Palsson_Geometry_Circles_Week#5

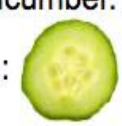
Student Name:
Teacher Name: Palsson
Class Name/Subject: Geometry
Period:
Assignment Week #: 5
Due date: No due date this week since your work will not be graded. However, I recommend that you do it anyway since it will help you to do better in Algebra 2.

YOU ONLY NEED TO DO THIS PAPER VERSION WORK IF YOU DO NOT HAVE ACCESS TO INTERNET.
IF YOU DO HAVE ACCESS TO INTERNET, GO TO mpalsson.weebly.com EVERY DAY TO SEE WHAT YOU NEED TO DO.

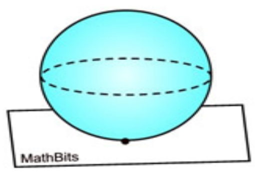
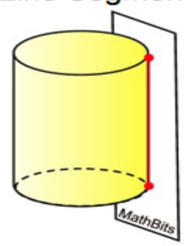
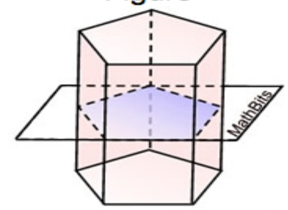
Feel free to email me if you have any questions. **mpalsson@tusd.net**

Definition: A **cross section** is the intersection of a figure in three-dimensional space with a plane. A cross section is the **face** you obtain by making a "slice" through a solid object. A cross section is two-dimensional.

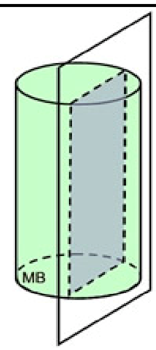
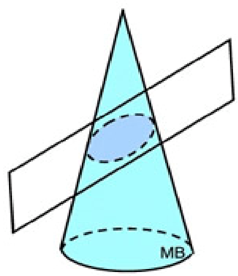
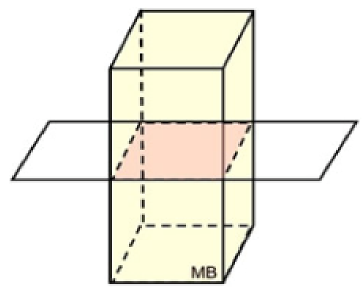
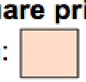
We see cross sections in everyday life.

 A "slice" of bread. Cross section: 	 A "slice" of cucumber. Cross section: 	 A "slice" of log. Cross section: 

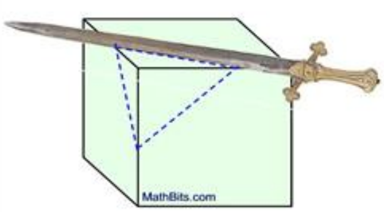
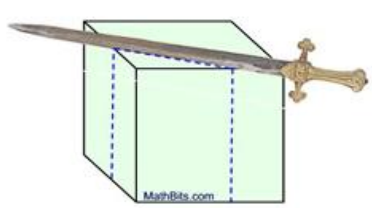
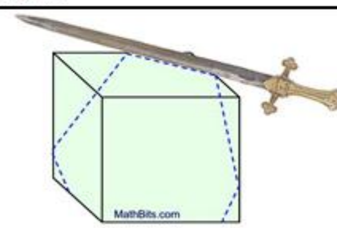
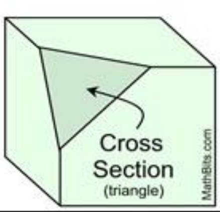
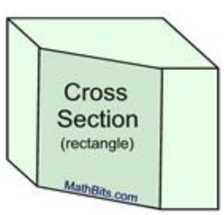
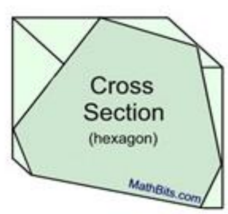
When a plane intersects a solid figure, the cross sectional face may be a point, a line segment, or a two-dimensional shape such as, but not limited to, a circle, rectangle, oval, or hexagon.

Point	Line Segment	Figure
		
The plane is tangent to the sphere, intersecting in only one point.	The plane is tangent to the side of the cylinder, intersecting in a line segment.	The plane cuts through the figure, intersecting in a pentagon. The plane may, or may not, be parallel to the base of the figure.

The figure (face) obtained from a cross section depends upon the orientation (angle) of the plane doing the cutting.

		
Right circular cylinder	**Right circular cone**	**Right square prism**
Cross section:  rectangle	Cross section:  ellipse	Cross section:  square
Plane orientation: perpendicular to the bases	Plane orientation: slanted (angled) across the cone	Plane orientation: parallel to the bases of the prism

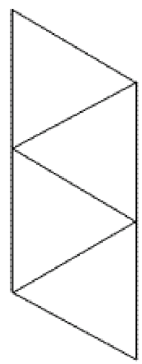
A single solid figure can be sliced to produce numerous cross sections of different forms.
In the diagrams below, the sword represents the "slicing" plane.
The solid object is a right rectangular prism.

