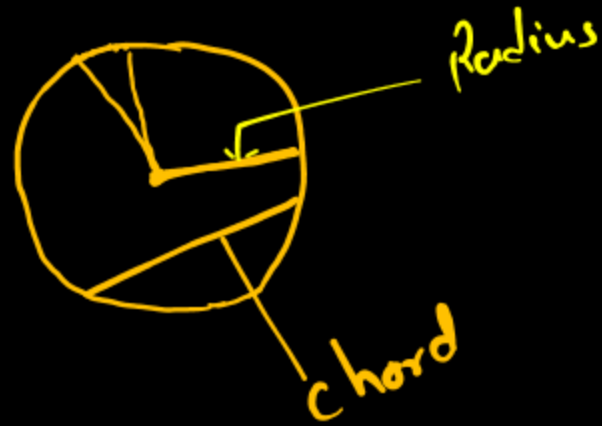


Area of Circle

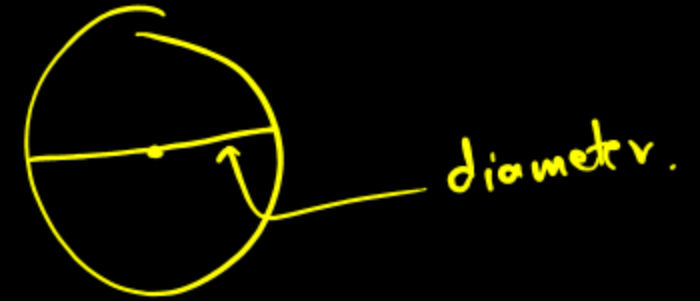
Area of Circle

Circle :



Radius:

Diameter: [Longest chord]

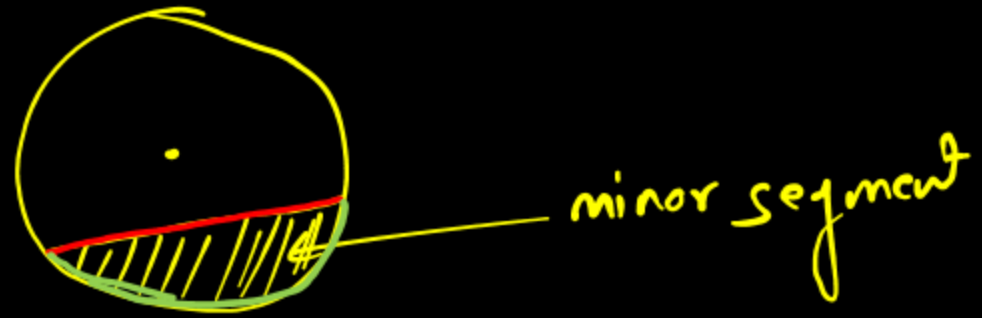


Chord:

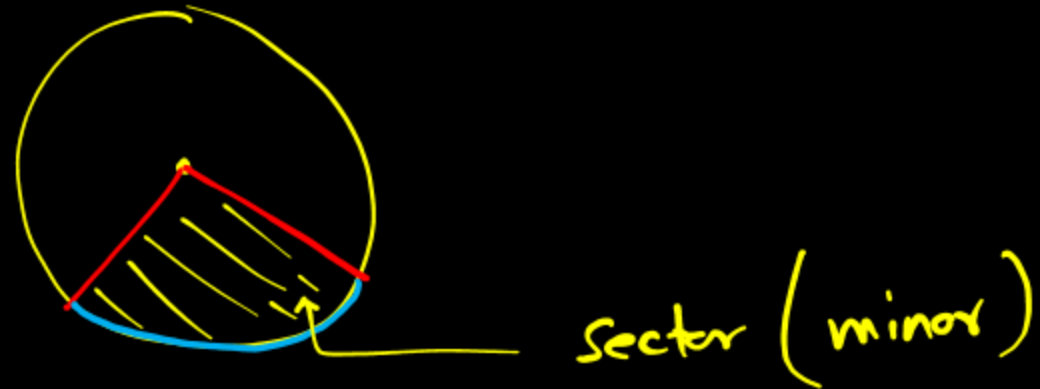
Arc: Part of circular boundary
└─ major arc
└─ minor arc



