} \times 3^{4} \times 7$
d) $2^{4} \times 3^{7} \times 7$
15. In an AP $n^{\text {th }}$ term is $a_{n}=a+(n-1) d$, in this formula ' $d$ ' represents
a) no. of terms
b) common ratio
c) first term
d) common difference
16. If $\sin A=\cos A\left(0^{\circ}<A<90^{\circ}\right)$, then the value of $1+\tan A$ is
a) 2
b) 0
c) 3
d) 1
17. If the radius of a cylinder is doubled and its height is halved, then the volume of new cylinder formed is
a) 4 times the value of $1^{\text {st }}$ cylinder
b) 3times the value of $1^{\text {st }}$ cylinder
c) 2 times the value of $1^{\text {st }}$ cylinder
d) volume remains the same
18. If E and $\overline{\mathrm{E}}$ are two complementary events in a random experiment. If $\mathrm{P}(\mathrm{E})=0.07$, then the value of $P(\bar{E})$ is
a) 0.83
b) 0.93
c) 0.63
d) 0.83
19. The mean of 9 observation is 45 . In doing so, if an observation was wrongly taken as 42 for 24 , then the correct mean of the data is
a) 34
b) 43
c) 37
d) 45
20. Base radii and heights of a cylinder and cone ore equal. Volume of cone is 9 u , then the volume of cylinder is
(a)
a) $27 u$
b) $37 u$
c) $9 u$
d) $36 u$
