

## Unit #9: Surface Area and Volume

Resources: Big Ideas Chapter 8

Common Core Standards: 6.G.2; 6.G.4

Common Core

Number	<b>Learning Targets</b>	Common Core Standard	Resources
1	I can identify three-dimensional shapes and find the number of faces, edges, and vertices are on the shape.	6.G.4 (Background)	8.1
2	I can find the surface area of a prism from a net.	6.G.4	8.2 (Extra)
3	I can find the surface area of a pyramid from a net.	6.G.4	8.3 (Extra)
4	I can find the volume of prisms and unknown dimensions of a prism using the volume.	6.G.2	8.4

### My Practice:

Number	Pre-test:	Exit slip scores	Day #2 Homework	Extra Targeted Practice	Post-test:
1	_____/4				_____/8
2	_____/2				_____/10
3	_____/2				_____/8
4	_____/6				_____/9

My Final Pretest Score: \_\_\_\_\_ /14

My Final Pretest Percent \_\_\_\_\_ %

My Final Posttest Score: \_\_\_\_\_ /37

My Final Posttest Percent: \_\_\_\_\_ %

Between the Pre and Post test scores, I increased by \_\_\_\_\_ % !!

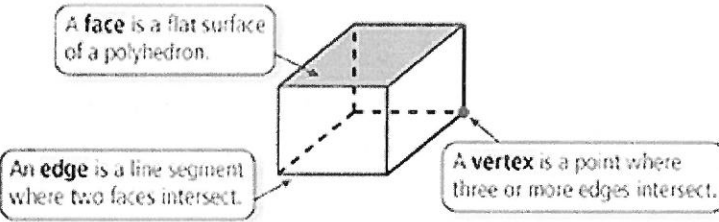
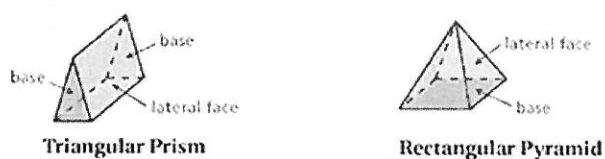
## Section 8.1: Three-Dimensional Figures

**Objective:** Students will be able to identify three-dimensional shapes and find the number of faces, edges and vertices that are in the shape.

**Essential Question:** How can you draw three-dimensional figures?

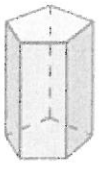
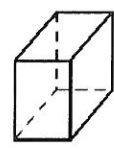
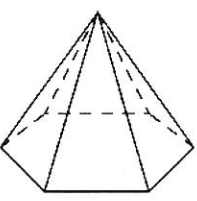
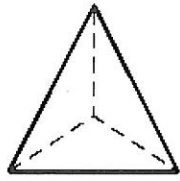
**Vocabulary:**

- 1.) Space Figure - a three-dimensional figure or solid
- 2.) Prism - a space figure with two polygon bases and lateral faces that are parallelograms
- 3.) Pyramid - a space figure with one polygon base and triangular faces that meet at a vertex

 <p>A <b>face</b> is a flat surface of a polyhedron.</p> <p>An <b>edge</b> is a line segment where two faces intersect.</p> <p>A <b>vertex</b> is a point where three or more edges intersect.</p>	 <p style="text-align: center;">The shape of the base tells the name of the prism or the pyramid.</p>
---	---

**Examples:**

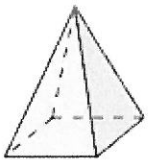
Describe the base, name the figure, number of vertices, faces, and edges.

<p>1.)</p>  <p style="margin-left: 100px;">Base =</p> <p style="margin-left: 100px;">Figure =</p> <p>Vertices:      Faces:      Edges:</p>	<p>2.)</p>  <p style="margin-left: 100px;">Base =</p> <p style="margin-left: 100px;">Figure =</p> <p>Vertices:      Faces:      Edges:</p>
<p>3.)</p>  <p style="margin-left: 100px;">Base =</p> <p style="margin-left: 100px;">Figure =</p> <p>Vertices:      Faces:      Edges:</p>	<p>4.)</p>  <p style="margin-left: 100px;">Base =</p> <p style="margin-left: 100px;">Figure =</p> <p>Vertices:      Faces:      Edges:</p>

5.) Draw a rectangular prism.

