Name:_____ Date:_____ Period:_____

Lesson 12-1 (pgs. 664-669)

3 Dimensional Figures

Plane:

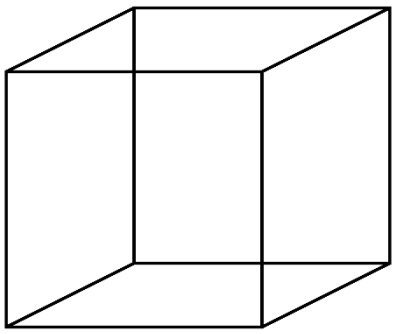
Solid:

Polyhedron:

Vertex:

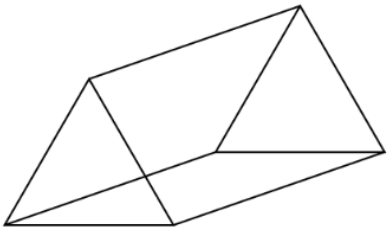
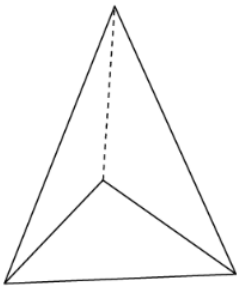
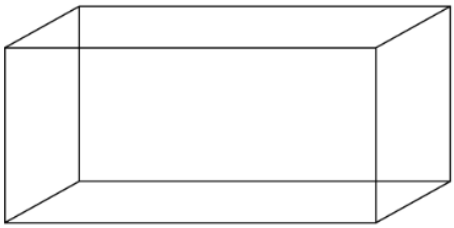
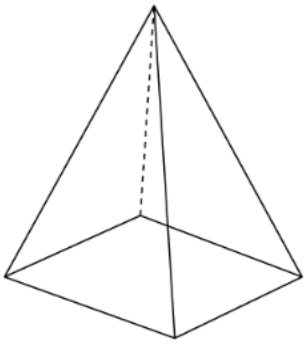
Edge:

Face:



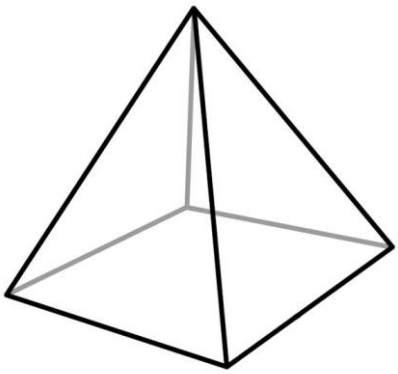
Prism:

Pyramid:

Prism	Pyramid
	
	

Identify the figure. Name the faces, bases, edges and vertices.

Ex)



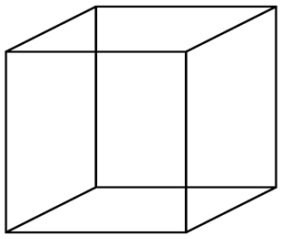
Lesson 12-2 (pgs. 671-676)

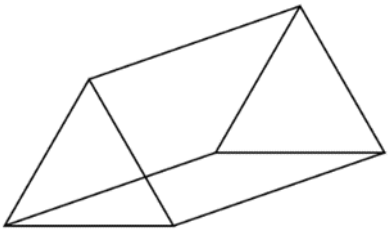
Volume of Prisms

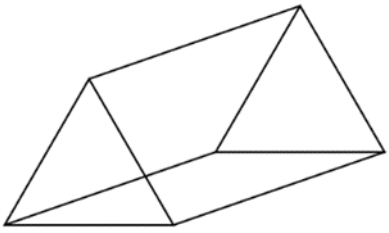
Volume:

Formula for Area of a Prism

Find the volume.

Ex) 

Ex) 

Ex) 

Lesson 12-2 (pgs. 671-676)

Volume of a Composite Figure

Find the volume of the figure.

