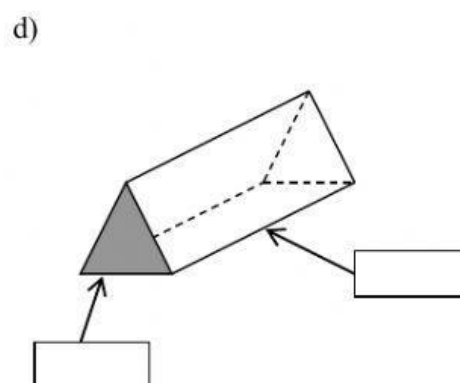**SOLID GEOMETRY III**
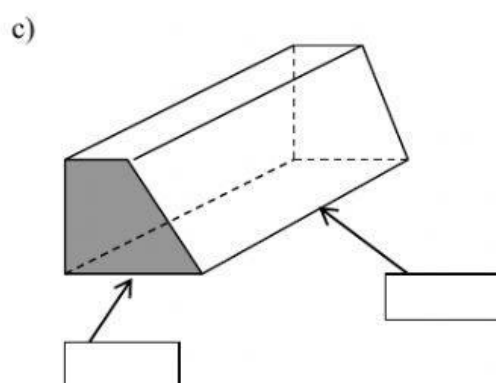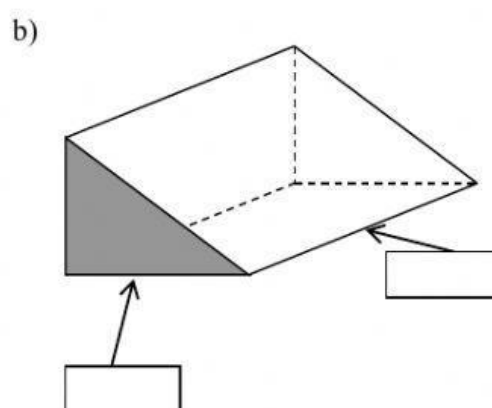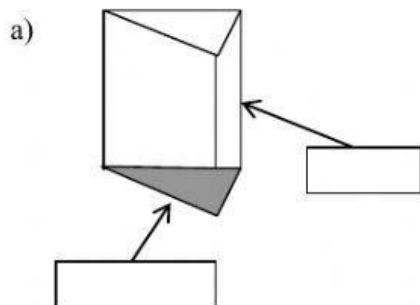
8.1b Volume of right prism

Learning Outcome :

To calculate the volume of right prism in cubic units given the height and
      a) the base area
      b) dimensions of the base

PRACTICE I

Identify the base and the height of the right prisms given below.
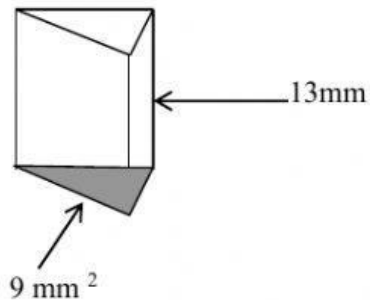
a)

b)

c)

d)

PRACTICE II

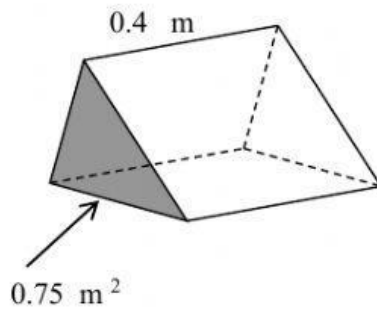Volume of right prism = base area x height

Find the volume of each right prism.

1)

13mm

9 mm ^{2}

Base area =   9 mm ^{2}

Height   =   13 mm

Volume   =   base area x height

=   9 mm ^{2} x   13 mm

=   _____ mm ^{3}

2)

0.4 m

0.75 m ^{2}

Base area =   0.75 m ^{2}

Height   =   0.4 m
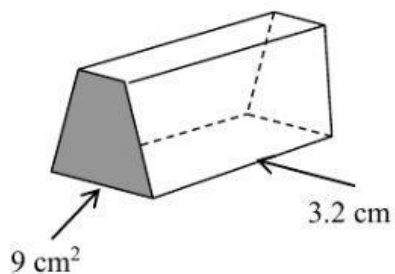
Volume   =   base area x height

=   _____ x 0.4 m

=   _____ m ^{3}

3)

3.2 cm

9 cm^2

Base area =   _____

Height   =   _____

Volume   =   base area x height

=   _____ x _____

=   _____ cm ^{3}

PRACTICE III

Calculate the volume of the right prism given below.