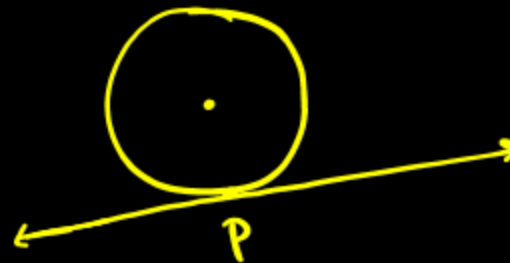
Segment:



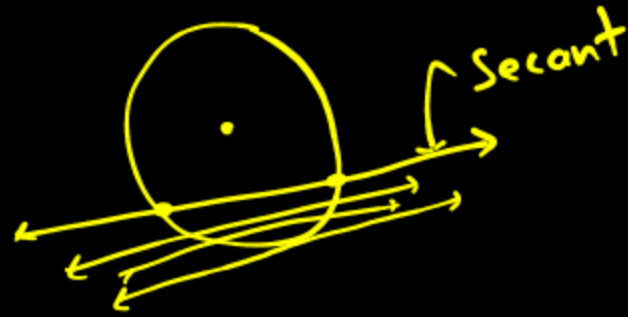
Sector:



Tangent:

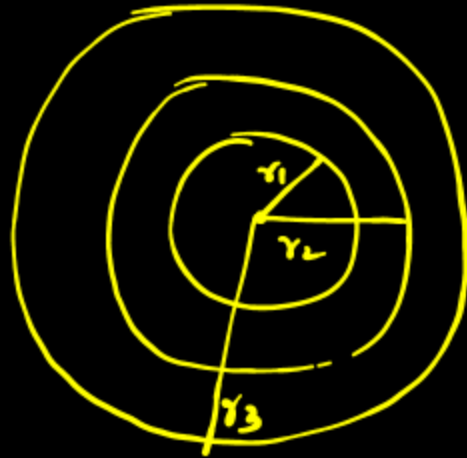


Secant :



Concentric Circles:

Same centre



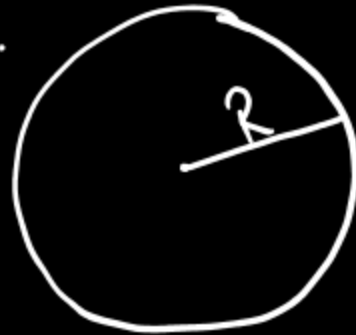
Congruent Circles (Two more circles having Same radius)



Circumference of a circle

"The perimeter of a circle is called its circumference"

For $\frac{\text{Circumference}}{\text{diameter}} = \text{constant value.} \approx \underline{\underline{3.14}}$



$$\pi = 3.14 \text{ (approx.)}$$
$$= \frac{22}{7} \text{ (approx.)}$$

$$\frac{\text{Circumference}}{\text{diameter}} = \pi$$

$$\text{Circumference} = \pi \times \text{diameter}$$
$$\boxed{C = \pi \cdot D} \checkmark$$

$$D = 2 \cdot R$$

$$C = \pi (2R)$$

$$\boxed{C = 2\pi R} \checkmark$$

$$\left[\pi = 3.141593 \dots \right]$$

" π is not a rational number"

$\left[\pi \text{ is an irrational number} \right]$

$$2 \boxed{-0} = 2$$

$$3 - 0 = 3$$

$$2 + (\underline{-0}) =$$

$\begin{array}{l} 0 \\ \left[\begin{array}{l} \rightarrow \text{Non-positive} \\ \rightarrow \text{Non-negative} \end{array} \right] \end{array}$

Q. Find the diameter of a circle whose circumference is 15.7 cm.

Sol.

$$C = 15.7 \text{ cm}$$

$$\pi \cdot D = 15.7$$

$$D = \frac{15.7}{\pi} = \frac{15.7}{3.14} = \underline{\underline{\sim 5 \text{ cm}}}$$

Q. The ratio of the radii of two circles is 2:5. What is the ratio of their circumference.



$$C_2 = 2\pi(5x)$$



$$C_1 = 2\pi(2x)$$

$$\frac{C_1}{C_2} = \frac{2\pi 2x}{2\pi 5x} \quad (2+3)$$

$$\frac{C_1}{C_2} = \frac{2}{5}$$

$$C_1 : C_2 = \underline{\underline{2:5}}$$

Q. A piece of a wire in the form of a rectangle 8.9cm long and 5.4cm broad is reshaped and bent into the form of a circle. Find the radius of the circle.