Ex)

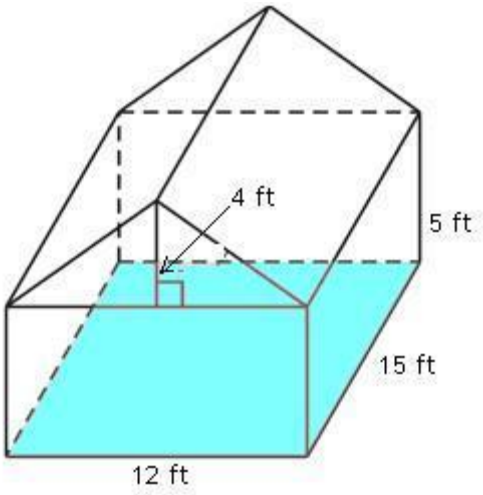
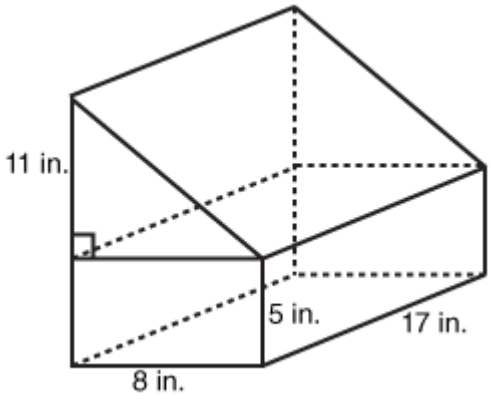
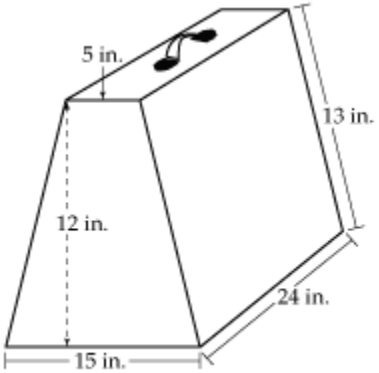


Fig: 5

Ex)



Ex)



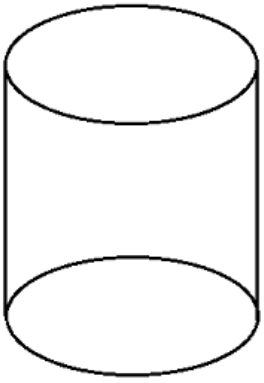
Lesson 12-3 (pgs. 677-681)

Volume of Cylinders

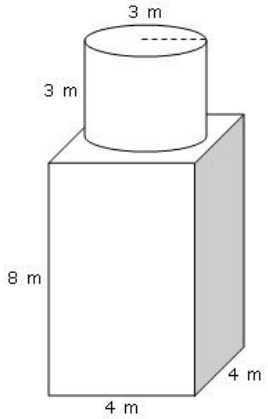
Formula for Volume of Cylinders

Find the volume. Round to the nearest tenth

Ex)



Ex)



Lesson 12-4 (pgs. 683-685)

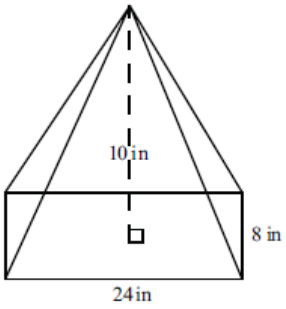
Volume of Pyramids, Cones and Spheres

Formula for Volume

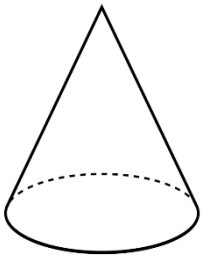
Pyramids	Spheres	Cones

Find the Volume.

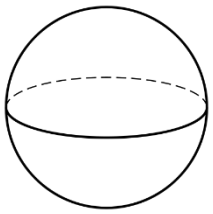
Ex)



Ex)



Ex)

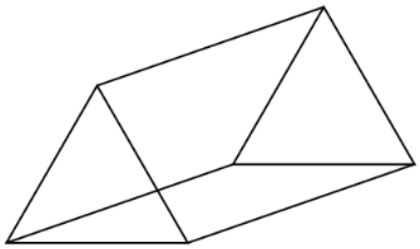


Lesson 12-5 (pgs. 691-695)

Surface Area of Prisms

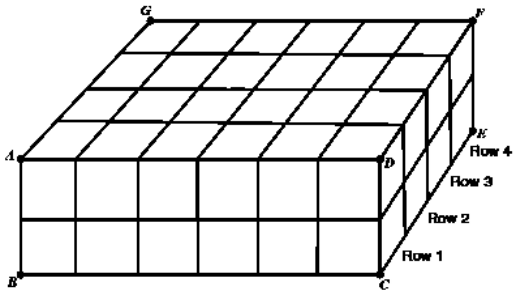
Lateral Area:

Formula for Lateral Area



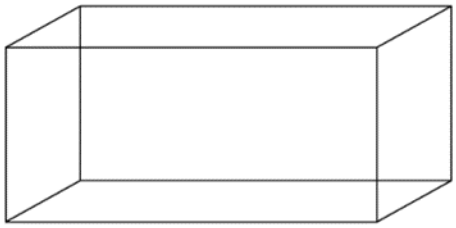
Surface Area:

Formula for Surface Area

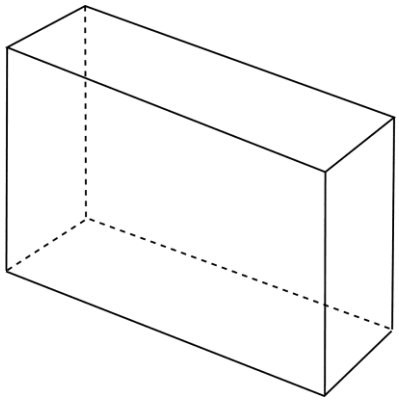


Find the lateral area and the surface area.

Ex)



Ex)

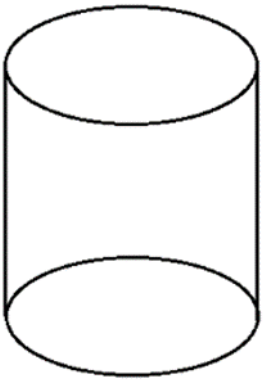


Lesson 12-6 (pgs. 691-701)

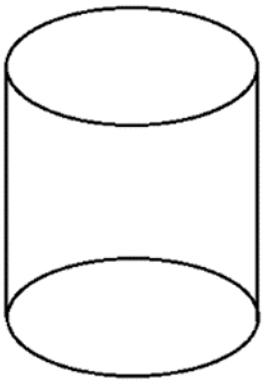
Surface Area of Cylinders

Find the surface area. Round to the nearest tenth. Use pi= 3.14

Ex)



Ex)



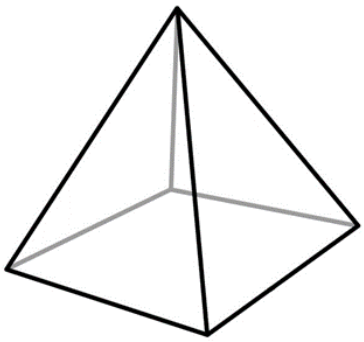
Lesson 12-7 (pgs. 702-706)

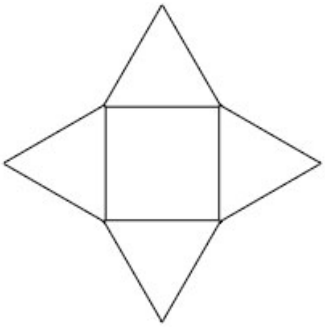
Surface Area of Pyramids

Regular Pyramid:

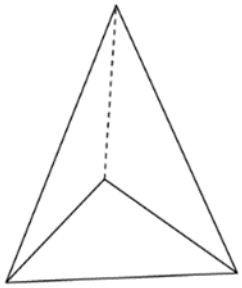
Slant Height:

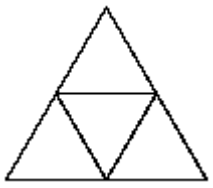
Ex)





Ex)





Find the Surface area and slant height.

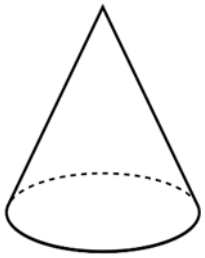
Ex) Square pyramid

Ex) Triangular pyramid

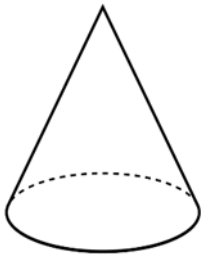
Lesson 12-7 (pgs. 702-707)

Surface Area of Cones

Ex)



Ex)