1)

4 cm
5 cm   12 cm

Area of triangle = $\frac{1}{2}$ x base x height
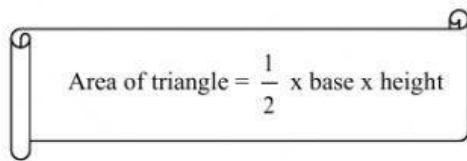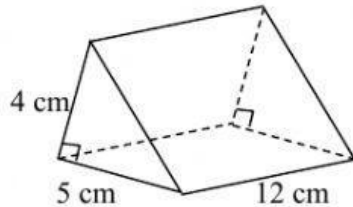
Shape of the base = <u>a triangle</u>

Base area = $\frac{1}{2}$ x _____ x _____

Height = 12 cm

Volume = base area x height

= _____ x 12 cm

= _____ cm^3

2)

40 mm
80 mm
36 mm

Shape of the base = _____

Base area = $\frac{1}{2}$ x _____ x _____

= _____

Height = _____

Volume = base area x height

= _____ x _____

= _____ mm^3

3)

3 m
8 m
5 m
13 m

Area of trapezium
= $\frac{1}{2}$ (a+b)h

Shape of the base = _____

Base area = $\frac{1}{2}$ x (__+__) x ___

= _____

Height = _____

Volume = base area x height

= _____ x _____

= _____

8.1d Volume of right circular cylinder.

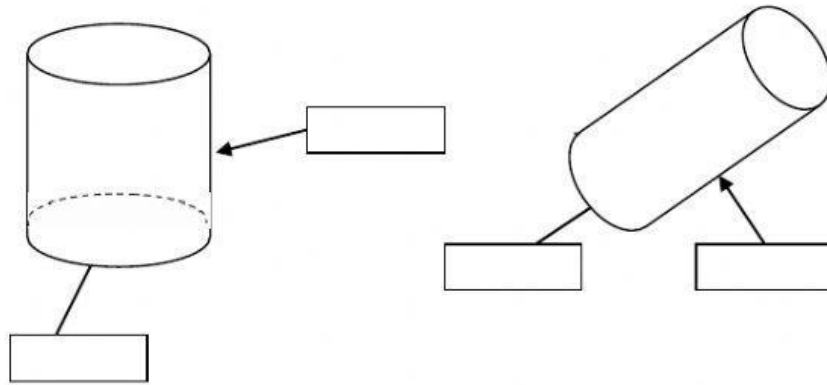Learning Outcome;

To calculate the volume of right prism in cubic units given the height and
      a) the base area
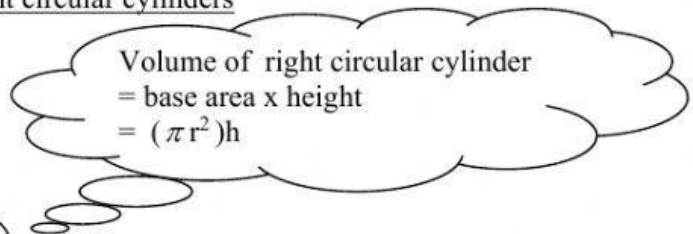   b) dimensions of the base

PRACTICE I

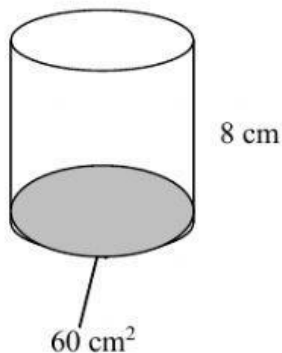Identify the base, and the height of the right circular cylinders given below.