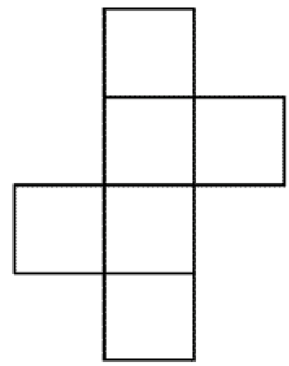
Definition: A **net** is a two-dimensional "pattern" that can be folded to form a three-dimensional solid. It is a "pattern" of the layout of a three-dimensional solid showing each of its faces. A solid may have more than one net.

These are possible "nets" for the Platonic Solids.

Click on the net to open a .pdf file with a larger template.



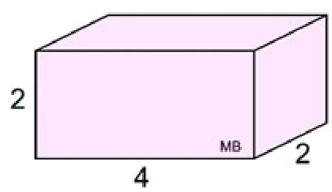
tetrahedron



cube

Definition: Surface area is the total area that the surface of a three-dimensional object occupies, in square units.

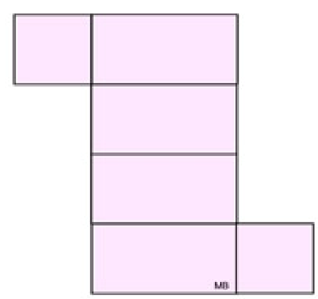
Surface Area using a Net:



Finding the surface ares means finding the area of EVERY face of this figure.

If you cut apart this box and flatten out the pieces, you will get a shape similar to the one at the right, called a **net**. Several options are possible.

The advantage of examining the net is that you can see each of the faces of the figure, making computing the surface area easier.

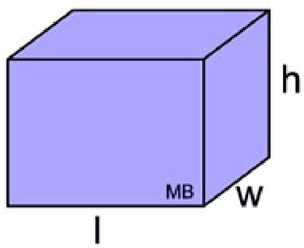
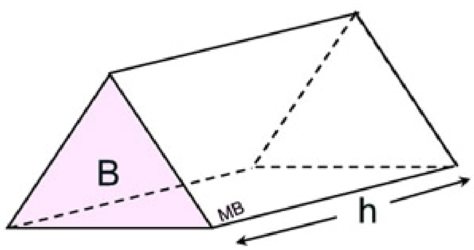
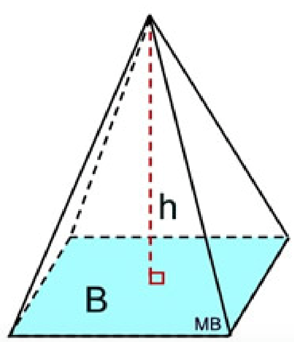


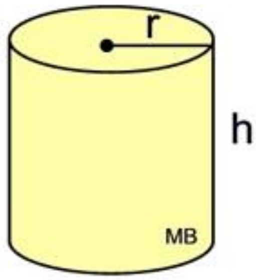
The surface area of this rectangular prism will be the sum of areas of all six shapes in the net.

Surface Area = (2•2) + (2•4) + (2•4) + (2•4) + (2•4) + (2•2) = **40 square units.**

YOU WILL RECOGNIZE THE V-FORMULAS BELOW, YOU LEARNED IT IN THE PAPER PACKAGE FOR WEEK 4. <u>THIS WEEK WE WILL FOCUS ON THE SA-FORMULAS. SA STANDS FOR SURFACE AREA.</u>

Formulas:

<table>
<tr>
<td>
</td>
<td>Rectangular Solid (Prism)
$$V = lwh$$
$$SA = 2lh + 2hw + 2lw$$
This formula assumes a "closed box", with all 6 sides.</td>
</tr>
<tr>
<td>
</td>
<td>Prism (all forms)
$$V = Bh$$
B = area of end face; h = height (depth)
SA = sum of all surface areas
(2 triangular end faces and 3 rectangular faces)</td>
</tr>
<tr>
<td>
</td>
<td>Pyramid
$$V = \frac{1}{3}Bh$$
B = area of base; h = height
SA = sum of all surface areas
(1 base and all triangular faces)</td>
</tr>
</table>

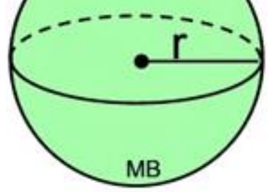


Cylinder

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

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

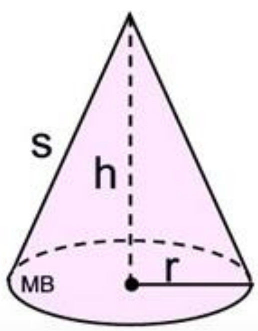
This formula assumes a "closed container" with a top and bottom.



