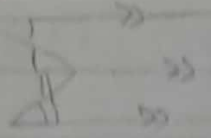
1.) $3\theta = 72°$, $\theta = 24°$



2.) Ext. $\angle$ Each $= \frac{360}{8} = \boxed{45}$

Each Int. $\angle = 180 - 45 = \boxed{135}$

3.) $(17-4) < x < (17+4)$

$13 < x < 21$

x can take any value b/w

(A)

4.) $(26-10) <$ 3rd Side $< (26+10)$

$16 <$ 3rd side < 36

$(10+16+26) <$ Perimeter $< (10+16+36)$

$\boxed{52 < \text{Perimeter} < 62}$

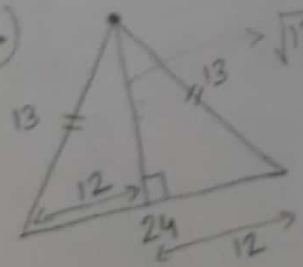
5.) $R = 5$

Let each side of equilateral $\Delta = a$

$\frac{a \times a \times a}{4R} = \frac{\sqrt{3}}{4}a^2 \rightarrow a = R\sqrt{3} = 5\sqrt{3}$

$\text{Area} = \frac{\sqrt{3}}{4} \times (5\sqrt{3})^2 = \frac{75}{4}\sqrt{3}$

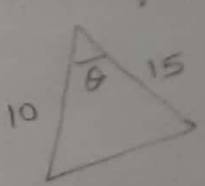
6.)



$\sqrt{13^2 - 12^2} = 5$

$\text{Area} = \frac{1}{2} \times 24 \times 5 = \boxed{60}$

Area of Δ with 2 sides 10cm & 15cm



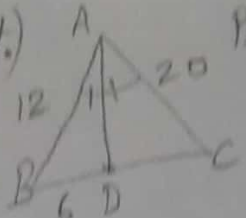
$\rightarrow \text{Area} = \frac{1}{2} \times 10 \times 15 \times \sin\theta$

$0 < \sin\theta < 1$

$\boxed{0 < \text{Area} < 75}$

(D)

7.)



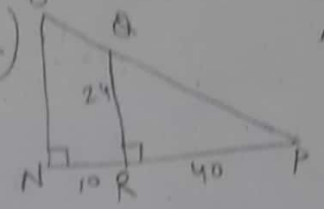
Property of Angle Bisector:

$\frac{AB}{AC} = \frac{BD}{CD}$

$\frac{12}{20} = \frac{6}{CD}$ $\boxed{CD = 10}$

$\boxed{BC = 6 + 10 = 16}$

8.)



$\Delta POR \sim \Delta PON$

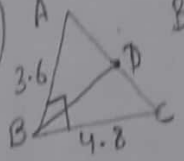
Sides are prop.

$\frac{QR}{ON} = \frac{QP}{OP} = \frac{PR}{PN}$

$\frac{24}{ON} = \frac{48}{50}$

$\boxed{ON = 30}$

9.)



By Pyth. Th.

$AC = \sqrt{(3.6)^2 + (4.8)^2}$

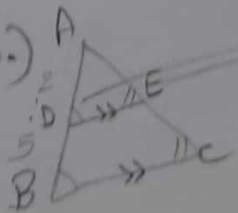
$AC = 6$

In a Right Δ, Median from 90° vertex Or Hypotenuse, meet at Mid-Point of Hypot. also acts as CIRCUMCENTRE

Hence $DA = DC = DB = R = \frac{1}{2}AC$

$\boxed{BD = 3}$

10.)



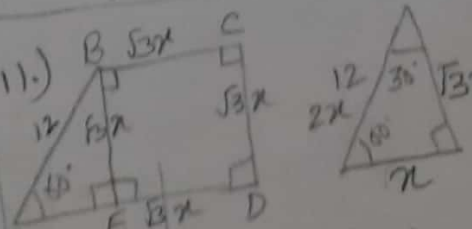
Corresponding $\angle$'s Δ's are Similar.

$\Delta ABC \sim \Delta ADE$

Hence

$\frac{\text{Area of } \Delta ABC}{\text{Area of } \Delta ADE} = \frac{AB^2}{AD^2} = \frac{7^2}{2^2} = \boxed{\frac{49}{4}}$

11.)



$90 - 60 - 30$

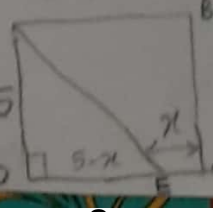
$1 : \sqrt{3} : 2$

$2x = 12$

$x = 6$

Area of Square $(6\sqrt{3})^2 = \boxed{108}$

12.)



