केवल मूल्यांकनकर्ता के उपयोग हेतु!

माध्यमिक शिक्षा मण्डल, मध्यप्रदेश, भोपाल

32 पृष्ठीय

केवल परीक्षक द्वारा भरा जावे। प्रश्न क्रमांक के सम्मुख प्राप्तांकों की प्रविष्टी करें।

प्रश्न क्रमांक	पृष्ठ क्रमांक	प्राप्तांक (अंकों में)	प्रश्न क्रमांक	पृष्ठ क्रमांक	प्राप्तांक (अंकों में)
1			17		
2			18		
3			19		
4			20		
5			21		
6			22		
7			23		
8			24		
			25		
			26		
			27		
			28		

क एवं उपमुख्य परीक्षक द्वारा भरा जावे ↓

परीक्षक एवं उपमुख्य परीक्षक द्वारा भरा जावे

मुख्य पृष्ठ पर अंकों की प्रविष्टी एवं अंकों का योग सही है।

निर्धारित मुद्राः

ांक एवं पदांकित संस्था के नाम की मुद्रा ल

उप मुख्य

परीक्षक

Lakhmicl Sahu (UMS)

② de'smat

योग पूर्व पृष्ठ + पृष्ठ 2 के अंक = कुल अंक

मध्यप्रदेश

BOARDOFSECONDARYEDUCATION,MADHYAPRADESH,BHOPAL

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Question No. 1 [True / False]

(i) False
(ii) True
(iii) False
(iv) False
(v) True
(vi) True

BSE

Question No. 2 [Match the]

	A	B
(i)	$9\sec^2 A - 9\tan^2 A$	9
(ii)	$\cos 0^\circ$	1
(iii)	$\sin 0^\circ$	0
(iv)	area of sector of angle θ	$\theta/360 \times \pi r^2$
(v)	curved surface area of hemisphere	$2\pi r^2$
(vi)	total surface area of hemisphere	$3\pi r^2$

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Question No. 3 (one sentence)

(i) The standard form of a quadratic equation is $ax^2+bx+c=0$.

(ii) The condition for similarity of two triangles is that corresponding angles of both triangles must be equal.

(iii) The distance between origin (0,0) and point (x_1, y_1) is $\sqrt{x_1^2+y_1^2}$ units.

(iv) If shadow and height of the pole are equal, then the angle of the elevation of the sun will be 45°.

(v) The length of the arc of a sector of angle θ and radius r is $\frac{\theta}{360} \times 2\pi r$ units.

(vi) The class mark of 20–40 is 30.

Question. 4 (choose the option)

(i) 2 (a)

(ii) infinitely many solutions (d)

(iii) $b^2-4ac=0$ (b)

(iv) 20 (c)

(v) $\sqrt{8}$ (a)

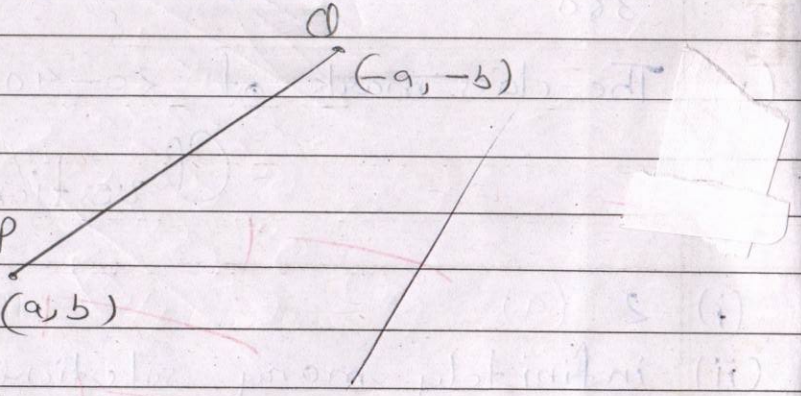
(vi) infinite (d)

Question No. 5 (Fill ups)

