~~Black~~ 15C **WITH GRAPH PAPER**

केन्द्रीय माध्यमिक शिक्षा बोर्ड, दिल्ली
सैकण्डरी स्कूल परीक्षा (कक्षा दसवीं)
परीक्षार्थी प्रवेश–पत्र के अनुसार भरें

विषय Subject : Mathematics Basic

विषय कोड Subject Code : 241

परीक्षा का दिन एवं तिथि
Day & Date of the Examination : Thursday, 12/03/2020

उत्तर देने का माध्यम
Medium of answering the paper : English

प्रश्न पत्र के ऊपर लिखे कोड को दर्शाएं : Write code No. as written on the top of the question paper :	Code Number	Set Number
	430/4/1	● ② ③ ④

अतिरिक्त उत्तर–पुस्तिका (ओं) की संख्या No . of supplementary answer -book(s) used	Nil
बेंचमार्क विकलांग व्यक्ति : हाँ / नहीं Person with Benchmark Disabilities : Yes / No	No
विकलांगता का कोड (प्रवेश पत्र के अनुसार) Code of Disability (As per the admit card)	No
क्या लेखन – लिपिक उपलब्ध करवाया गया : हाँ / नहीं Whether writer provided : Yes / No	No
यदि दृष्टिहीन हैं तो उपयोग में लाए गये सोफ्टवेयर का नाम : If Visually challenged, name of software used :	No

*एक खाने में एक अक्षर लिखें। नाम के प्रत्येक भाग के बीच एक खाना रिक्त छोड़ दें। यदि परीक्षार्थी का नाम 24 अक्षरों से अधिक है, तो केवल नाम के प्रथम 24 अक्षर ही लिखें।

Each letter be written in one box and one box be left blank between each part of the name. In case Candidate's Name exceeds 24 letters, write first 24 letters.

कार्यालय उपयोग के लिए
Space for office use

SECTION - A

Ans. 1.
(A) 156

Ans. 2.
(D) 16 : 81

Ans. 3.
(B) $\sqrt{37}$ units

Ans. 4. (Choice - I)
(A) -8

Ans. 5.
(C) 1

Ans. 6.
(B) $\frac{1}{2}$

Rough

$2 \mid 156, 78$
$2 \mid 78, 39$
39

$\sqrt{(5+1)^2 + (-2+3)^2}$
$\sqrt{36+1}$
$\sqrt{37}$

$2 \mid 156, 78$
$2 \mid 78, 39$
$3 \mid 39, 39$
$13 \mid 13, 13$
$1, 1$

$\sqrt{b^2 - 4ac}$
$\sqrt{16 - 24}$

$39 \times 4 = 156$

$D = b^2 - 4ac$
$= 16 - 24$
$= -8$

$\sqrt{(5+1)^2 + (-2+3)^2}$

1 - odd
2
3 - odd
4
5 - odd
6

$36 + 1$
$= \sqrt{37}$

$16 - 24$
-8

Ans. 7.

(D) -2

Ans. 8.

(D) 45°

Ans. 9.

(C) 44

Ans. 10.

~~(C) $4\pi r^2$~~ (A) $3\pi r^2$

Ans. 11.

$D=0$ (discriminant is zero)

or $b^2-4ac=0$ {here $a=1$}.

$b^2=4c$

Ans. 12. $(-3,0)$

Rough

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

$k=2$.

$a=47$

$d=-3$

$a_2=a+d$

$=47-3$

$=44$

$m_1=1, m_2$

$\frac{-3-3}{2},$

$\frac{-3-3}{2}, \frac{3-}{2}$

$\frac{-6^3}{2}, \frac{0}{2}$

$\frac{-6^3}{2}, \frac{0}{2}$

$-3, 2$

$\frac{-3-3}{2}, -3$

$\frac{-6}{2}$ $-3, 0$.

Ans. 13.

equal

Ans. 14.

58

Ans. 15.

$\alpha + \beta = \frac{-b}{a} = \frac{0}{1} = 0$

Ans. 16.