PRACTICE II

Calculate the volume of the following right circular cylinders

> Volume of right circular cylinder
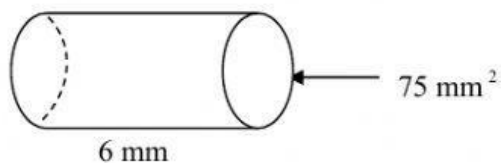> = base area x height
> = $(\pi r^2)h$

1.

    8 cm

    60 cm^2

Base area =   60 cm^2

Height   =   8 cm

Volume   =   base area x height

           = _____ x _____

           = _____ cm^3

2)

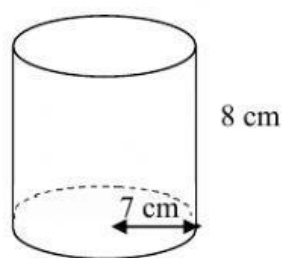Base area = _____

Height   = _____

75 mm^2

6 mm

Volume   =   base area x height

= _____ x _____

= _____ mm^3

PRACTICE III

Calculate the volume of the following right circular cylinders.

1.

8 cm

7 cm

$(\pi = \frac{22}{7})$
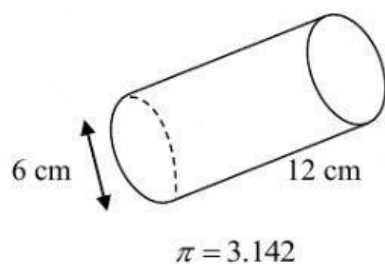
Area of circular base = πr^2

$= \frac{22}{7}$ x 7 x 7

Height   = 8 cm

Volume   =   base area x height

$= \frac{22}{7}$ x 7 x 7 x 8

= _____ cm^3

2.

6 cm   12 cm

$\pi = 3.142$

Base diameter = 6cm, therefore radius =3 cm

Area of circular base = πr^2

$= 3.142 \text{ x } 3 \text{ x } 3$

Height   = 12 cm

Volume   =   base area x height

= _____ x ___x ___ x _____

= _____

3.

4 m

2.8 m

$(\pi = \dfrac{22}{7})$
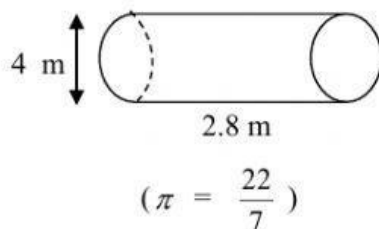
Base diameter = 4 m, therefore radius = ___ m

Area of circular base = πr^2

$= \dfrac{22}{7} \text{ x } \_\_\_ \text{ x } \_\_\_$

Height   = 2.8 m

Volume   =   base area x height

= ___ x ___x ___ x _____

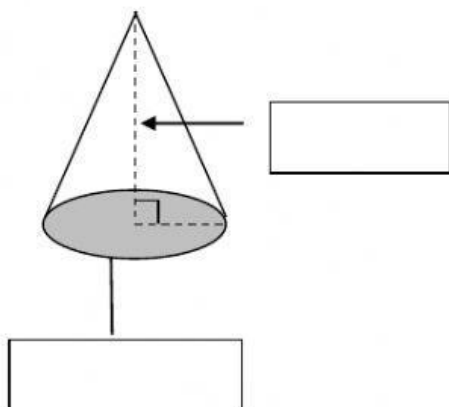= _____

8.2d Volume of right circular cone.

Learning Outcome:

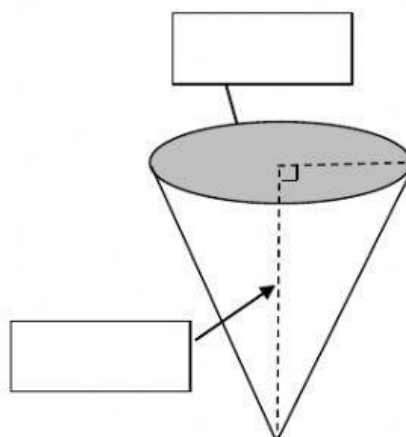To calculate the volume of a cone in mm^3, cm^3 and m^3, given the height and base radius.