6.) Draw a triangular pyramid.

7.) Draw the front, side, and top views of the solid.



# 8.1 Three-Dimensional Figures Homework Day 1

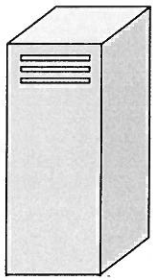
Draw the solid.

1. Square pyramid

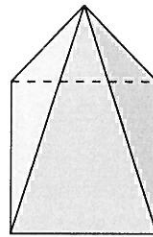
2. Right triangular prism

Draw the front, side, and top views of the solid.

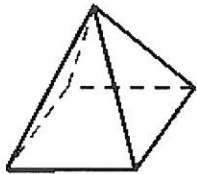
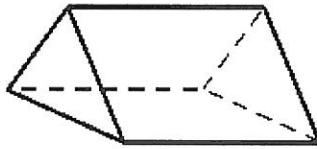
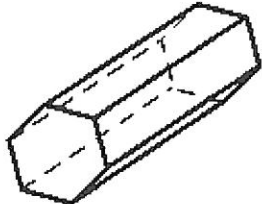
3.



4.



Describe the base, name the figure, number of vertices, faces, and edges.

<p>5.)</p>  <p>Base =</p> <p>Shape =</p> <p>Vertices =      Faces =</p> <p>Edges =</p>	<p>6.)</p>  <p>Base =</p> <p>Shape =</p> <p>Vertices =      Faces =</p> <p>Edges =</p>	<p>7.)</p>  <p>Base =</p> <p>Shape =</p> <p>Vertices =      Faces =</p> <p>Edges =</p>
---	--	---

# 8.1

## Three Dimensional Shapes Homework Day 2

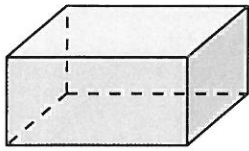
Draw the solid.

1. Pentagonal pyramid

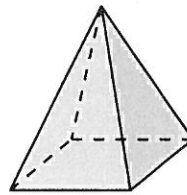
2. Square prism

Draw the front, side, and top views of the solid.

3.



4.

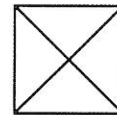
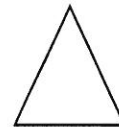


5. Draw a solid with the following front, side, and top views.

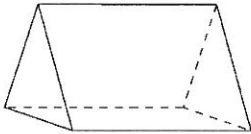
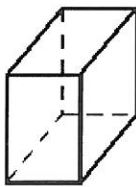
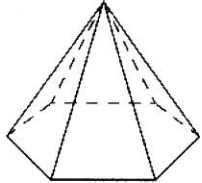
Front

Side

Top



Describe the base, name the figure, number of vertices, faces, and edges.

<p>6.) Base = </p> <p>Shape =</p> <p>Vertices =      Faces =</p> <p>Edges =</p>	<p>7.) Base = </p> <p>Shape =</p> <p>Vertices =      Faces =</p> <p>Edges =</p>	<p>8.) Base = </p> <p>Shape =</p> <p>Vertices =      Faces =</p> <p>Edges =</p>
--	--	--

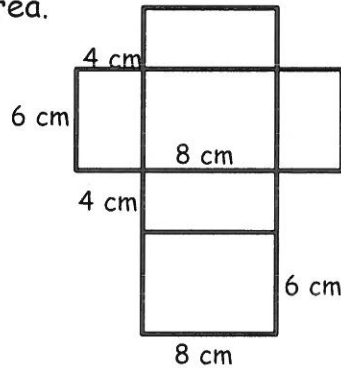
## Section 8.2: Surface Area of Prisms

**Objective:** Students will be able to find the surface area of a prism from a net.

**Essential Question:** How can you find the area of the entire surface of a prism?

1.) Find the surface area.