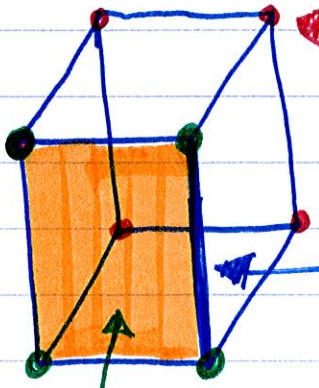
Lesson 12-1

4/25/12 3-Dimensional Figures (p664-669)

Plane: a flat surface that never-ends

Solid: 3-D figure formed by intersecting planes

Polyhedron: a solid with flat surfaces that are polygons



Vertex: where 3 or more planes intersect

Edge: where 2 planes intersect

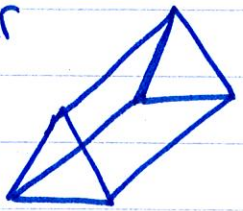
Face: flat surface

Prism: a polyhedron with
* 2 parallel & congruent faces ← known as bases
* and rectangular sides

Pyramid: a polyhedron with
* only 1 base
* and triangular sides

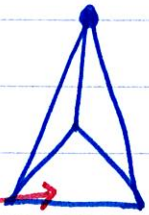
Prism vs. Pyramid

Triangular Prism



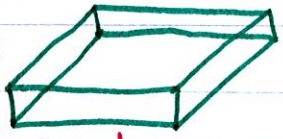
2 triangle bases

Triangular Pyramid



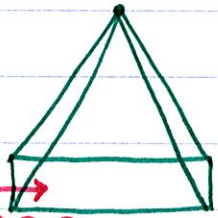
1 triangle base

Rectangular Prism



2 rectangle bases

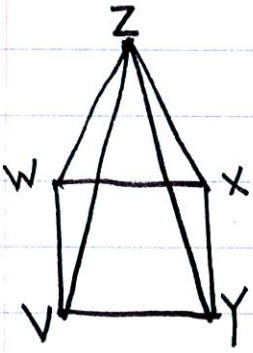
Rectangular Pyramid



1 rectangle base

Identify the figure.

ex: Name the faces, bases, edges, & vertices



- Rectangular Pyramid
- Base: WXVY
- Faces: ZXY, VYZ, VWZ, WXZ
  VWXY ... Don't forget the base
- Edges: $\overline{XY}$, $\overline{ZX}$, $\overline{ZW}$, $\overline{ZY}$, $\overline{ZV}$, $\overline{YV}$, $\overline{VW}$, $\overline{WX}$
- Vertices: X, Y, V, W, Z

Lesson 12-2

4/6/11 Volume of Prisms (p671-676)

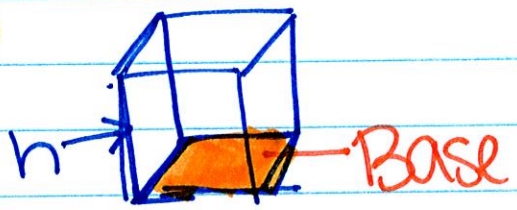
Volume: measure of space occupied by a 3-dimensional figure.

*measured in cubic units.

ex: in^3, ft^3, yd^3, cm^3, mi^3

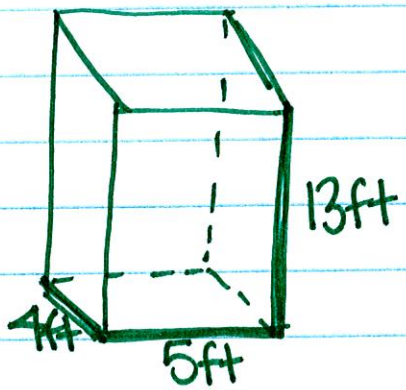
The volume of a prism is the area of the base, B, times the height, h

$$V = Bh$$



---

ex:) Find the volume of the figure.



$V = Bh$
$V = l w h$
$V = 4 \times 5 \times 13$
$V = 260\ ft^3$

ex) Find the height of a triangular prism with a base length of 10 yd a base height of 20 yd & a volume of 600 yd^3.