Perimeter of rectangle = circumference of circle.
28.6 cm = Circumference

$$C = 28.6$$
$$2\pi r = 28.6$$
$$r = \frac{28.6}{2\pi} = \frac{14.3}{3.14} \approx \underline{\underline{4.55\text{cm}}}$$

π Pie.
 ~ 3.14

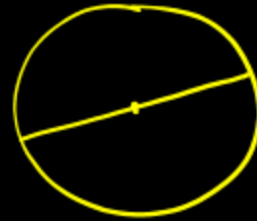
$$\pi \approx 3.14 \approx \frac{22}{7}$$

$\left[\frac{\text{Circumference of any circle}}{\text{its diameter}} \right] \approx$

$\underline{3.141593...}$

was called $\frac{\text{Pie}}{\text{I}}$

π
(Greek alphabet)



Q. The diameter of a wheel of a cycle is 70 cm. It moves slowly along the road. How far will it go in 24 complete revolutions.

3.14



$$\text{Distance covered} = \text{circumference} \times \underline{\underline{24}}$$

$$= \pi (70) \times 24$$

$$= \frac{22}{7} (70) \times 24$$

$$= 220 \times 24$$

$$= \underline{\underline{5280 \text{ cm.}}}$$

$$\frac{3.14 \times 70}{22 \times 10}$$

Q. A race track is in the form of a ring whose inner circumference is 352m and outer circumference is 396m. Find the width of the track.

$$\boxed{\pi r} = \frac{352}{2} = 176$$

$$r = \frac{176}{\pi} = \frac{176}{1}$$

$$\boxed{2\pi r = 352}$$

$$\pi r = \frac{352}{2} = 176$$

$$r = \frac{176}{\pi}$$

$$\div \left(\frac{22}{7} \right)$$

$$= \frac{176}{1} \times \frac{7}{22} = \frac{56}{1} \text{ m} = \underline{56 \text{ m}}$$

$$r_{\text{inner}} = 56 \text{ m}$$

$$r_{\text{outer}} = \frac{396}{2} \div \frac{22}{7}$$

$$r_{\text{outer}} = 63 \text{ m.}$$

$$\text{width} = 63 - 56 = 7 \text{ m}$$

Area of circle

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



(like a rectangle)



$$\left[\frac{1}{2} \cdot \text{circumference} \right]$$

$$\begin{aligned} \text{Area of rectangle} &= \frac{1}{2} \cdot \text{circumference} \times r \\ &= \frac{1}{2} \times 2\pi r \times r = \underline{\underline{\pi r^2}} \end{aligned}$$



Area of Semi-circle

$$= \frac{1}{2} (\pi r^2)$$

Area of a Quadrant : $\frac{1}{4} (\pi r^2)$



Find Radius of a circle from area. the given area.

$$\text{Area} = \pi r^2$$

$$\pi r^2 = \text{Area.}$$

$$r^2 = \frac{\text{Area}}{\pi}$$

$$r = \sqrt{\frac{\text{Area}}{\pi}}$$

Q. The circumference of a circle is 44 cm. Find its area.

Find 'r' using circumference.

$$r = 7 \text{ cm}$$

$$\begin{aligned} A &= \pi r^2 \\ &= \frac{22}{7} \times 7 \times 7 \\ &= 154 \text{ cm}^2 \end{aligned}$$

Set of first 5 even nos.

List of well-defined elements / class / group.

Finite set →

Infinite set →

π

elements of set

✓ Collection of odd natural nos. less than 50.

Not a set → Collection of clever students of your class.

✓ Collection of all prime nos.

Not a set ⇒ Collection of all good cricket players.