Sphere

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

$$SA = 4\pi r^2 = \pi d^2$$



Cone

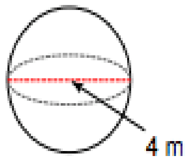
$$V = \frac{1}{3}\pi r^2 h$$

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

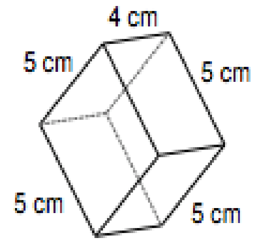
This formula assumes a "closed container", with a bottom.

Look at the examples above when you solve the problems below.

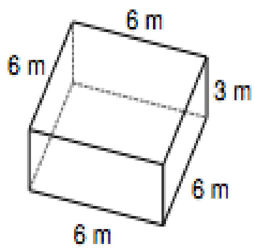
1)


4 m

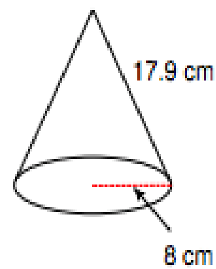
2)


4 cm
5 cm
5 cm
5 cm
5 cm

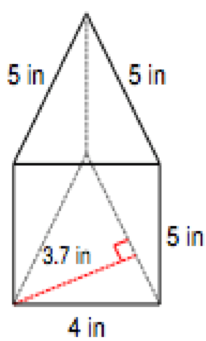
3)


6 m
6 m
3 m
6 m
6 m

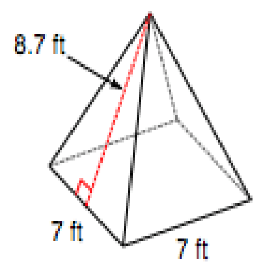
4)


17.9 cm
8 cm

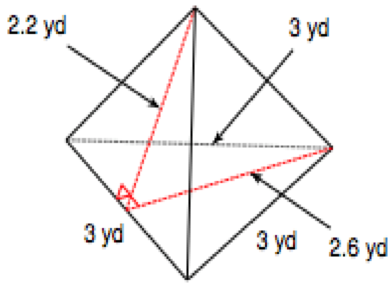
5)


5 in
5 in
3.7 in
5 in
4 in

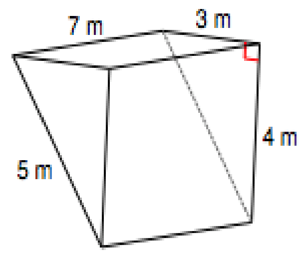
6)


8.7 ft
7 ft
7 ft

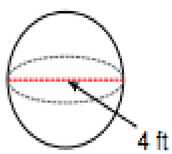
7)


2.2 yd
3 yd
3 yd
3 yd
2.6 yd

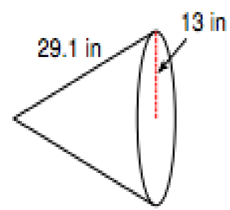
8)


7 m
3 m
4 m
5 m

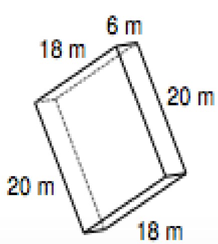
9)


4 ft

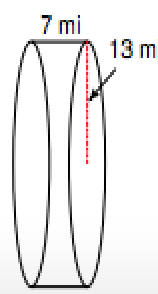
10)


29.1 in
13 in

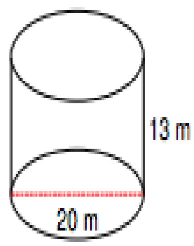
11)


6 m
18 m
20 m
20 m
18 m

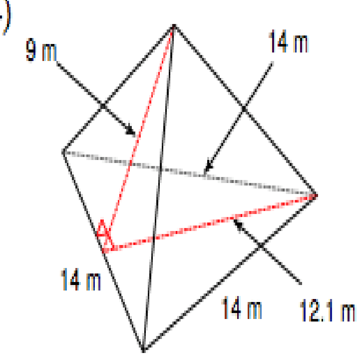
12)


7 mi
13 mi

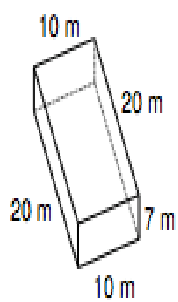
13)



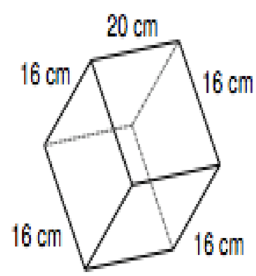
14)



15)



16)



17) A cone with diameter 10 in and a slant height of 13 in.

18) A square prism measuring 8 km along each edge of the base and 9 km tall.