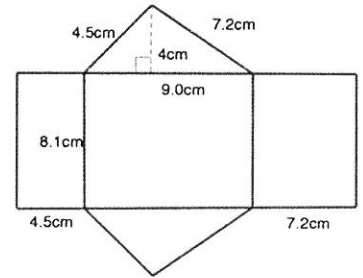
Figure:



Surface Area:

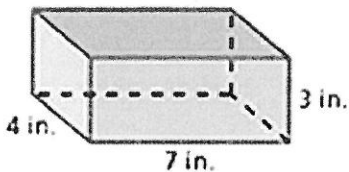
2.) Find the surface area.

Figure:

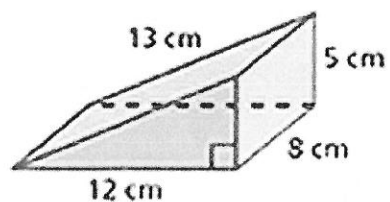


Surface Area:

3.) Make a net of the rectangular prism. Then find the surface area.



4.) Make a net of the triangular prism. Then find the surface area.

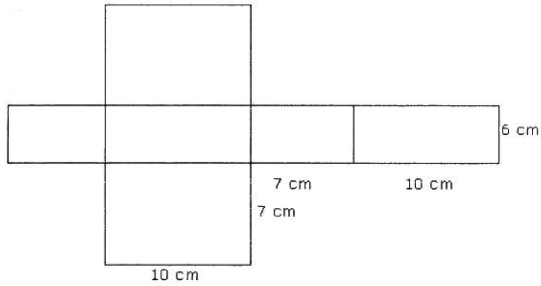


5.) A rectangular prism that is 3 cm long, 2 cm wide, and has a height of 6 cm. Draw a net for the rectangular prism, then find the surface area.

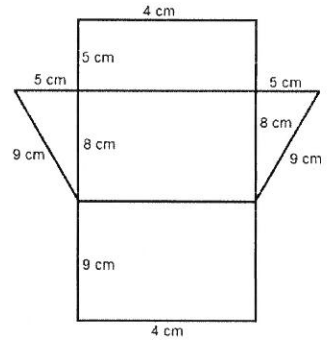
MUST SHOW All math work  
for credit

8.2 Surface Area of Prisms Homework Day #1

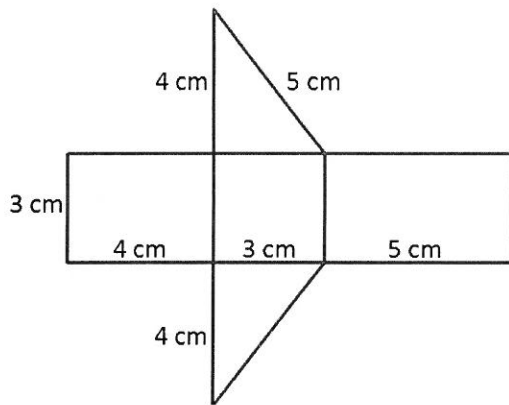
1.)



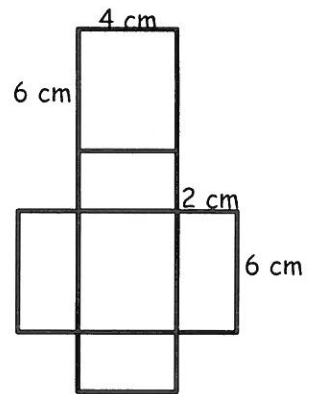
2.)



3.)



4.)

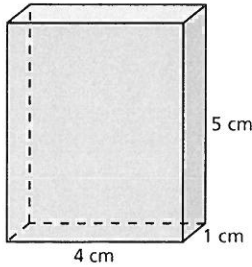




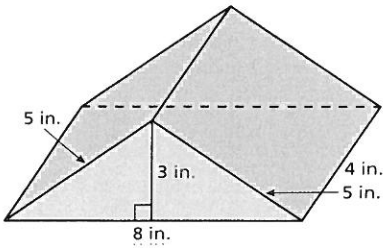
MUST show all  
work for credit

8.2 Surface Area of Prisms Homework Day #2

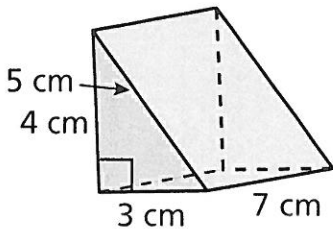
1.) Draw a net for the rectangular prism. Then find the surface area.