ACTIVITY I

Identify the base and the height of the right circular cones below.
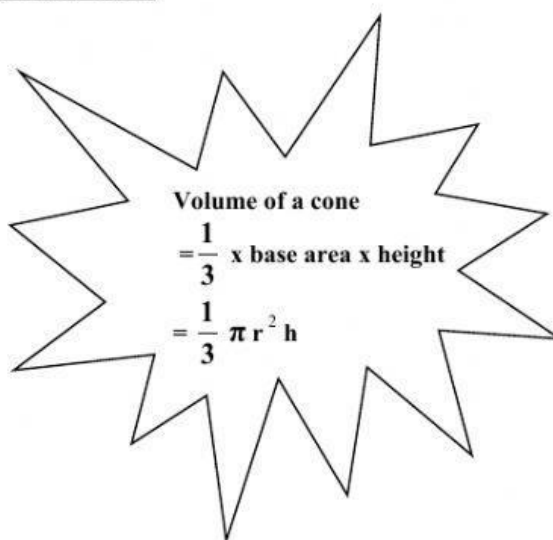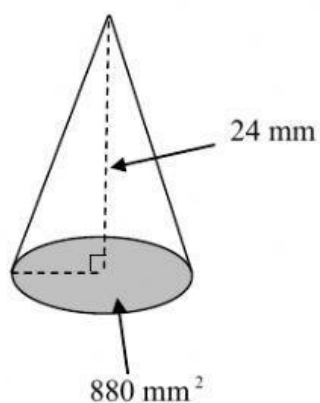
1.

2.

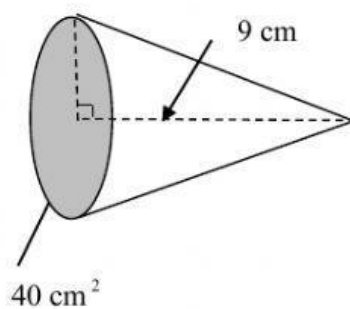PRACTICE II

Find the volume of each right circular cone.

—

Volume of a cone

$= \dfrac{1}{3}$ x base area x height

$= \dfrac{1}{3} \pi r^2 h$

1.

Base area $=880$ mm^2

Height $=24$ mm

Volume of the cone $= \frac{1}{3}$ x base area x height

$\qquad\qquad\qquad\qquad = \frac{1}{3}$ x 880 mm^2 x 24 mm

$\qquad\qquad\qquad\qquad = $ _____ mm^3

2.

Base area $=40$ cm^2

Height $=$ ___ cm

Volume of the cone $= \frac{1}{3}$ x base area x height

$\qquad\qquad\qquad\qquad = \frac{1}{3}$ x ____ x _____

$\qquad\qquad\qquad\qquad = $ _____

PRACTICE III

Find the volume of the following right circular cones.

1.

9 mm
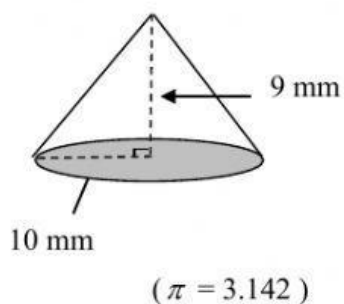
10 mm

$(\pi = 3.142)$

Base radius = 10 mm

Height = 9 mm

Volume of the cone = $\frac{1}{3} \pi r^2 h$

= $\frac{1}{3}$ x 3.142 x 10 x 10 x 9

= _____ mm^3

2.

6 m

14 m

$(\pi = \frac{22}{7})$
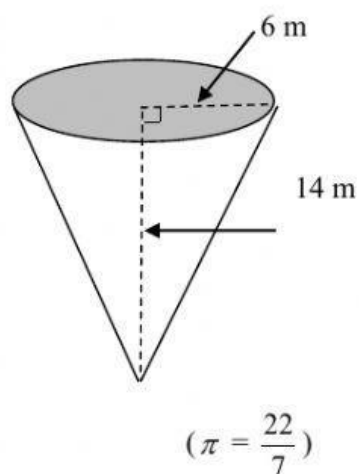
Base radius = ___ m

Height = ___ m

Volume of the cone = $\frac{1}{3} \pi r^2 h$

= $\frac{1}{3}$ x ___ x __ x ___ x ___

= ____