$a_{26} = ?$ $n = 26$, $a = 7$, $d = a_2 - a_1 = 4 - 7 = -3$

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

$a_{26} = 7 + (26-1)(-3)$

~~$a_{26} = 7 +$ $a_{26} =$~~

$a_{26} = 7 - 75$

$\boxed{a_{26} = -68}$

$m_1 = 1$, $m_2 = 2$
$x_1 = 2$, $x_2 = 5$
$y_1 = 3$, $y_2 = -6$

Let the point be P and its coordinates be (x,y)

$$(x, y) = \left(\frac{m_1x_2 + m_2x_1}{m_1+m_2} , \frac{m_1y_2 + m_2y_1}{m_1+m_2}\right)$$

$$(x, y) = \left(\frac{1(5)+2(2)}{1+2} , \frac{1(-6)+2(3)}{1+2}\right)$$

$$(x, y) = \left(\frac{5+4}{3} , \frac{-6+6}{3}\right)$$

$$(x, y) = \left(\frac{9}{3} , \frac{0}{3}\right)$$

$$\boxed{(x, y) = (3, 0)}$$

Since the point is on x-axis, therefore ~~t~~ the point on y-axis will be '0'.

Ans. 18. (Choice-II)

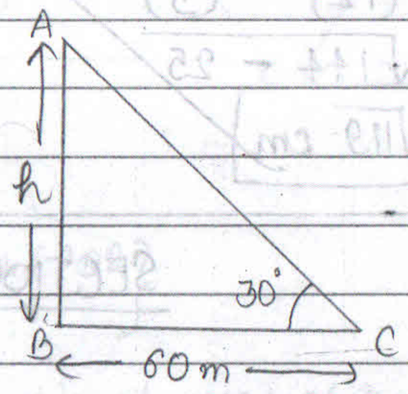
$\sin 42^\circ - \cos 48^\circ$

$= \sin 42^\circ - \sin(90-48)^\circ$ $\{\because \cos\theta = \sin(90-\theta)\}$

$= \sin 42^\circ - \sin 42^\circ$

$= \boxed{0}$

Ans. 19.



Let the height of the tower be h m

In $\triangle ABC$

$\angle ABC = 90^\circ$ (Tower stands vertical on the ground)

$\therefore \tan 30^\circ = \frac{AB}{BC}$

$\frac{1}{\sqrt{3}} = \frac{h}{60}$

$h = \frac{60}{\sqrt{3}} \Rightarrow h = \frac{20 \times \cancel{3}^{\sqrt{3}}}{\sqrt{3}} \Rightarrow \boxed{h = 20\sqrt{3}\ m}$

Ans. 20.

In $\triangle$ OQP

$\angle OQP = 90°$ (radius is $\perp$ to tangent)

By Pythagoras theorem,

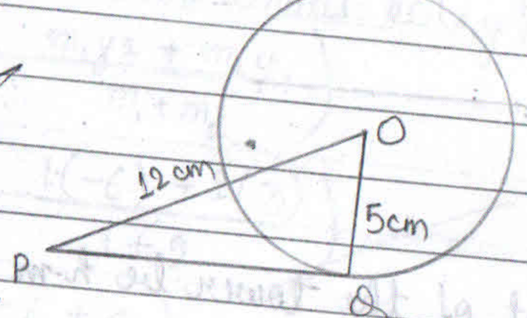
$OP^2 = OQ^2 + PQ^2$

$PQ^2 = OP^2 - OQ^2$

$PQ^2 = (12)^2 - (5)^2$

$PQ = \sqrt{144 - 25}$

$\boxed{PQ = \sqrt{119}\ cm}$



SECTION - B

Ans. 21.

Cylinder

$h = 32\ cm$

$r = 14\ cm$ $\pi = \frac{22}{7}$

Volume of sand = Vol. of cylinder

$= \pi r^2 h$

P.T.O.