2.) Draw a net for the triangular prism. Then find the surface area.



3.) Draw a net for the triangular prism. Then find the surface area.



4.) A rectangular prism that is 5 cm long, 2 cm wide, and has a height of 6 cm. Draw a net for the rectangular prism, then find the surface area.

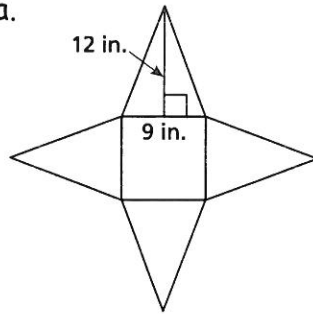
### Section 8.3: Surface Areas of Pyramids

**Objective:** Students will be able to find the surface area of a pyramid from a net.

**Essential Question:** How can you use a net to find the surface area of a pyramid?

1.) Find the surface area.

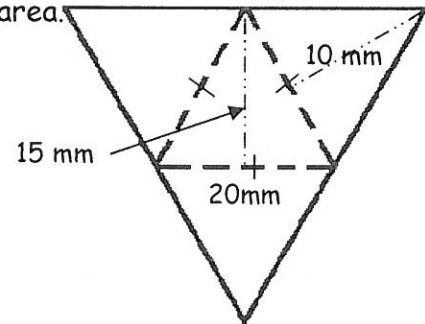
Figure:



Surface Area:

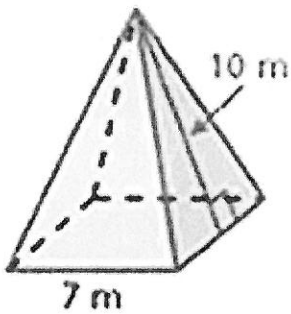
2.) Find the surface area.

Figure:

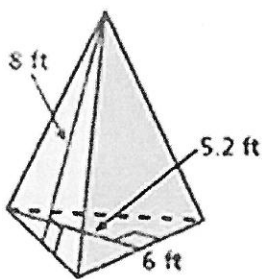


Surface Area:

3.) Draw a net for the square pyramid. Then find the surface area.



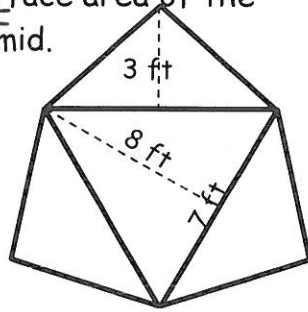
4.) Draw a net for the triangular pyramid. Then find the surface area.



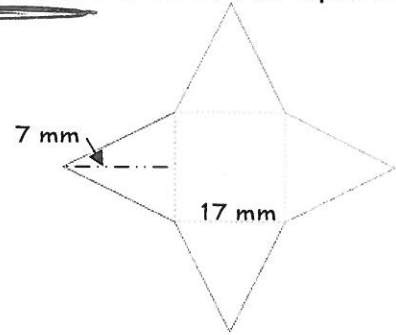
# MUST SHOW ALL WORK FOR CREDIT

## 8.3 Surface Area of Pyramids Homework Day 1

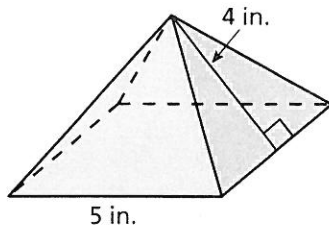
1.) Find the surface area of the triangular pyramid.



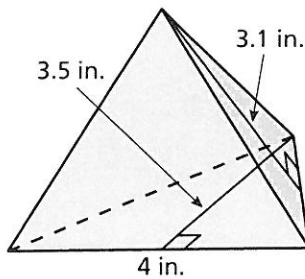
2.) Find the surface area of the square pyramid.



3.) Draw a net for the square pyramid. Then find the surface area.