(i) irrational number.
(ii) cubic polynomial
(iii) −1
(iv) similar
(v) secant
(vi) 1

Question No. 6 (OR)

The given points are P (a, b)
& Q (−a, −b)



By using distance formula

$$\text{distance} = \sqrt{(x_2-x_1)^2+(y_2-y_1)^2}$$

$$PQ = \sqrt{[a-(-a)]^2+[b-(-b)]^2}$$
$$= \sqrt{(a+a)^2+(b+b)^2}$$
$$= \sqrt{(2a)^2+(2b)^2} = \sqrt{4a^2+4b^2} = 2\sqrt{a^2+b^2}$$

Ans = The distance between (a, b) & (−a, −b) is $2\sqrt{a^2+b^2}$ unit.

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ANSWER NO. 7 [OR]

R.H.S

$\tan 30^\circ = \frac{1}{\sqrt{3}}$

$\frac{2\left(\frac{1}{\sqrt{3}}\right)}{1-\left(\frac{1}{\sqrt{3}}\right)^2} = \frac{\frac{2}{\sqrt{3}}}{1-\frac{1}{3}}$

$\frac{\frac{2}{\sqrt{3}}}{\frac{3-1}{3}} = \frac{\frac{2}{\sqrt{3}}}{\frac{2}{3}}$

$\frac{6}{2\sqrt{3}} = \frac{3}{\sqrt{3}} \times \frac{\sqrt{3}}{\sqrt{3}}$

To Find : $\frac{2\tan 30^\circ}{1-\tan^2 30^\circ}$

We know that $\tan 30^\circ = \frac{1}{\sqrt{3}}$

$\therefore \frac{2\tan 30^\circ}{1-\tan^2 30}$

$= \frac{2\left(\frac{1}{\sqrt{3}}\right)}{1-\left(\frac{1}{\sqrt{3}}\right)^2} = \frac{\frac{2}{\sqrt{3}}}{1-\frac{1}{3}} = \frac{2/\sqrt{3}}{\frac{3-1}{3}}$

$= \frac{2/\sqrt{3}}{2/3} = \frac{6}{2\sqrt{3}} = \frac{3}{\sqrt{3}} \times \frac{\sqrt{3}}{\sqrt{3}} = \frac{3\sqrt{3}}{3} = \sqrt{3}$

Ans : The value of $\frac{2\tan 30^\circ}{1-\tan^2 30}$ is $\sqrt{3}$.

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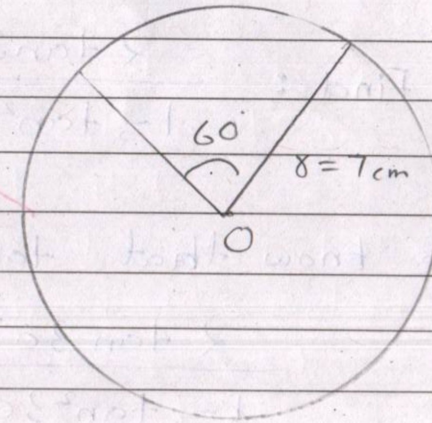
ANSWER No. 8 (OR)



Given in circle C(O, r)

$r = 7$ c.m

$\theta = 60°$

Length of arc $= \frac{\theta}{360} \times 2\pi r$

$= \frac{60}{360} \times 2 \times \frac{22}{7} \times 7$

$= 22/3$

$= 7.33$ c.m

Ans = The length of the arc will be 7.33 c.m.

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ANSWER 9 (OR)

TO FIND: The probability of getting a prime number.

Event (E) = getting a prime number

~~faiv~~ faivorable outcomes = 2, 3, 5

No. of faivorable outcomes = 3

Total no. of outcomes = 6

We know that $P(E) = \dfrac{\text{No. of faivorable outcomes}}{\text{No. of total outcomes}}$

$\therefore \quad P(E) = \dfrac{3}{6}$

$P(E) = \dfrac{1}{2}$

Ans = The probability of getting a prime number is ~~1/2~~ $\dfrac{1}{2}$.