$\begin{array}{r} 144 \\ -25 \\ \hline 119 \end{array}$

$$= \left(\frac{22}{7} \times 14^2 \times 14 \times 32\right) cm^3$$

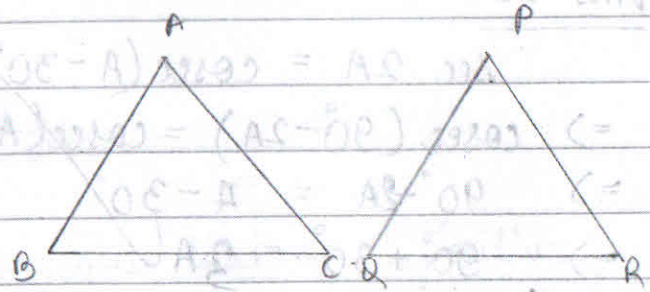
$$= \boxed{19712\ cm^3}$$

Ans. 22. (Choice II)

Given

$\triangle ABC \sim \triangle PQR$

$ar(ABC) = ar(PQR)$



To prove: $\triangle ABC \cong \triangle PQR$

Proof:

$$\frac{ar(ABC)}{ar(PQR)} = 1 \quad \{\because ar(ABC) = ar(PQR)\}$$

$$\frac{ar(ABC)}{ar(PQR)} = \left(\frac{AB}{PQ}\right)^2 \quad \{\because \text{the ratio of areas of two similar } \triangle s \text{ is equal to the square of ratio of their sides}\}$$

$$\frac{AB}{PQ} = 1^2$$

$AB = PQ$ —— (1.)

Similarly $\frac{BC}{QR} = 1^2 \Rightarrow BC = QR$ — (2.), $\frac{AC}{PR} = 1^2 \Rightarrow AC = PR$ — (3.)

from (1.), (2.) and (3.)

$\triangle ABC \cong \triangle PQR$ (SSS congruency)

$\therefore$ Proved

Ans. 23.

$\sec 2A = \operatorname{cosec}(A - 30^\circ)$

$\Rightarrow \operatorname{cosec}(90^\circ - 2A) = \operatorname{cosec}(A - 30^\circ)$ $\{\because \sec\theta = \operatorname{cosec}(90^\circ - \theta)\}$

$\Rightarrow 90^\circ - 2A = A - 30^\circ$

$\Rightarrow 90^\circ + 30^\circ = 3A$

$\Rightarrow 120^\circ = 3A$

~~$\Rightarrow \boxed{A = 60^\circ}$~~ $\Rightarrow \boxed{A = \left(\frac{120}{3}\right)^\circ = 40^\circ}$

Ans. 24.

Let a be any positive integer. Let it be divided by 2 giving 'q' as quotient, 'r' as remainder.

$a = 2q + r$

According to Euclid's divison algorithm.

$0 \le r < b \Rightarrow 0 \le r < 2$

r can either be 0 or 1

When $r = 0$

$a = 2q + 0 \Rightarrow a = 2q$ (Here a is even) — (1.)

When $r = 1$

$a = 2q+1$ (Here a is odd) — (2.)

Thus, from (1.) and (2.) it can be said that every even positive integer is of the form 2q and every positive odd integer is of the form 2q+1.

Ans. 25. (Choice – II)

$d = 5$, $n = 10$, $S_{10} = 75$

$a = ?$

$S_n = \frac{n}{2}[2a + (n-1)d]$

$$S_{10} = \frac{10}{2}[2a + (10-1)5]$$

$$S_{10} = \frac{10}{2}[2a + 45]$$

$$75 \times 2 = 20a + 450$$

$$150 - 450 = 20a$$

$$-300 = 20a$$

$$a = \frac{-30\cancel{0}}{2\cancel{0}}$$

$$\boxed{a = -15}$$

Ans. 26.

C.I.	f
5-15	60
15-25	110
25-35	210 — f_0
35-45	230 — f_1

45 - 55	150 — f_2
55 - 65	50

$f_1 = 230$, $f_2 = 150$, $f_0 = 210$

$l = 35$, $h = 10$

$$Mode = l + \left[\frac{f_1 - f_0}{2f_1 - f_0 - f_2}\right] \times h$$

$$= 35 + \left[\frac{230 - 210}{460 - 210 - 150}\right] \times 10$$

$$= 35 + \left[\frac{\cancel{20}^{2}}{\cancel{100}} \times 1\cancel{0}\right]$$

$$= 35 + 2$$

$$= \boxed{37}$$

~~SEC~~

Rough

23
2
460

460
360
150

210
150
360

SECTION-C

Ans. 27.