$V = Bh$

$V = (\frac{1}{2}bh)h$

$600 = \frac{1}{2} \times 10 \times 20h$

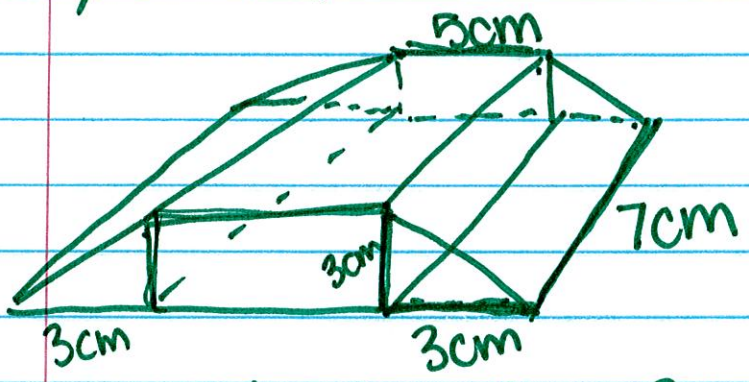
$600 = 100h$

$6 yd = h$

Lesson 12-2

4/7/11 Volume of a Composite Figure (p671-676)

ex) Find the volume of the figure.



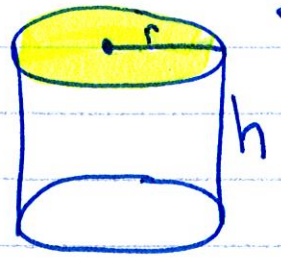
$V = Bh + Bh + Bh$ $\quad V = Bh + 2Bh$

$V = \left(\frac{1}{2}bh\right)h + lwh + \left(\frac{1}{2}bh\right)h$

$V = \left(\frac{1}{2}\times 3\times 3\right)7 + 3\times 5\times 7 + \left(\frac{1}{2}\times 3\times 3\right)7$

Lesson 12-3

5/2/12 Volume of Cylinders (p677-681)



← The bases are circles ☺

$V = Bh$

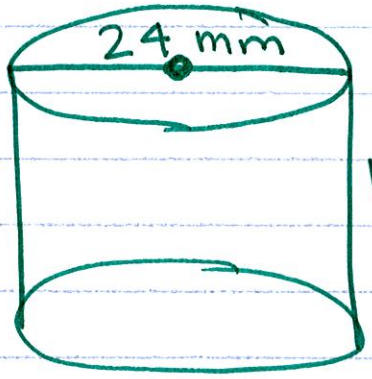
$V = \pi r^2 h$

---

* Round to the nearest tenth.

ex)

$\pi = 3.14$



$V = Bh$

$V = \pi r^2 h$

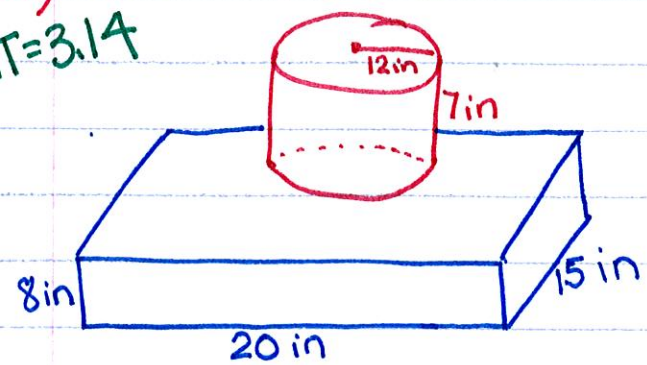
$V = 3.14 \times 12^2 \times 15$

$V = 6,782.4 \text{ mm}^3$

---

ex) * Round to the nearest tenth.

$\pi = 3.14$



$V = Bh + Bh$

$V = lwh + \pi r^2 h$

$V = 20 \cdot 15 \cdot 8 + 3.14 \times 12^2 \cdot 7$

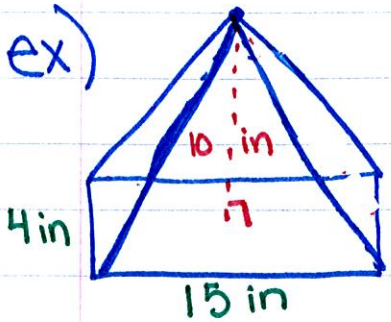
$V = 2,400 + 3,165.12$

$V = 5,565.1 \text{ in}^3$

Lesson 12-4

5/3/12 Volume of Pyramids, Cones, & Spheres (p683-68

ex)



$$V = \frac{1}{3}Bh$$

Rectangular or Triangular Pyramid

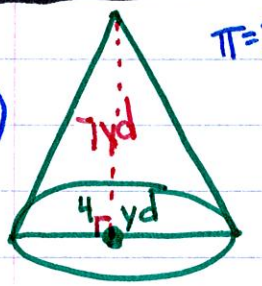
$$V = \frac{1}{3}(\ell w)h$$

$$V = \frac{1}{3}(15 \times 4)10$$

$$V = 200.0 \text{ in}^3$$

---

ex)



