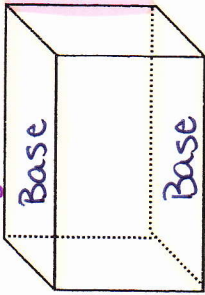


NOTES 12.2/12.4a

LATERAL AREA, SURFACE AREA & VOLUME OF PRISMS

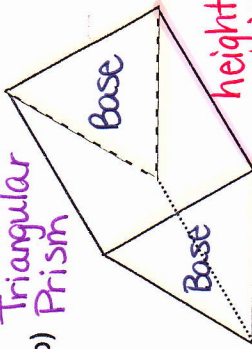
EXAMPLE 1: Label the parts of the prisms below.

a) Rectangular Prism



height of prism

b) Triangular Prism



height of prism

Bases must be //.

FORMULAS:

LATERAL AREA = Ph

SURFACE AREA = LA + 2B

VOLUME = Bh

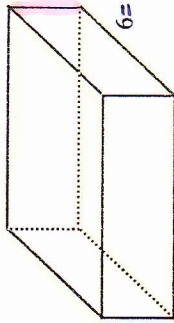
P = perimeter of the base

B = area of the base

h = height of the prism (distance between the 2 bases)

EXAMPLE 2: Name the prism below. Then find its Lateral Area, Surface Area, and Volume.

LA = Ph = 28(2) = 56
SA = LA + 2B = 56 + 2(48) = 152
V = Bh = 48(2) = 96



Base is a rectangle.

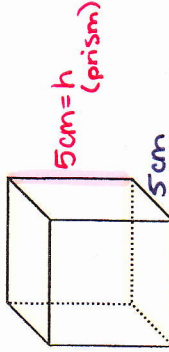
Name: Rectangular Prism

LA = 56
SA = 152
V = 96

P = 8 + 8 + 6 + 6 = 28
B = LW = 8(6) = 48

EXAMPLE 3: Find the Lateral Area, Surface Area, and Volume of the cube below if each edge is 5 cm.

LA = Ph = 20(5) = 100
SA = LA + 2B = 100 + 2(25) = 150
V = Bh = 25(5) = 125



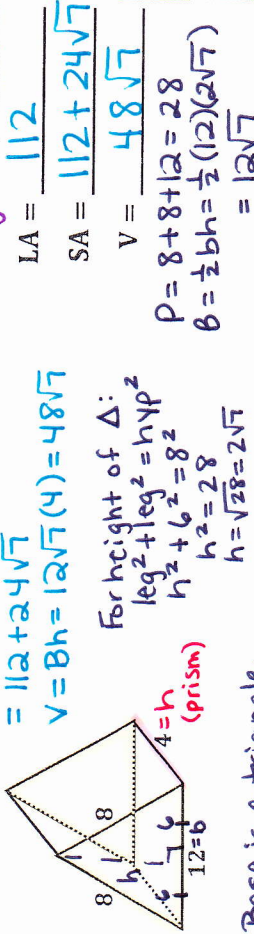
P = 5(4) = 20
B = 5^2 = 25

s = 5cm Base is a square.

EXAMPLE 4: Name the prism below. Then, find its Lateral Area, Surface Area, and Volume.

LA = Ph = 28(4) = 112
SA = LA + 2B = 112 + 2(12) = 148
V = Bh = 12(4) = 48

Name: Triangular Prism

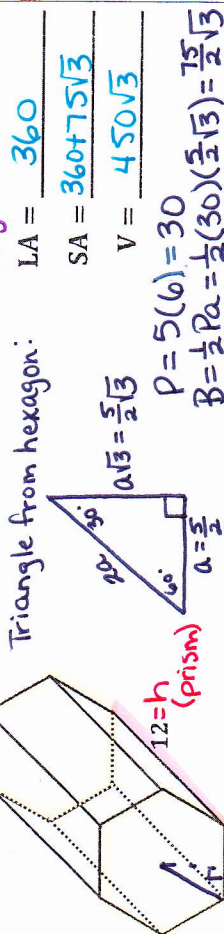


Base is a triangle.

EXAMPLE 5: Name the regular prism below. Then, find its Lateral Area, Surface Area, and Volume.

LA = Ph = 30(12) = 360
SA = LA + 2B = 360 + 2(15^2) = 660
V = Bh = 15(12) = 180

Name: Hexagonal Prism



Triangle from hexagon:

LA = 360
SA = 360 + 75(2) = 510
V = 450(3) = 1350

P = 5(6) = 30
B = 1/2 Pa = 1/2(30)(5/2) = 75/2

Base is a hexagon.

EXAMPLE 6: Name the prism below. Then, find its Lateral Area, Surface Area, and Volume.

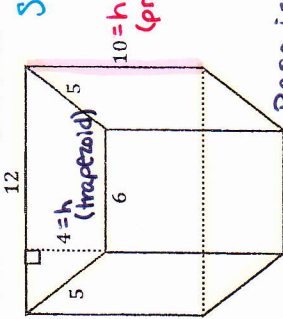
$LA = Ph = 28(10) = 280$

$SA = LA + 2B$
 $= 280 + 2(36)$
 $= 352$

$V = Bh$
 $= 36(10)$
 $= 360$

Name: Trapezoidal Prism

$LA = 280$
 $SA = 352$
 $V = 360$



Base is a trapezoid.

EXAMPLE 7: The Volume of the rectangular prism is 24 cm^3 .

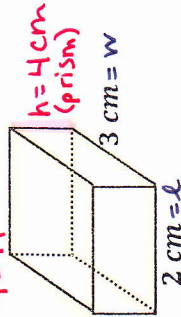
Find its height, Lateral Area, and Surface Area.

$V = Bh$
 $24 = 6h$
 $4 = h$

$LA = Ph = 10(4) = 40$

$SA = LA + 2B$
 $= 40 + 2(6)$
 $= 52$

$h = 4 \text{ cm}$
 $LA = 40 \text{ cm}^2$
 $SA = 52 \text{ cm}^2$



$P = 2 + 2 + 3 + 3 = 10$
 $B = lw = 2(3) = 6$

EXAMPLE 8: The base of a triangular prism is an isosceles right triangle with legs of 3 cm. The height of the prism is 10 cm. Find its Lateral Area, Surface Area, and Volume.

$h = 10$
 $LA = Ph = (6 + 3\sqrt{2})(10)$
 $= 60 + 30\sqrt{2}$

$SA = LA + 2B$
 $= 60 + 30\sqrt{2} + 2(\frac{9}{2})$
 $= 60 + 30\sqrt{2} + 9$

$V = Bh = \frac{9}{2}(10) = 45$
 $P = 3 + 3 + 3\sqrt{2} = 6 + 3\sqrt{2}$
 $B = \frac{1}{2}bh = \frac{1}{2}(3)(3) = \frac{9}{2}$