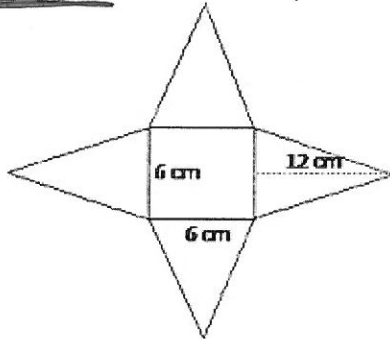
4.) Draw a net for the triangular pyramid. Then find the surface area.



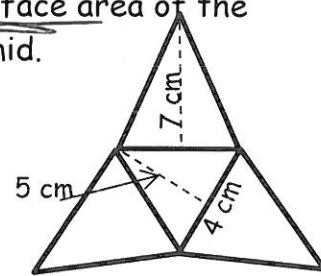
must show all work for credit

8.3 Surface Area of Pyramids Homework Day 2

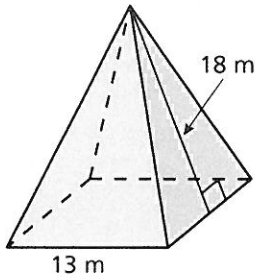
1.) Find the surface area of the square pyramid.



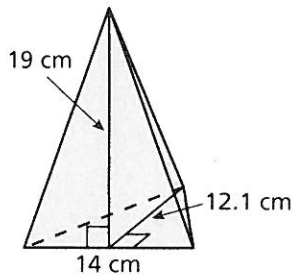
2.) Find the surface area of the triangular pyramid.



3.) Draw a net for the square pyramid. Then find the surface area.



4.) Draw a net for the triangular pyramid. Then find the surface area.



## Section 8.4: Volumes of Rectangular Prisms

**Objective:** Students will be able to find the volume of prisms and unknown dimensions of a prism using the volume.

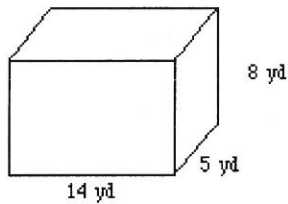
**Essential Question:** How can you find the volume of a rectangular prism with fractional edge lengths?

**Volume Formulas:**

$$V = Bh \text{ where "B" is the area of the base and "h" is the height}$$

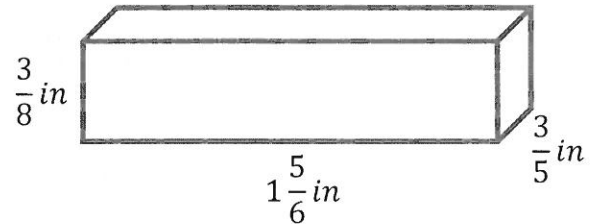
Find the volume of each figure.

1.)



Volume:

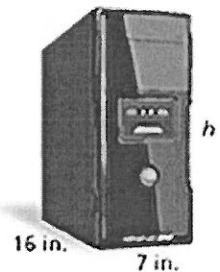
2.)



Volume:

3.) If the volume of a rectangular prism is  $336 \text{ in}^3$ , the base is  $12 \text{ in}$ , and the width is  $7 \text{ in}$ , what is the height?

4.) Write and solve an equation to find the height of the computer tower.



Volume =  $1792 \text{ in}^3$

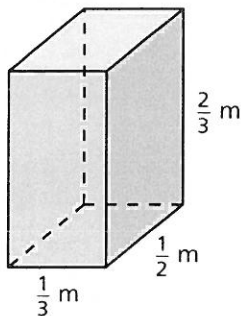
**8.4**

**Volumes of Rectangular Prisms Homework Day 1**

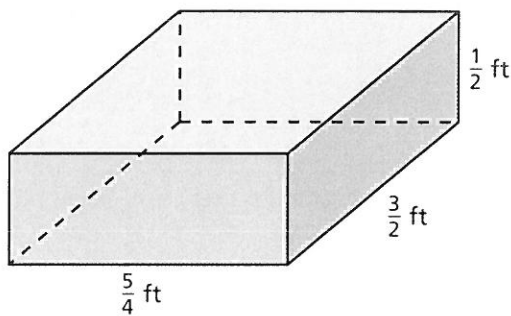
*must show all work for credit*

Find the volume of the prism.