$\pi = 3.14$

$$V = \frac{1}{3}Bh$$

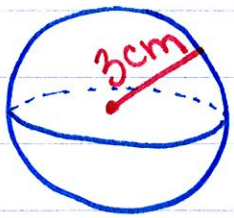
$$V = \frac{1}{3}(\pi r^2)h$$

$$V = \frac{1}{3}(3.14 \times 2^2)7$$

$$V = 29.3 \text{ yd}^3$$

---

ex)



$$V = \frac{4}{3}\pi r^3$$

Note the cubed!

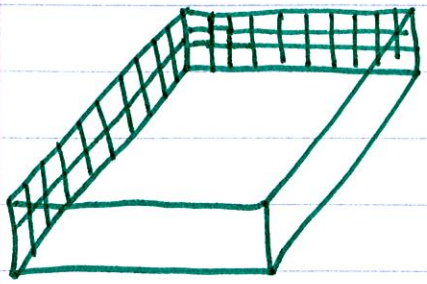
$$V = \frac{4}{3} \times 3.14 \times 3^3$$

$$V = 113.0 \text{ cm}^3$$

Lesson 12-5

5/8/12 Surface Area of Prisms (p691-695)

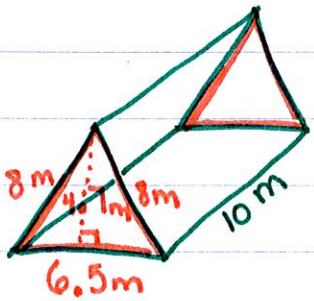
Surface Area: the number of square units needed to cover the surface of a 3D figure



$$SA = L + 2B$$

Surface area (SA) of a prism is the lateral area (L) plus the sum of the area of both bases

Lateral Area: the sum (in square units) of the lateral faces



← The lateral area in this triangular prism is the three rectangles.

- $L = Ph$

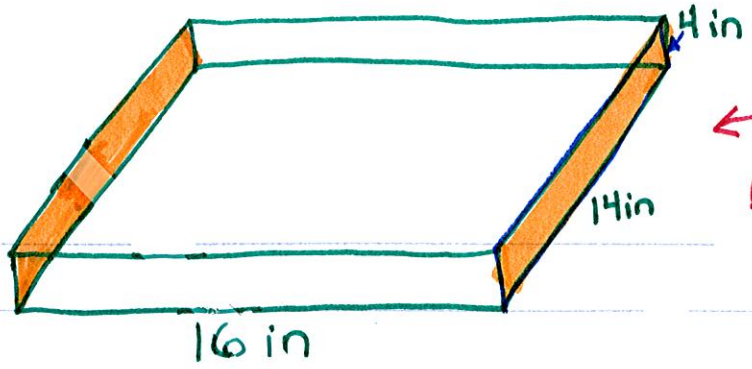
Lateral area (L) of a prism is the perimeter (P) of the base times the height (h) between the two bases.

8+8+6.5

- $L = 22.5 \times 10$
- $L = 225\ m^2$

- $SA = L + 2(\frac{1}{2}bh)$
- $SA = 225 + 2(\frac{1}{2} \times 6.5 \times 4.7)$
- $SA = 255.55\ m^2$

ex)



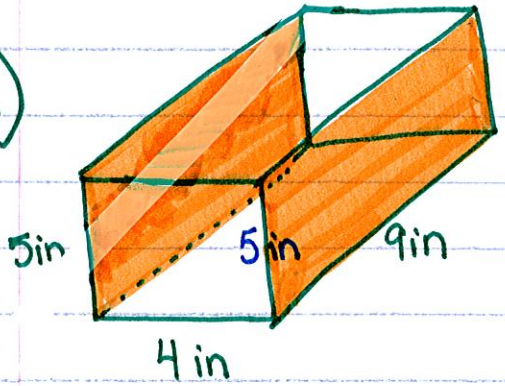
I picked this for a base ☺

$L = Ph$
$L = 36 \times 16$
$L = 576\ in^2$

$SA = L + 2(lw)$
$SA = 576 + 2(14 \times 4)$
$SA = 688\ in^2$

---

ex)