(i.) Coordinates of A = (2, 2)

Coordinates of B = (5, 4)

Coordinates of C = (7, 6)

(ii.) If the points are collinear then,

$$AB + BC = AC$$

$$AB = \sqrt{(5-2)^2 + (4-2)^2} \quad \left\{ \sqrt{(x_2-x_1)^2 + (y_2-y_1)^2} \right\}$$

$$AB = \sqrt{9+4}$$

$$AB = \sqrt{13} \text{ unit}$$

$$BC = \sqrt{(7-5)^2 + (6-4)^2}$$

$BC = \sqrt{4 + 4}$

$BC = \sqrt{8}$ unit

$AC = \sqrt{(7-2)^2 + (6-2)^2}$

$AC = \sqrt{25 + 16}$

$AC = \sqrt{41}$

$\because \quad \sqrt{13} + \sqrt{8} \neq \sqrt{41}$

$\therefore$ The points are not collinear.

Ans. 28. (Choice – I)

$AB = 10$ cm, $AQ = 7$ cm, $CQ = 5$ cm

$BC = ?$

$AR = AQ$ (equal tangents from point A) {tangents from a point outside the circle are equal in length}

$AR = 7$cm

$\begin{array}{r} 25 \\ +16 \\ \hline \sqrt{41} \end{array}$

$BC = \sqrt{4+4}$

$BC = \sqrt{8}$ unit

$AC = \sqrt{(7-2)^2 + (6-2)^2}$

$AC = \sqrt{25 + 16}$

$AC = \sqrt{41}$

$\because \sqrt{13} + \sqrt{8} \neq \sqrt{41}$

$\therefore$ The points are not collinear.

$\begin{array}{r} 25 \\ +16 \\ \hline \sqrt{41} \end{array}$

Ans. 28. (Choice – I)

$AB = 10$ cm, $AQ = 7$ cm, $CQ = 5$ cm

$BC = ?$

$AR = AQ$ (equal tangents from point A) {tangents from a point outside the circle are equal in length}

$AR = 7$cm

$AB = AR + BR$

$BR = AB - AR$

$BR = 10 - 7$

$BR = 3$ cm

$BR = BP = 3$ cm (equal tangents from B) — (1.)

$CQ = 5cm = CP$ {equal tangents from C} — (2.)

$BC = BP + CP$ {from (1.) & (2.)}

$BC = 3 + 5$

$\boxed{BC = 8cm}$

Ans. 29.

Let us assume that $\sqrt{2}$ is rational

Then, $\frac{a}{b}$ is its simplest where 'a' and 'b' are

P.T.O.

co-prime integers, $b \neq 0$

$$\sqrt{2} = \frac{a}{b}$$

squaring both the sides we get

$$2 = \frac{a^2}{b^2}$$

$$2b^2 = a^2 \quad \text{— (1)}$$

Thus, 2 divides a^2 {$\because$ it divides b^2}

$\Rightarrow$ 2 divides a {$\because$ 2 is prime & divides a^2} — (2)

Let $a = 2c$ for some integer c

$$a^2 = 4c^2$$

$$2b^2 = 4c^2 \quad [\text{from } (1)]$$

$$b^2 = 2c^2$$

Thus, 2 divides b^2 {$\because$ 2 divides c^2}

$\Rightarrow$ 2 divides b {$\because$ 2 is prime + divides b^2} — (3)

from (2) and (3) we get 2 as a common factor of a and b

P.T.O.

But this contradicts the fact that a and b are co - primes.

This contradiction has arisen due to our wrong assumption

Therefore, $\sqrt{2}$ is irrational number.

Ans. 30.

$$(\operatorname{cosec}\theta - \cot\theta)^2 = \frac{1-\cos\theta}{1+\cos\theta}$$

From L.H.S.

$$(\operatorname{cosec}\theta - \cot.\theta)^2$$

$$= \operatorname{cosec}^2\theta + \cot^2\theta - 2\operatorname{cosec}\theta\cot\theta \qquad \{(a-b)^2 = a^2+b^2-2ab\}$$

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

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

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

$$= \frac{(1-\cos\theta)^2}{1-\cos^2\theta} \quad \left\{ \begin{array}{l} \because a^2+b^2-2ab=(a-b)^2 \\ \because \sin^2\theta + \cos^2\theta = 1 \end{array} \right\}$$

$$= \frac{\cancel{(1-\cos\theta)}(1-\cos\theta)}{\cancel{(1-\cos\theta)}(1+\cos\theta)} \quad \{\because a^2-b^2=(a+b)(a-b)\}$$

$$= \frac{1-\cos\theta}{1+\cos\theta}$$

$= R.H.S.$

Therefore, Proved.