1.



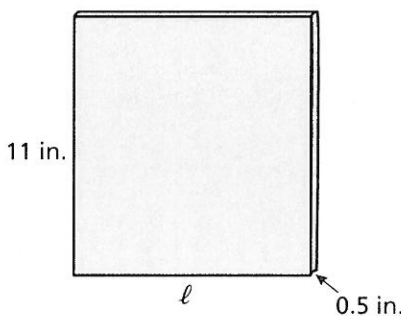
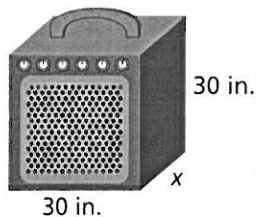
2.



**Write and solve an equation to find the missing dimension of the prism.**

3. Volume =  $18,000 \text{ in.}^3$

4. Volume =  $55 \text{ in.}^3$



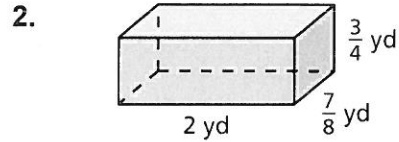
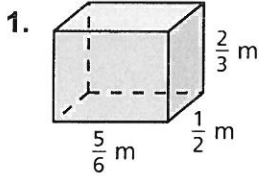
5. You are mailing a birthday present to a friend. You have a box that has a length of  $2\frac{1}{2}$  feet, a height of 2 feet, and a width of  $1\frac{1}{2}$  feet. The present has a volume of 3 cubic feet. What is the volume of the empty space in the box?

**8.4**

**Volumes of Rectangular Prisms Homework Day 2**

*must show all work for credit!*

Find the volume of the prism.

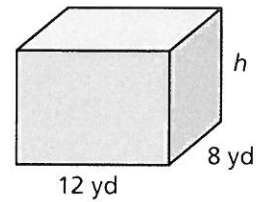
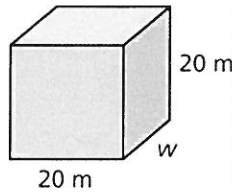
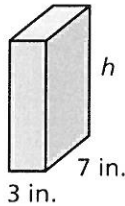


Write and solve an equation to find the missing dimension of the prism.

3. Volume =  $231 \text{ in.}^3$

4. Volume =  $6400 \text{ m}^3$

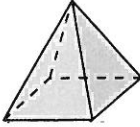
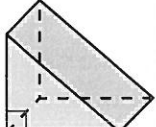
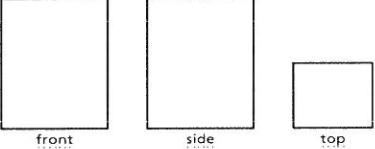
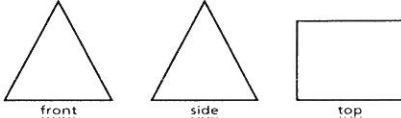
5. Volume =  $864 \text{ yd}^3$



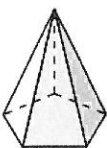
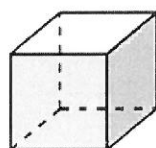
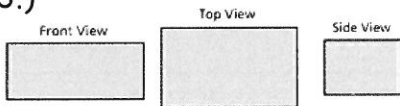
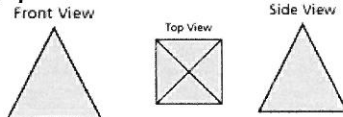
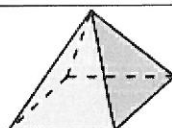
6. An office cubicle measures seven feet by eight feet with a five-foot wall. What is the volume of the cubicle?