$L = Ph$
$L = 28 \times 4$
$L = 112\ in^2$

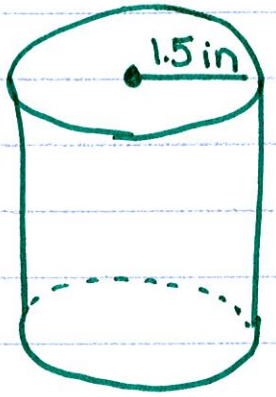
$SA = L + 2(lw)$
$SA = 112 + 2(9 \times 5)$
$SA = 202\ in^2$

Lesson 12-6

5/9/12 Surface Area of Cylinders (p691-701)

ex) $\pi = 3.14$

* Round to the nearest tenth.



This is still Circumference (which is $C = 2\pi r$) times the height.

$$L = 2\pi r h$$

$$L = 2 \times 3.14 \times 1.5 \times 6.5$$

$$L = 61.2 \text{ in}^2$$

$$SA = L + 2\pi r^2$$

$$SA = 61.2 + 2 \times 3.14 \times 1.5^2$$

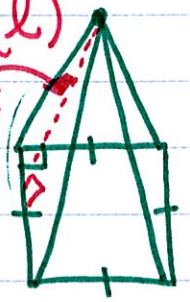
$$SA = 75.3 \text{ in}^2$$

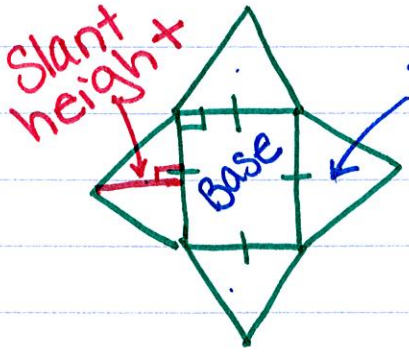
Lesson 12-7

5/10/12 Surface Area of Pyramids (p702-706)

Regular Pyramid: a pyramid that has a regular polygon as its base

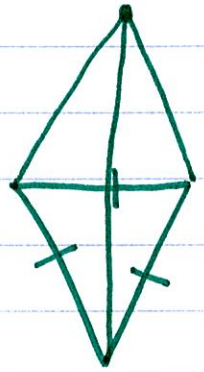
ex)

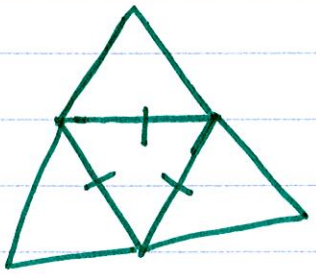




The triangles are the lateral faces

ex)





Slant Height: height of the lateral side

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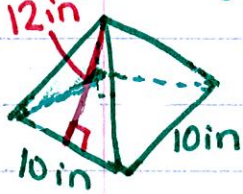
ex) *Square Pyramid



$L = \frac{1}{2}P\ell$

$L = \frac{1}{2}(40)12$

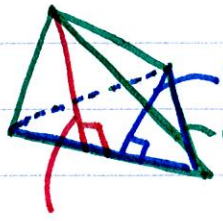
$L = 240.0\ in^2$

$SA = L + \ell w$

$SA = 240 + 10 \cdot 10$

$SA = 340.0\ in^2$

ex) *Triangular Pyramid



$L = \frac{1}{2}P\ell$

$L = \frac{1}{2}(27)7.8$

$L = 105.3\ mm^2$

$SA = L + \frac{1}{2}bh$

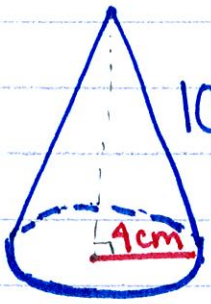
$SA = 105.3 + \frac{1}{2}(9)7.8$

$SA = 140.4\ mm^2$

Lesson 12-7

5/11/12 Surface Area of Cones (p702-707)

ex)



$L = \pi r \ell$

$L = 3.14 \times 4 \times 10$

$L = 125.6 \text{ cm}^2$

$SA = L + \pi r^2$

$SA = 125.6 + 314 \times 4^2$

$SA = 175.8 \text{ cm}^2$