Ans. 31 (Choice - I)

Let the cost of 1 pencil be ₹ x and cost of 1 pen be ₹ y.

Then, ~~at~~ ATQ,

$$5x + 7y = 250 \text{ --- (1)}$$

$$7x + 5y = 302 \text{ --- (2)}$$

Multiplying (1) by 7 and (2) by 5 and subtracting (1) from (2)

$$35x + 49y = 1750$$
$$35x + 25y = 1510$$
$$\underline{- \quad - \quad -}$$

$$24y = 240$$

$$y = \frac{240}{24}$$

$$y = ₹\ 10$$

Substituting $y = 10$ in (1), we get,

$$5x + 7(10) = 250$$
$$5x = 250 - 70$$
$$x = \frac{180}{5}$$
$$x = ₹\ 36$$

Cost of one pencil = ₹ 36
Cost of one pen = ₹ 10

1750 / 1510 / 250 / 70 / 180 / 36 / 18 / 180 + 70 = 250 / 302 × 5 = 1510

Ans. 32. (choice - I)

(i.) Total no. of red king = 2
Total no. of cards = 52

P(getting a king of red colour) = $\frac{\text{favourable outcome}}{\text{Total no. of outcomes}}$

$= \frac{2}{52}$

$= \frac{1}{26}$

(ii.) Diamond suit has 1 queen
P(getting the queen of diamonds) = $\frac{1}{52}$

(iii.) There are total 4 ace (one in each suit)
P(getting an ace) = $\frac{4}{52} = \frac{1}{13}$