Q. $\Rightarrow$ On rolling a dice what ~~is~~ is the probability of get 2.
 $\rightarrow$ 6 faced
 $\rightarrow$ fair

probability of getting ^{an} even no.

probability of a number less than 6

probability of getting a number less than 7.
1 [Sure event]

Find x

$$\boxed{2 + 5} = \boxed{1.75}$$

$$\boxed{-4.75 + 5}$$

$$-5 + 1.75$$

$$- (5 - 1.75)$$

$$\boxed{\begin{array}{r} -4.75 \\ + 1.75 \end{array}}$$

$$\boxed{-3.25}$$

$$\begin{array}{r} 5.00 \\ - 4.75 \\ \hline 1.25 \end{array}$$

Find x

$$2x - 8 = -7$$

$$2x = -7 + 8$$

$$\frac{2x}{2} = \frac{1}{2}$$

$$x = \frac{1}{2}$$

$$5x + 9 = 3x + 11$$

$$5x - 3x = 11 - 9$$

$$2x = 2$$

$$x = 1$$

Find x

$$\Rightarrow \frac{x}{4} - 5 = \frac{1}{2}$$

$$\Rightarrow \frac{x}{4} = \frac{1}{2} + 5$$

$$\frac{x}{4} = \frac{1+10}{2}$$

$$4 \times \frac{x}{4} = 4 \times \frac{11}{2}$$

$$\boxed{x = 22}$$

$$\frac{2x}{3} - \frac{7}{2} = \frac{3}{5}$$

$$\frac{2x}{3} = \frac{3}{5} + \frac{7}{2}$$

$$= \frac{6}{10} + \frac{35}{10}$$

$$\frac{2x}{3} \times 3 = \frac{41}{10} \times 3$$

$$\frac{2x}{2} = \frac{123}{10 \times 2}$$

$$\boxed{x = \frac{123}{20}}$$

$$\boxed{4\cancel{7} \frac{1}{2} 243}$$

$$\frac{4}{100} \times \frac{243}{1} = \frac{[4 \times 243]}{100} = \frac{972}{100} = \underline{\underline{9.72}}$$

Linear Sequence: 1, 2, 3, 4, 5

$$= 10, 9, 8$$

$$= 1 \quad 2 \quad 7 \quad 10$$

$$\boxed{+3} \quad \boxed{+3} \quad \boxed{+3}$$

2	1	x	⇒ A
2.5		x	⇒ B
1	y	2	⇒ C

$$A = B = C$$

$$\boxed{A = B}$$

$$\boxed{B = C}$$

$$\boxed{A = C}$$

Quadratic Sequence:

$$[1, 3, 12, 60]$$

≤

≥

$$1, 1, 2, 3, 5, 8$$

$$\boxed{x + 3n = 4n}$$

Quadratic sequence

Second difference
is same.

$$\begin{array}{ccccc} (1)^2 & (2)^2 & (3)^2 & (4)^2 & (5)^2 \\ 1 & 4 & 9 & 16 & 25 \\ \hline & +3 & +5 & +7 & +9 \\ \hline & (1) & +2 & +2 & \Rightarrow (a) \end{array}$$

$$\left\{ \begin{array}{l} \Rightarrow n^2 \\ \Rightarrow \boxed{n^2 + a} \end{array} \right.$$

Simplify:

$$\Rightarrow \boxed{4xy} + 3yz + \boxed{7yx}$$

$$\underline{4xy + 3yz + 7xy}$$

$$11xy + 3yz$$

$$(x \cdot y) = (y \cdot x)$$

Simplify

$$\underline{60^2x^2 + 12a^2x + 13x^2a + 17a^2x^2 + 19ax^2}$$

$$\boxed{\frac{1}{10}}$$

$$\frac{1}{100}$$

one ~~the~~ tenths

$$\frac{0.53}{100} = 0.55$$

Equality and Equivalence

$$\boxed{x} + 7 = 15$$

$$\boxed{} - 9 = 26$$

3:5 ✓ x 2

6:8

5:3

①

30:50 ✓

60:100

$$\frac{3x}{5x} = \frac{3}{5}$$

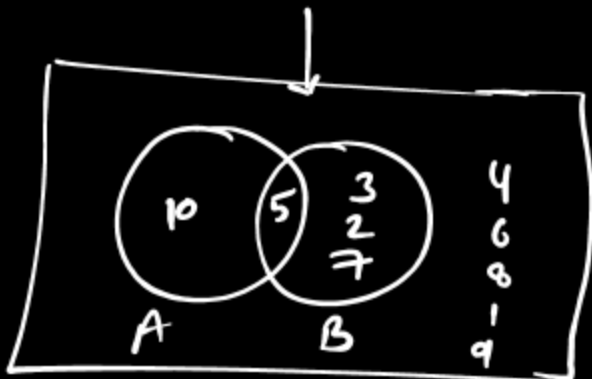
$$\textcircled{8} \quad \left. \begin{array}{l} A \rightarrow \underline{6 \text{ hr.}} \\ B \rightarrow \underline{9 \text{ hrs.}} \end{array} \right\} \quad \boxed{\underline{2 \text{ AM}}} \Rightarrow$$

$$\underline{\underline{LCM}} \quad \boxed{18} \underline{\underline{\text{hrs.}}} \quad \boxed{2}$$