$\Delta ADE = \frac{1}{2} \times 5x(5-x)$

$\square ABCD = 5^2 = 25$

Ratio $\Rightarrow \boxed{\frac{5-x}{10}}$

13.) Area of Cyclic □ → a = 12, b = 20, c = 18, d = 10

$\sqrt{(s-a)(s-b)(s-c)(s-d)}$

$s = \frac{a+b+c+d}{2}$

$= \sqrt{43200} = 207.8 \; (120\sqrt{3})$

18.) $h = 5x$ b $\quad L = 8^3 h$

$= 8 \times 5b$

$= 40b$

$b = 0.4m$ (40cm or)

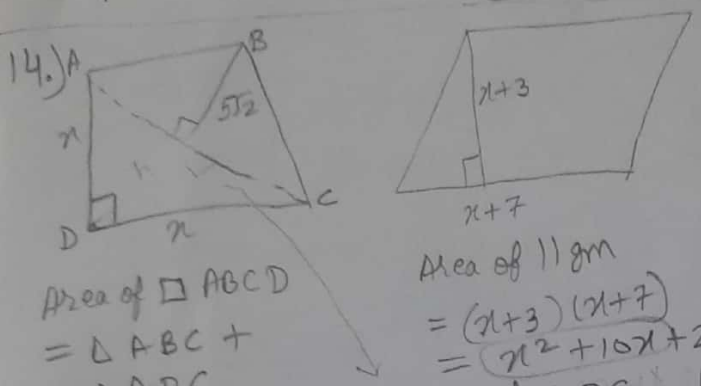
$V = L \times b \times h = 12 \cdot 8$

$40b \times b \times 5b = 12 \cdot 8$

$b^3 = \frac{12 \cdot 8}{200} = 0.064$

$b = \sqrt[3]{0.064}$

14.)



Area of □ ABCD = △ ABC + △ ADC

$= \frac{1}{2} \times AC \times 5\sqrt{2} + \frac{1}{2} \times x \times x = 75$

$\frac{1}{2} \times \sqrt{2}x \times 5\sqrt{2} + \frac{x^2}{2} = 75$

$5x + \frac{x^2}{2} = 75$

$10x + x^2 = 150$

Area of ∥gm $= (x+3)(x+7) = x^2 + 10x + 21$

In Rt. △ ADC

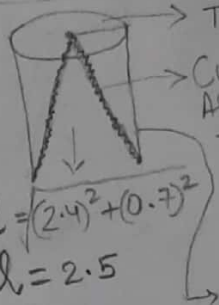
$AC = \sqrt{2}x$ (P.G.Th)

150 + 21

171

(E)

19.)



$\pi(0.7)^2 = 0.49\pi$

Curved Surface Area of Cone $\pi r l$

$= \pi(0.7)(2.5) = 1.75\pi$

$l = \sqrt{(2.4)^2 + (0.7)^2}$

$l = 2.5$

CSA OF CYLINDER $= 2\pi r h = 2\pi(0.7)(2.4) = 3.36\pi$

S.A. of Remaining Solid $= 0.49\pi + 1.75\pi + 3.36\pi = 5.6\pi = 17.6$

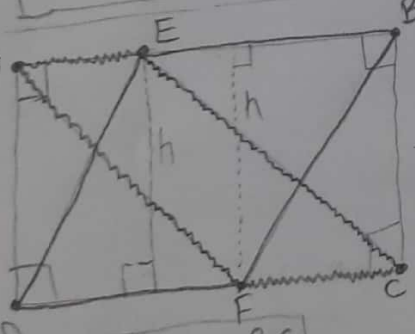
20) B

21.) Vol. Cone $= \frac{1}{3}\pi r^2 h = \frac{1}{3} \times \pi \times (12)^2 \times 50 = 2400\pi$

Vol of liquid in cylinder $= 2400\pi = \pi(10)^2 h$

$h = 24$ cm

15.)



$h = AD = BC$

∥ EBFD $= FD \times h = 3$

∥ AECF $= CF \times h = 2$

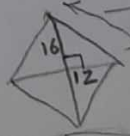
ADD

$(FD + CF) \times h = 5$

$CD \times AD = 5$

(C)

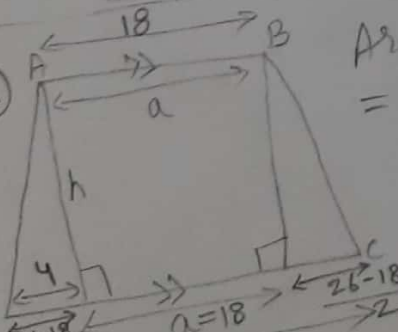
22.) The Diagonals of a RHOMBUS Bisect each other at Rt. ∠'s.



$\rightarrow 20 = \sqrt{16^2 + 12^2}$ → P.G.Th.