SECTION - D

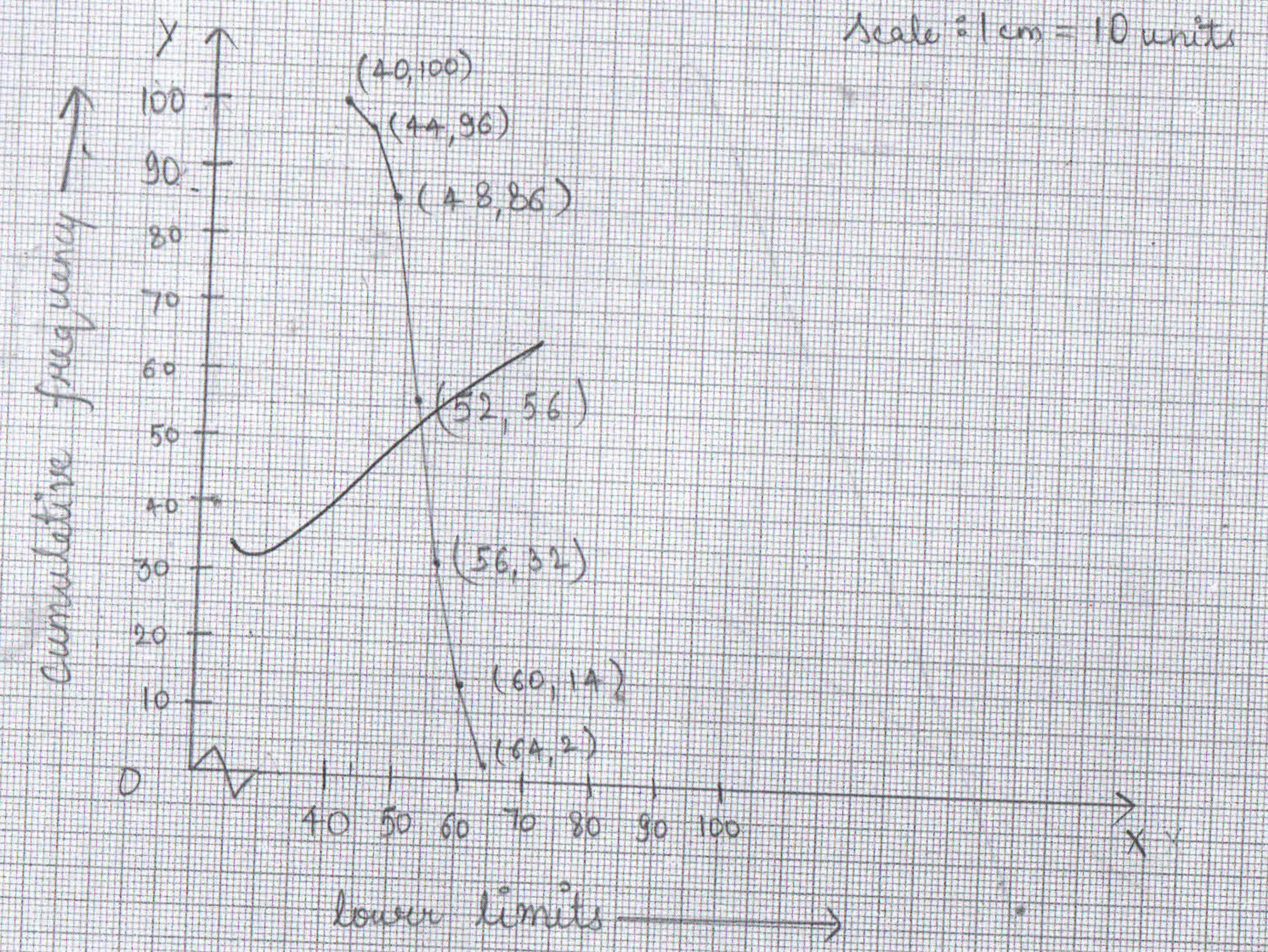
$\boxed{\text{Ans. 39.}}$

C.I (lower limits)	c.f.
More than 40 (or equal to)	100
More than 44 (or equal to)	(100-4) = 96
More than 48 (or equal to)	96-10 = 86
More than 52 (or equal to)	86-30 = 56
More than 56 (or equal to)	56-24 = 32
More than 60 (or equal to)	32-18 = 14
More than 64 (or equal to)	14-12 = 2

Coordinates → (40, 100)
(44, 96)
(48, 86)
(52, 56)
(56, 32)
(60, 14)
(64, 2)

4
10
30
24
18
12
2
0

Ans. 39.



Scale : 1 cm = 10 units
Y
100
90
80
70
60
50
40
30
20
10
0
Cumulative frequency
(40,100)
(44,96)
(48,86)
(52,56)
(56,32)
(60,14)
(64,2)
40
50
60
70
80
90
100
X
lower limits

Ans. 33.

Area of the square $= (\text{side})^2$

$= (14)^2$

$= 196 \text{ cm}^2$

Area of 4 quadrants $= 4 \times \left[\frac{\theta}{360^\circ} \times \pi r^2\right]$

$= 4 \times \left[\frac{\cancel{90^\circ}}{\cancel{360^\circ}_4} \times \frac{22}{\cancel{7}} \times \cancel{3.5}^{0.5} \times 3.5\right]$

$= \left(\cancel{4} \times \frac{1}{\cancel{4}} \times 22 \times 0.5 \times 3.5\right)$

$= 38.5 \text{ cm}^2$

Area of circle $= \pi r^2$

$= \cancel{\frac{22}{7} \times 16} \quad \frac{22}{7} \times (4)^2$

$= \frac{352}{7} = 50.29 \text{ cm}^2$ (approx.)