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ANSWER 10. (OR)

To find: The probability of getting a red face card.

Event (E) = getting a red face card.

No. of red face cards = 6
So, no. fauvorable outcomes = 6
Total no. of outcomes = 52

We know that $P(E) = \frac{\text{No. of favorable outcomes}}{\text{No. of total outcomes}}$

$\therefore P(E) = \frac{6}{52} \quad \frac{3}{26}$

$= \frac{3}{26}$

Ans = The probability of getting a face card is 3/26.

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ANSWER No. 11

Given numbers are 96 & 404
To find: HCF (96, 404)

Prime factorization: $96 = 2\times2\times2\times2\times2\times3 = 2^5\times3^1$
$404 = 2\times2\times101 = 2^2\times101^1$

$HCF(96, 404) = 2^2 = 2\times2 = 4$
Ans = The HCF of 96 and 404 is 4.

ANSWER No. 12

FUNAMENTAL THEOREM OF ARITHMETIC

Every composite number can be expressed (factorized) as the products of primes, & this factorization is unique, apart from the order in which the prime factors occur.

For Example: 8 is a composite number.
$8 = 2\times2\times2$
Here, 8 is expressed as product of prime number 2.

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ANSWER NO. 13 (OR)

Given polynomial $p(x) = x^2 - 3x - 10$

By Factorisation Method

$p(x) = x^2 - 3x - 10$
$= x^2 + 2x - 5x - 10$
$= x(x+2) - 5(x+2)$
$p(x) = (x+2)(x-5)$

B S E

The factors are $(x+2)$ & $(x-5)$, equating factors with ze

$x+2 = 0$ ⇒ $\boxed{x = -2}$

$x-5 = 0$ ⇒ $\boxed{x = 5}$

Ans = The zeros of polynomial $x^2 - 3x - 10$ are $x = -2$ and $x = 5$.

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ANSWER NO. 14

Let $p(x) = 4v^2 + 8v$

Now, $P(x) = 4v^2 + 8v$

$P(x) = 4v(v+2)$

Here $(4v)$ and $(v+2)$ are the factors,

On equating factors with zero.

$4v = 0$	$v + 2 = 0$
$\Rightarrow v = 0/4$	$\Rightarrow \boxed{v = -2}$
$\Rightarrow \boxed{v = 0}$	

Ans = The zeros are 0 and -2.

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ANSWER NO. 15

Given equations : $x + 2y = 8$ — (1)

$x - y = 8$ — (2)

from eq. (2)

$x = 8 + y$ — (3)

B S E

Substituting the value of x in eq (1).

$(8 + y) + (8 + y) + 2y = 8$

$\Rightarrow \quad 3y = 0$

$\Rightarrow \quad \boxed{y = 0}$

putting y in eq (3)

$x = 8 + y$

$\Rightarrow \quad x = 8 + 0$

$\Rightarrow \quad \boxed{x = 8}$

Ans = The solution of $x + 2y = 8$ and $x - y = 8$ are $x = 8$ and $y = 0$.

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ANSWER No. 16

Given A.P = 2, 7, 12 - - - -

Here $a = 2$ and $d = 12 - 7 = 5$ & $n = 10$

To Find: 10^{th} term or a_{10}

$\because a_n = a + (n-1)d$

$\therefore a_{10} = 2 + (10-1)5$

$= 2 + 9(5)$

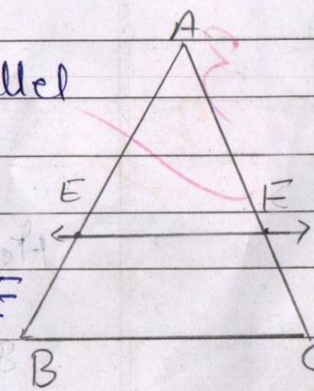
$= 2 + 45$

$\boxed{a_{10} = 47}$

Ans = The 10^{th} term of this A.P is 47.