Perimeter $= 4 \times 20 = 80$

16.)



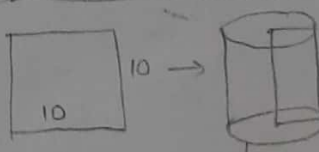
Area of Trapezium $= \frac{1}{2}(18+26) \times h = 176$

$h = 8$

In a Rt. △ $\sqrt{4^2 + 8^2} = AD = \sqrt{80} = BC$ (4√5)

OBLIQUE

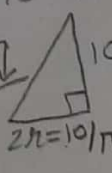
23.)



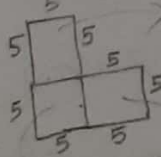
$2\pi r = 10 \rightarrow r = 5/\pi$

→ Longest Rod

$\sqrt{10^2 + (\frac{10}{\pi})^2}$



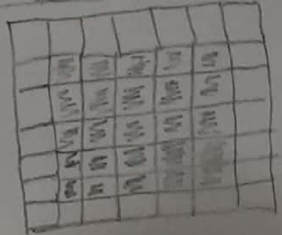
17)



$5 \times (5^2) + 4 \times (5)^2 + 5 \times (5)^2 = 14 \times 25$

$= 350$

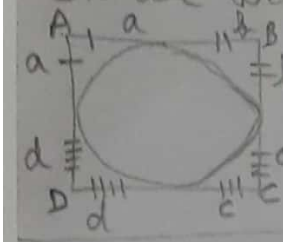
24.)



25 single side Paint on one face Hence $25 \times 6 = 150$

25.) $AB+CD = AD+BC$

WHY? Tangents drawn from external Point on same Circle are equal.



$AB+CD = a+b+c+d$

$BC+AD = b+c+a+d$.

$\Rightarrow 20+15 = 17+AD$

$\boxed{AD = 18}$

26.)

diameter $= 2r = 8$

$r = 4$

Area of Circle $= \pi(4)^2 = 16\pi$

27.) Max. Area of Quad = SQUARE

$r = 8 \rightarrow$ diameter $= 16$ will act as DIAGONAL OF SQUARE

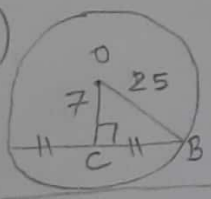
$r^2 + r^2 = 16^2$

$2r^2 = 16^2$

$r = \sqrt{128}$

AREA OF SQUARE $= r^2 = \boxed{128}$

28.)

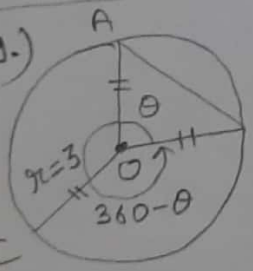


$BC = \sqrt{25^2 - 7^2}$

$BC = 24$

$AB = 2BC = \boxed{48}$

29.)

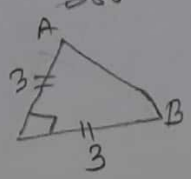


$\overset{\frown}{ACB} = 3\overset{\frown}{AB}$

$\frac{(360-\theta)}{360} \times 2\pi r = 3 \times \frac{\theta}{360} \times 2\pi r$

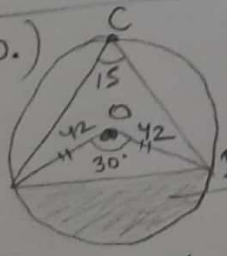
$360 - \theta = 3\theta$

$\boxed{\theta = 90}$



$AB = \sqrt{3^2+3^2} = \boxed{3\sqrt{2}}$ (E)

30.)



$\angle ACB = 15°$

Hence $\angle AOB = 2 \times \angle ACB = 30°$

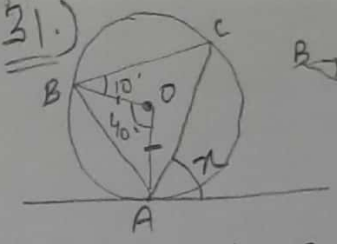
Area = Sector − Δ

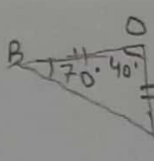
$\Rightarrow \frac{30}{360} \times \pi(42)^2 - \frac{1}{2} \times 42 \times 42 \times \sin 30°$

$\Rightarrow \frac{42 \times 42}{12} \times \frac{22}{7} - 21 \times 42 \times \frac{1}{2}$

$\Rightarrow 462 - 441 = \boxed{21}$

31.)





Isosceles Δ

$\angle OBA = \angle OAB = 70°$

NOW;

$\angle CBA = 10 + 70 = 80°$

By Alternate segment Theorem

$\angle x = \angle CBA = \boxed{80°}$

32.)