SECTION - D

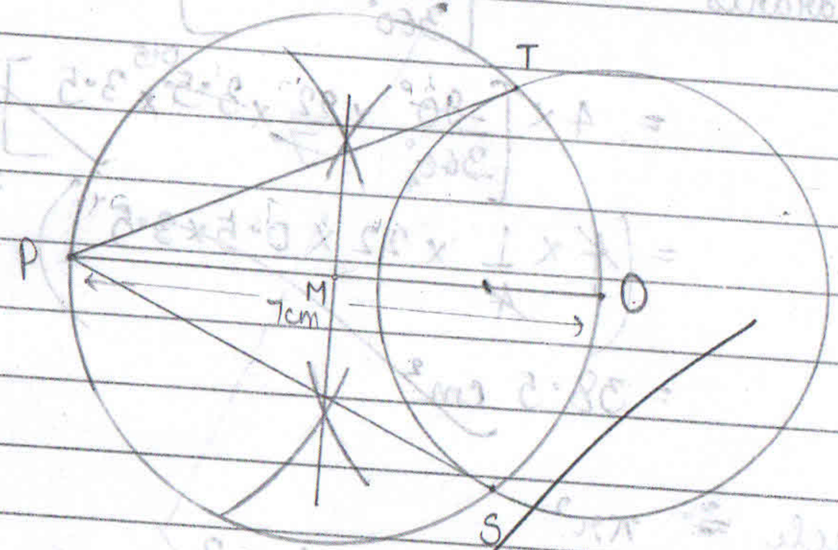
Area of shaded region = Area of square − (Area of 4 q
Area of circl

= 196 − (38·5 + 50·29)

= (196 − 88·79)

= 107·21 cm² (approx)

Ans. 34.



PT and PS are the required tangents.

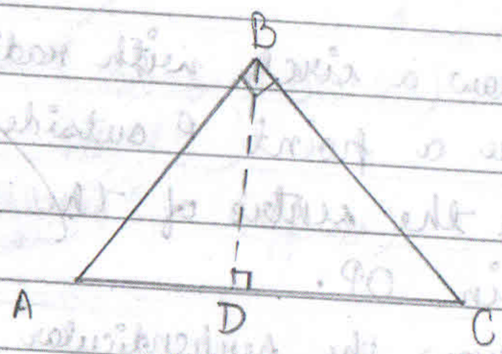
P.T.O.

Steps of construction:

1. Draw a circle with radius 3 cm
2. Take a point P outside the ~~s~~ circle which is 7 cm away from the centre of the circle.
3. Join OP.
4. Draw the perpendicular bisector of OP which intersects it at M.
5. Taking M as centre and radius equal to PM draw another circle.
6. ~~L~~ Mark the points of intersection of bigger circle and smaller circle as T and S
7. Join PT and PS.

SECTION-D

Ans. 35.



ABC is a right-angled $\triangle$

$\angle B = 90^\circ$

AC $\rightarrow$ hypotenuse

To prove: $AC^2 = AB^2 + BC^2$

Const.: Draw $AD \perp \cancel{AD}\ AC$

Proof:

In $\triangle ADB$ and $\triangle ABC$

$\angle ADB = \angle ABC = 90^\circ$

$\angle DAB = \angle BAC$ (common)

$\therefore \triangle ADB \sim \triangle ABC$ (AA - similarity criterion),

$\Rightarrow \dfrac{AD}{AB} = \dfrac{AB}{AC}$

$\Rightarrow AB^2 = AD \times AC$ —— (1.)

In Δ BDC and Δ ABC

$\angle BDC = \angle ABC = 90^\circ$

$\angle BCD = \angle ACB$ (common)

$\therefore \Delta BDC \sim \Delta ABC$ (AA- similarity criterion)

$\Rightarrow \cancel{\frac{BD}{}} \frac{BC}{AC} = \frac{DC}{BC}$

$\Rightarrow BC^2 = AC \times DC$ —— (2)

Adding (1) & (2) we get,

$AB^2 + BC^2 = AD \times AC + AC \times DC$

$AB^2 + BC^2 = AC(AD + DC)$

$AB^2 + BC^2 = AC \times AC$

$\boxed{AB^2 + BC^2 = AC^2}$

$\therefore$ Proved

Ans. 36. (Choice-I)

$$
\begin{array}{r|l}
 & -x+4 \\
x^2+x-1 & -x^3+3x^2-3x+5 \\
 & -x^3-x^2+x \\
 & +\quad +\quad - \\
\hline
 & 4x^2-4x+5 \\
 & 4x^2+4x-4 \\
 & -\quad -\quad + \\
\hline
 & -8x+9
\end{array}
$$