## Chapter 8 Answer Key:

### 8.1 Day 1 Homework Answer Key:

1.) 	2.) 	3.) 	4.) 
5.) B: Square S: Square Pyramid V: 5 F: 5 E: 8		6.) B: Triangle S: Triangular Prism V: 6 F: 5 E: 9	
7.) B: Hexagon S: Hexagonal Prism V: 12 F: 8 E: 18			

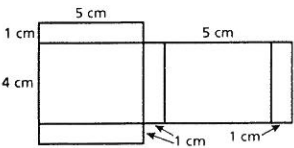
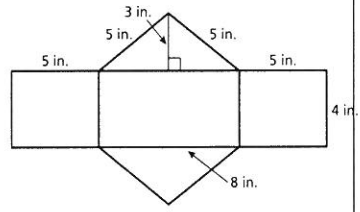
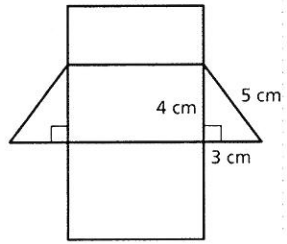
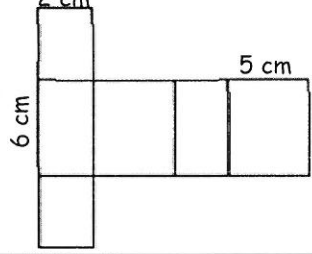
### 8.1 Day 2 Homework Answer Key:

1.) 	2.) 	3.) 	4.) 
5.) 	6.) B: Triangle S: Triangular Prism V: 6 F: 5 E: 9	7.) B: Rectangle S: Rectangular Prism V: 8 F: 6 E: 12	8.) Hexagon S: Hexagonal pyramid V: 7 F: 7 E: 12

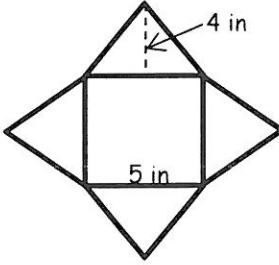
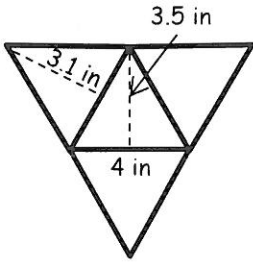
### 8.2 Day 1 Homework Answer Key:

1.) $344 \text{ cm}^2$	2.) $128 \text{ cm}^2$	3.) $48 \text{ cm}^2$	4.) $88 \text{ cm}^2$
------------------------	------------------------	-----------------------	-----------------------

### 8.2 Day 2 Homework Answer Key:

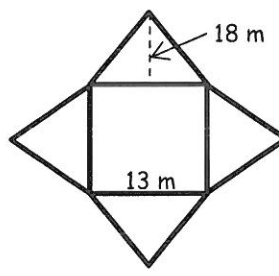
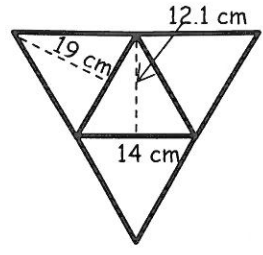
1.) $58 \text{ cm}^2$ 	2.) $96 \text{ in}^2$ 	3.) $96 \text{ cm}^2$ 	4.) $104 \text{ cm}^2$ 
--	--	---	---

### 8.3 Day 1 Homework Answer Key:

1.) $59.5 \text{ ft}^2$	2.) $527 \text{ mm}^2$	3.) $65 \text{ in}^2$ 	4.) $25.6 \text{ in}^2$ 
-------------------------	------------------------	---	--



8.3 Day 2 Homework Answer Key:

1.) $180 \text{ cm}^2$	2.) $52 \text{ cm}^2$	3.) $637 \text{ m}^2$ 	4.) $483.7 \text{ cm}^2$ 
------------------------	-----------------------	---	---

8.4 Day 1 Homework Answer Key:

1.) $\frac{1}{9} \text{ m}^3$	2.) $\frac{15}{16} \text{ ft}^3$	3.) 20 in	4.) 10 in	5.) $4.5 \text{ ft}^3$
-------------------------------	----------------------------------	-----------	-----------	------------------------

8.4 Day 2 Homework Answer Key:

1.) $\frac{5}{18} \text{ m}^3$	2.) $1 \frac{5}{16} \text{ yd}^3$	3.) 11 in	4.) 16 in	5.) 9 yd	6.) $280 \text{ ft}^3$
--------------------------------	-----------------------------------	-----------	-----------	----------	------------------------