2020/21 Academic Year 1st Quarter Physics Lesson Note One for Grade 8

Unit one

Physics and measurement

LESSON -1

1.1Measuring Area

What is area?

Area is the space bounded by a certain line. Its SI unit is square meter (m^2)

Its non SI units are cm square, mm square, km square etc.

The relationships between SI and non SI units of area:

$1m^2 = 10,000cm^2$

$1m^2 = 1,000,000mm^2$

$1m^2 = 100dm^2$

Calculating area

1. Area of rectangle is given by A=L×W
2. Area of square is given by A =L×L
3. Area of triangle is given by A=1/2(b×h)
4. Area of circle is given by $A = \pi \times r^2 = \prod (radius)^2$

Example 1

1. The length of rectangle is 200cm and its width is 300cm. Calculate its area in m^2.

Solution: $A = L \times W = 2m \times 3m = 6m^2$

2. Find the area of circle whose diameter is 8cm.

Solution: $A = \prod (d/2)^2 = \pi \times r^2 = 16\pi \ cm^2$

3. What is the length of square if its area is 49 cm^2? $A = L^2$

$\sqrt{A} = \sqrt{49cm^2}$ mc7=

Activity

1. A sheet of paper has side 200 c.m by 40 c.m Calculate
   A. area in m^2
   B. area in cm^2
   C. area in mm^2
2. Find the base of triangle whose area is 12 $c.m^2$ and height is 4 c.m.
3. How many $c.m^2$ are there in 24 m^2 .
4. How can you calculate the total surface area of?
   A. Cube
   B. Rectangular block
   C. Cylinder

1 .2 M ea suring Vo lu me

What is Volume?

- Volume is the space occupied by a body.
- The SI unit of Volume is cubic meter.
- It has non SI unit's cm^3, mm^3, dm^3.

NB. $1m^3 = 1{,}000{,}000cm^3$

$1cm^3 = 1000mm^3$

$1m^3 = 1000dm^3$

Volume of regular shaped bodies:

1. The volume of rectangular block is given by length × width × height $V = L \times w \times h$.
2. Volume of cube is given by $V = L \times L \times L = L^3$.
3. Cylinder whose radius 'r' and height 'h' is given by V =area of base times Height= $\pi r^2 h$.

Ex a mple

1. A cubic block has 3m length. Find the volume of the block.

$V = L^3 = (3m)^3$

$= 27m^3$

"ፈጣሪ የምንወዳቸውን ልጆቻችንን፣ ሀዝባችንን እና ሀገራችንን ይጠብቅልን!"

2. What is the length of cube if its volume is 64 cm^3?

$V = {}^3L$

$64cm^3 = L^3$

$L = 3\sqrt{64} = 4cm$

3. What is the height of cylinder if its Volume is $6280cm^3$ and its radius is 10 cm? Use $\pi=3.14$.

So l uti on

$V=\pi r^2h = \pi\times$ (10cm h^2mc001$\pi = h^2$)

$6280cm^3 = \pi 100cm^2h$

$6280cm^3 = 3.14\times 100cm^2h$

$6280cm^3 = 314cm^2\ h$

$h = 6280cm^3 \div 314cm^2\ h = 20cm$

Activity

1. If a rectangular block has sides 400 cm length, 100 cm width and 2m height. What is its volume?

2. What is the length of cube if its volume is $216cm^3$?

3. What is the volume of cylinder whose height is 2m and diameter is 600cm?