Divisor = x^2+x-1

Dividend = $-x^3+3x^2-3x+5$

Remainder = $-8x+9$

Quotient = $-x+4$

According to the division algorithm

Dividend = Divisor × Quotient + Remainder

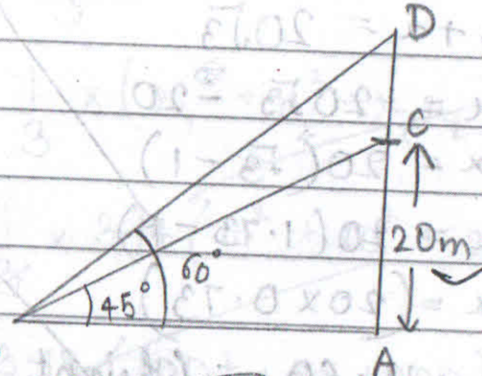
~~$-x^3+3x^2-3x+5 = (-x+4)(-x+4)+(-8x+9)$~~

~~$-x^3+3x^2-3x+5 = x^2-4x-4x+16-8x+9$~~

$$-x^3+3x^2-3x+5 = (x^2+x-1)\times(-x+4) + (-8x+9)$$
$$= -x^3+4x^2-x^2+4x+x-4-8x+9$$
$$= -x^3+3x^2-3x+5$$
$$= L.H.S.$$

$\therefore$ Proved.

Ans. 37.



AC → height of building = 20m

CD → height of transmission tower

CD = x m.

AB → distance of the point from the foot of the building = y m

In $\triangle$ ABC

$\angle CAB = 90^\circ$ [building stands vertical on the ground]

$\therefore \tan 45^\circ = \frac{AC}{AB} \Rightarrow 1 = \frac{AC}{y} \Rightarrow y = 20\,m$ —— (1)

In $\triangle ADB$

$\angle DAB = 90^\circ$ (building stands vertical on the ground)

$\therefore \tan 60^\circ = \frac{AD}{AB}$

$\Rightarrow \sqrt{3} = \frac{20+x}{y}$

$\Rightarrow \sqrt{3} = \frac{20+x}{20}$ {from (1)}

$20 + x = 20\sqrt{3}$

$x = 20\sqrt{3} - 20$

$x = 20(\sqrt{3} - 1)$

$x = 20(1.73 - 1)$

$x = (20 \times 0.73)$

$x = 14.60$ m. (height of tower)

$\begin{array}{r} 20 \\ .73 \\ \hline 60 \\ 140 \\ \hline 14.60 \end{array}$

Ans. 38. (Choice I)

$h = 30$ cm

$r_1 = 10$ cm

$r_2 = 20$ cm

Capacity = Volume

Volume of frustum of a cone $= \frac{1}{3} \times \pi \times h($

$= \frac{1}{3}\pi(r_1^2 + r_2^2 + r_1 r_2) \times h$

$= \frac{1}{\cancel{3}} \times 3.14(10^2 + 20^2 + 200) \times \cancel{30}^{10}$

$= 3.14(100 + 400 + 200) \times 10$

$= 3.14 \times 700 \times 10$

$= 2198 \times 10$

$= \underline{21980}$ cm^3

3.14
$\times 700$
000
$000\times$
$2198\times\times$
2198.00

Ans. 39. In front of graph paper

Ans. 40. Choice (II)

Let the sides of the two squares be x m and y m resp.

~~ATQ~~, Perimeter of square = 4 × side

ATQ, $4x - 4y = 24$

$4(x-y) = 24$

$x - y = 6$ — ~~(1.)~~

$x = 6 + y$ — (1.)

Area of square = $(\text{side})^2$

ATQ,

$x^2 + y^2 = 468$

$\cancel{x^2} + (6+y)^2 + y^2 = 468$ (from (1.))

$36 + y^2 + 12y + y^2 = 468$

$2y^2 + 12y + 36 - 468 = 0$

$2y^2 + 12y - 432 = 0$

$2(y^2 + 6y - 216) = 0$

$y^2 + 6y - 216 = 0$

$y^2 + 18y - 12y - 216 = 0$

$y(y+18) - 12(y+18) = 0$

$(y+18)(y-12) = 0$

$y = -18$ E

$y = 12$

We consider $y = 12$ m because distance cannot be negative

$x = 12 + 6$

$= 18$ m

Sides of two squares are 18 m and 12 m.

2 | 216
2 | 108
2 | 54
3 | 27
3 | 9
3 | 3

$\sqrt{216}$

12

18
12
36
18x
216

041861