ANSWER No. 17

Basic Proportionality Theorem: When a line is drawn parallel to one side of a triangle, intersecting two other sides at distinct points, divide the two side in the same ratio.



For example In $\triangle ABC$ if $EC \parallel BC$ then, $\frac{AE}{EB} = \frac{AF}{FC}$

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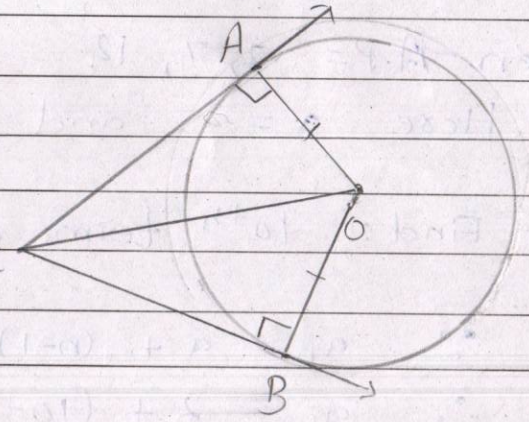
ANSWER No. 18

Let a ~~Δ AI~~ circle $C(O, r)$



To PROVE: $AC = BC$

Given: AC and BC are tangents with external point C.

PROVE: In Δ AOC and BOC

$CO = CO$ [common side]

$AO = BO$ [radii of circles]

& $\angle OAC = \angle OBC$ [tangets at the point of contact are perpendicular to radius]

By R.H.S congruency criteria

$\Delta AOC \cong \Delta BOC$

$\Rightarrow AC = BC$ [by c.p.c.t]

Hence it is proved that tangents from an external points are equal.

B S E

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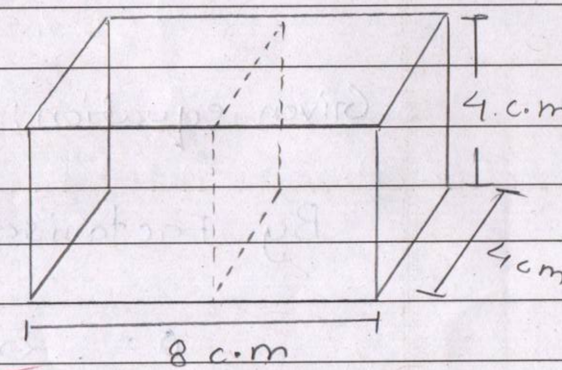
ANSWER No. 19



Given, volume of a cube = $64\ cm^3$

We know that volume of cube = a^3

$\therefore \quad a^3 = 64$

$\boxed{a = 4\ cm}$

The dimentions of resulting cuboid after joining two cubes are length (l) = 8 cm , breadth (b) = 4 cm and height (h) = 4 cm

Surface area of cuboid = $2(lb + bh + hl)$

$= 2(8 \times 4 + 4 \times 4 + 8 \times 4)$

$= 2(32 + 16 + 32)$

$= 2(80) = 160\ cm^2$

B
S
E

Ans = The surface area of the cuboid would be $160\ cm^2$.

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ANSWER 20

Given equation: $2x^2 - 5x + 3 = 0$

By Factarisation Method

$$\begin{aligned} 0 &= 2x^2 - 5x + 3 \\ &= 2x^2 - 2x - 3x + 3 \\ &= 2x(x-1) - 3(x-1) \\ &= (x-1)(2x-3) \end{aligned}$$

$(x-1)$ and $(2x-3)$ are the factors

On equating factors with 0.

$x - 1 = 0 \Rightarrow \boxed{x = 1}$ | $2x - 3 = 0 \Rightarrow \boxed{x = 3/2}$

Ans = The roots of equation $2x^2 - 5x + 3 = 0$ are

$x = 1$ and $x = \frac{3}{2}$.