∞

$$\textcircled{10} \quad U = \{0, 2, 3, 4, 5, 6, 7\} \quad \bigg/ \quad \{ \underline{\underline{1}} \}$$

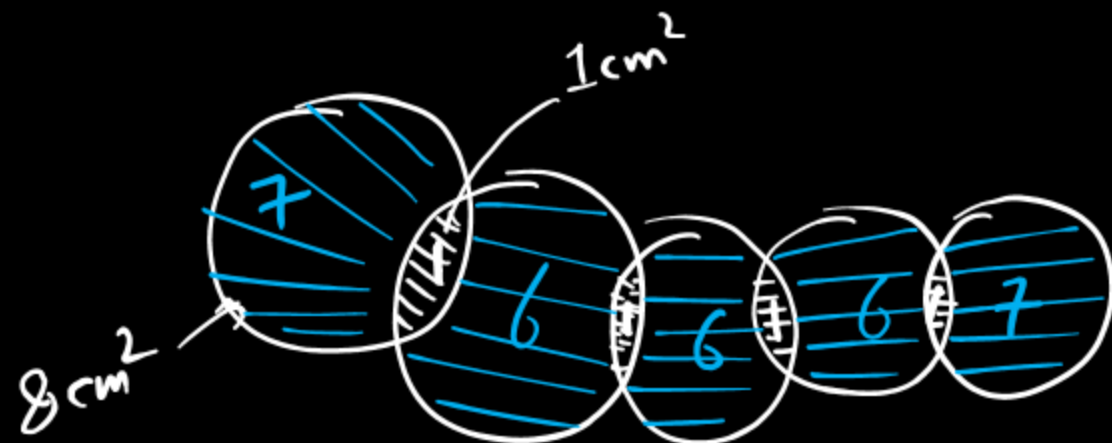
$$W = \{2, 3, 7\}$$



$$\cancel{A \cup B} \rightarrow \left(\frac{4}{10} \right)$$

$$* \underline{\underline{A \cup B = \{2, 3, 5, 7, 10\}}}$$

3



18

14

4

36

(A) 32 cm^2 .

(B) 36 cm^2

(C) 38 cm^2

(D) 39 cm^2

(E) 42 cm^2

Area of circle



$$\begin{aligned}\text{Area of ring} &= \pi R^2 - \pi r^2 \\ &= \pi(R^2 - r^2)\end{aligned}$$



