Converting b/w units of length:-

1 Km = 1000 m = 10 hectometers (hm) = 1000 m

1 m = 100 cm

1 cm = 10 mm

$\Rightarrow$ 1 Hectometer (hm) = 10 Deca-meters (dam) = 100 m

3 Km = 3000 m

2 m = 200 cm

4 cm = 40 mm

1 dam = 10 meters

6 Km = 6000 m

1 m = 10 decimeters (dm) = 100 cm = 1000 mm.

0.5 m = 50 cm

40 cm = 400 mm

1 dm = 10 cm

5000 m = 5 Km

1 dm = 0.1 m

400 cm = 4 m

1 cm = 10 mm

80 mm = 8 cm

1 cm = 0.01 m

2.5 Km = 2500 m

1 mm = 0.001 m.

1 m = 1000 m

1 hr = 60 min

9000 mm = 9 m

1 min = 60 sec

0.8 m = 80 cm

1 Year = 12 months

90 cm = 0.9 m

1 months = 30 days

1.5 cm = 15 mm

1 week = 7 days.

Q 1:-

Find area & perimeter of a square whose side is 5cm.

Sol:-

Side = a = 5cm.

Area of a Square = a^2 square units $\underline{cm^2}$

Area of a Square = 5^2

A = $25 cm^2$

The Perimeter of a Square = 4a units

$$P = 4 \times 5 = 20.$$

Therefore, the perimeter of a Square = 20cm.

2 - What is the circumference of a circle with a radius of 3.5cm?

Sol:

Radius of the circle = r = 3.5cm.

We Know that:

Circumference of a circle with radius r = $2\pi r$

$$= 2 \times \left(\frac{22}{7}\right) \times 3.5$$

$$= 22 cm$$

Hence the circumference is 22cm.

*Formulas :-

☐ Rectangle :

Area = length x width

$$A = Lw.$$

Perimeter = 2 x length + 2 x widths.

$$= 2l + 2w.$$

Parallelogram :-
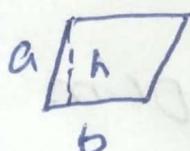
Area = Base x Height

$$A = bh$$

Perimeter = Add the length of all sides.

$$P = 2a + 2b.$$

Triangle :-
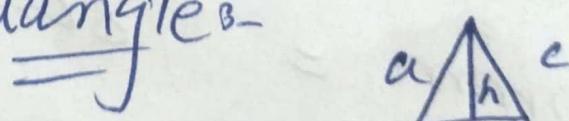
Area = $\frac{1}{2}$ of the base x height

$$= \frac{1}{2} bh.$$

$8 \times 10 = 80 \ sq. ft.$

$P = 2W + 2L$

$P = 2(8) + 2(10)$

$P = 16 + 20$

$P = 36 \ ft.$

Second Solution.

Rectangle for Second Solution

Rectangle for Second Solution

Understand the problem:

Find the length L.

$W \times L = 80 \ sq. ft.$

Find the perimeter P.

② Circle:- ⊗ Area $= \pi r^2$.

Radius: The distance from the center to a point on the circle (h),

Diameter: The distance b/w 2-points on the circle through the center $d = 2r$

Circumference:- the distance around the circle: $\pi d = 2\pi r =$ Perimeter.

Triangles-

Area $= \frac{1}{2}$ of the base x height

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

Perimeter = Add the length of the three sides.

Trapezoid:-
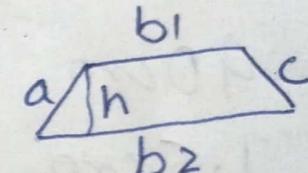
Area $= \frac{1}{2}$ of the base x height.

$A = \left(\frac{b_1 + b_2}{2}\right) h.$

Perimeter:- Add length of all sides

$P = a + b_1 + b_2 + c.$

→ if the radius of a circle is 21cm. Find its area and circumference.

Sol :

radius = 21cm

Area = πr^2

$A = \frac{22}{7} \times (21)^2$

$A = 1386$ sq.cm

Circumference $\Rightarrow C = 2\pi r = 2 \times \frac{22}{7} \times 21$

$= 132cm$.

→ If the length of the side of a square is 11cm. Then find its area & also find the total length of its boundary.

Area $= a^2 = (11)^2 = 121$ sq. cm.

Total length of its boundary,

Perimeter $= 4a = 4 \times 11 = 44$ cm²

→ Find area & perimeter of rectangular
L = 12m , width = 10m.

→ Diagonal of Rectangle $= \sqrt{l^2 + b^2}$.

A number that can be represented in the form of p/q is called a rational number. For example, 1/2, 4/5, 26/8, etc.

Irrational Numbers

A number is called an irrational number if it can't be represented in the form of a ratio.

Example: $\sqrt{3}$, $\sqrt{5}$, $\sqrt{11}$, etc.

Real Numbers

The collection of all rational and irrational numbers is called real numbers. Real numbers are denoted by R.

Every real number is a unique point on the number line, and every point on the line represents a unique real number.

Difference between Terminating and Recurring Decimals

Terminating Decimals	Repeating Decimals
If the decimal expression of a/b terminates. i.e. comes to an end, then the decimal so obtained is called a Terminating decimals.	A decimal in which a digit or a set of digits repeats repeatedly periodically is called a repeating decimal.
Example: ¼ =0.25	Example: ⅔ = 0.666...

Some Special Characteristics of Rational Numbers

- Every Rational number is expressible as a terminating decimal or a repeating decimal.
- Every terminating decimal is a rational number.
- Every repeating decimal is a rational number.

Irrational Numbers

- The non-terminating, non-repeating decimals are irrational numbers.

Example: 0.0100100001001…

- Similarly, if m is a positive number which is not a perfect square, then √m is irrational.

Example: $\sqrt{3}$

- If m is a positive integer which is not a perfect cube, then $\sqrt[3]{m}$ is irrational.

Example: $\sqrt[3]{2}$

Properties of Irrational Numbers

- These satisfy the commutative, associative, and distributive laws for addition and multiplication.
- The sum of two irrationals need not be irrational.

Example: $(2 + \sqrt{3}) + (4 - \sqrt{3}) = 6$

- The difference between two irrationals need not be irrational.

Example: $(5 + \sqrt{2}) - (3 + \sqrt{2}) = 2$

- The product of two irrationals need not be irrational.

Example: $\sqrt{3} \times \sqrt{3} = 3$

- The quotient of two irrationals need not be irrational.

$2\sqrt{3}/\sqrt{3} = 2$

- Sum of rational and irrational is irrational.
- The difference between rational and irrational numbers is irrational.
- The product of rational and irrational is irrational.
- Quotient of rational and irrational is irrational.

Real Numbers

A number whose square is non-negative is called a real number.

- Real numbers follow Closure property, associative law, commutative law, the existence of an additive identity, existence of additive inverse for Addition.
- Real numbers follow Closure property, associative law, commutative law, the existence of a multiplicative identity, the existence of multiplicative inverse, and Distributive laws of multiplication over Addition for Multiplication.

Rationalization