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योग पूर्व पृष्ठ + ... = कुल अंक 63

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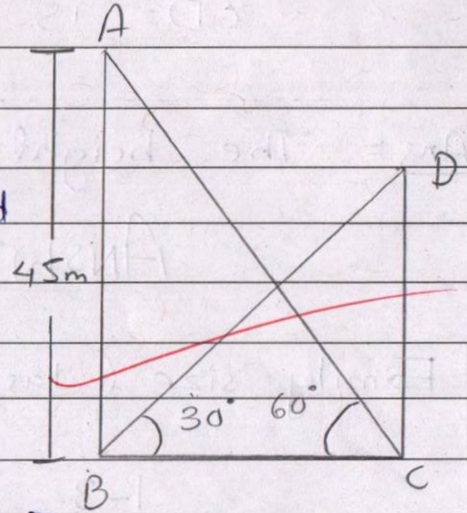
ANSWER 21 (OR)



AB is the 45 m high tower.
CD is the building. The angle of elevation of point A from C is 60° and the angle of elevation of point D from B is 30°.

BSE

In $\triangle$ ABC

$\tan 60^\circ = \frac{AB}{BC}$ $[\because \tan 60 = \sqrt{3}]$

$\Rightarrow \sqrt{3} = \frac{AB}{BC} = \frac{45}{BC}$

$\Rightarrow BC = \frac{45}{\sqrt{3}} = \frac{45}{\sqrt{3}} \times \frac{\sqrt{3}}{\sqrt{3}} = \frac{45\sqrt{3}}{3} = 15\sqrt{3}$ meters.

In $\triangle$ DCB

$\tan 30^\circ = \frac{CD}{BC} = \frac{CD}{15\sqrt{3}}$ $\left(\because \tan 30^\circ = \frac{1}{\sqrt{3}}\right)$

$\frac{1}{\sqrt{3}} = \frac{CD}{15\sqrt{3}}$

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CD = 15 meters

Ans = The height of the building is 15 meters.

ANSWER No. 22

Family size (class interval)	Number of families (f)
1–3	7
3–5	8
5–7	3
7–9	2
9–11	1

Here 8 is the highest frequency, therefore modal class is 3–5.
Here, $l = 3$, $f_1 = 8$, $f_0 = 7$, $f_2 = 3$ and $h = 2$.

$$\because \quad \text{MODE} = l + \frac{(f_1 - f_0)}{(2f_1 - f_0 - f_2)} \times h$$

$$\therefore \quad \text{Mode} = 3 + \frac{8 - 7}{2(8) - 7 - 3} \times 2$$

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$$= 3 + \frac{1}{16-7-3} \times 2$$

$$= 3 + \frac{2}{6} = 3 + \frac{1}{3}$$

$$= 3 + 0.33$$

Mode = 3.33 families

Ans = The mode of the given data is 3.33 ~~no. of fam~~ family size.

ANSWER No. 23 (OR)

Given equations

$$x + y = 5 \quad \text{—— (1)}$$
$$2x - 3y = 4 \quad \text{—— (2)}$$

Multiplying equation (1) with 2.

$$x + y = 5 \quad \text{—— } \times 2$$
$$\Rightarrow \quad 2x + 2y = 10 \quad \text{— (3)}$$

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By Elemination Method

from eq (2) & (3)

$2x - 3y = 4$
$2x + 2y = 10$
$- \quad - \quad -$

$0 \quad -5y = -6$

$y = 6/5$

putting the value of y in equation (1).

$x + \frac{6}{5} = 5$

$\Rightarrow x = 5 - \frac{6}{5}$

$\Rightarrow x = \frac{25-6}{5}$

$\Rightarrow x = \frac{19}{5}$

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VERIFICATION

$x + y = 5$	$2x - 3y = 4$
$\frac{19}{5} + \frac{6}{5} = 5$	$2\left(\frac{19}{5}\right) - 3\left(\frac{6}{5}\right) = 4$
$\frac{25}{5} = 5$	$\frac{38}{5} - \frac{18}{5} = 4$
$5 = 5$	$20/5 = 4$
	$4 = 4$

Ans = The solution of $x+y=5$ and $2x-3y=4$ is $x = \frac{19}{5}$ and $y = \frac{6}{5}$.