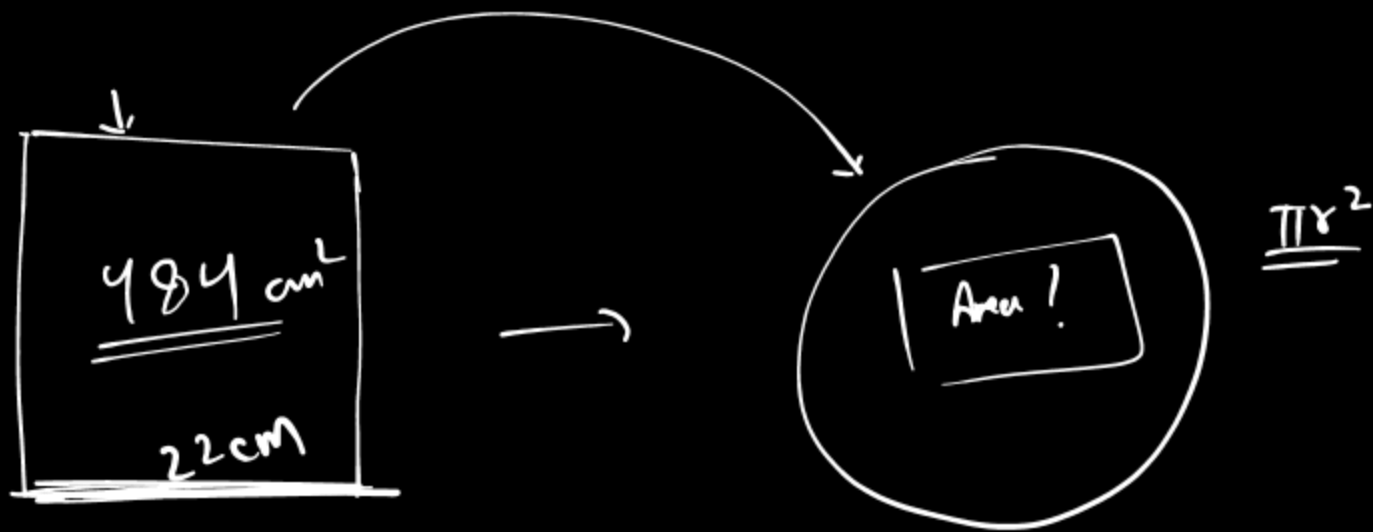
Perimeter of rect.
 18 cm

$\therefore$ Circumference of circle $= 18 \text{ cm}$

$$2\pi r \approx 18 \text{ cm}$$

$$2\pi r = 18$$

$$r \approx 3 \text{ cm}$$



$$a^2 = 484$$

$$a = \sqrt{484}$$

$$a = 22$$

$$\text{Perimeter} = 4 \times 22 = 88 \text{ cm}$$

$$\frac{56}{616}$$

$$r = ?$$

$$\text{Circumference} = 88$$

$$2\pi r = 88$$

$$\pi r = 44$$

$$r = \frac{44}{\pi}$$

$$r = 44 \times \frac{7}{22} = 14 \text{ cm}$$

$$\begin{aligned} \text{Area} &= \pi r^2 \\ &= \frac{22}{7} \times 14 \times 14 \\ &= 22 \times 28 \\ &= 616 \text{ cm}^2 \end{aligned}$$

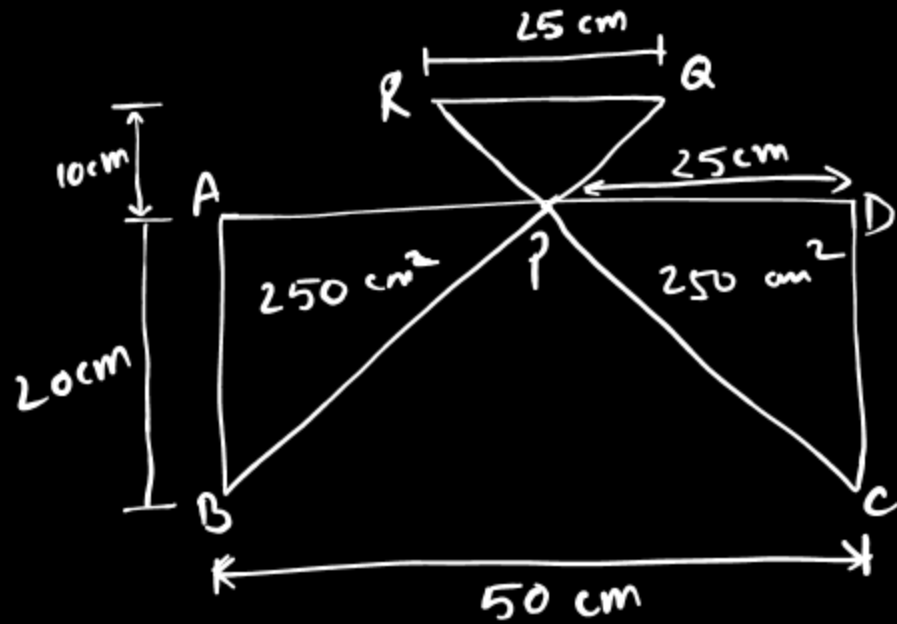


Fig. is not
to the scale

Find the sum of the
areas of three triangles.

$$\text{area of } \triangle APB = \text{ar } \triangle PDC = \frac{1}{2} \times 20 \times 25 = \underline{\underline{250 \text{ cm}^2}}$$

$$\underline{\underline{\text{ar } \triangle PQR}} = \frac{1}{2} \times 25 \times 10 = 125 \text{ cm}^2$$

$$\text{Total area} = 250 + 250 + 125 = \underline{\underline{625 \text{ cm}^2}}$$

End of the chapter