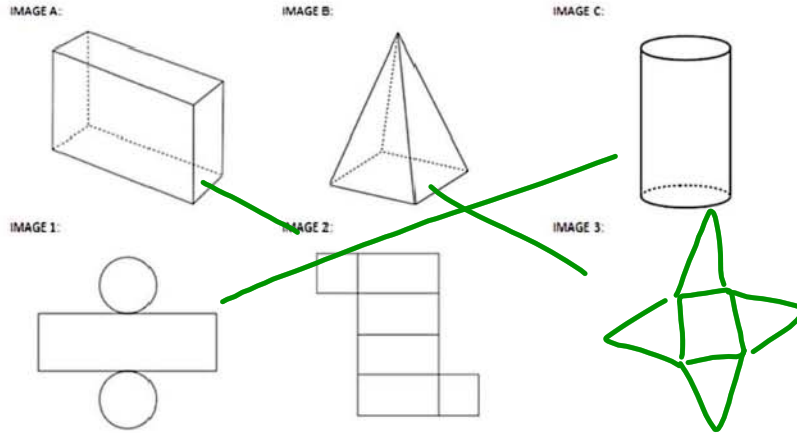


Geometry CC – Mr. Valentino
 Unit 11 Day 10: Surface Area!

Name: _____
 Date: _____ Per: _____

Aim: How can we find surface area and lateral area of 3D shapes?

Do Now: 3 dimensional figures are represented in images A, B and C. Images 1 and 2 are "nets" of the 3-dimensional figures. Match each net to their 3 dimensional image. Then try to draw the missing net.



Net - a two dimensional representation of a 3D shape

Matchmaker, Matchmaker, Make me a Match!

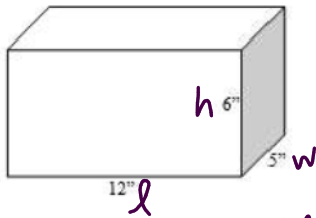
Match the following flat designs (nets) with their 3-dimensional (3D) shapes.
 Label each 3-D object with a name!

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
a.	b.	c.	d.	e.	f.	g.	h.	i.	j.
Triangular Prism	Pentagonal Prism	Cube	Triangular Pyramid	Rectangular Prism	Cylinder	Square Pyramid	Sphere	Pentagonal Pyramid	Cone

SURFACE AREA

To calculate the surface area of a figure... *add the area of the faces (sum of the area of the NET)*

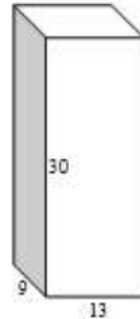
Find the surface areas of these prisms:



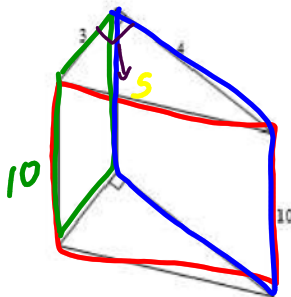
$$SA = 2lw + 2lh + 2hw$$

$$= (2 \cdot 12 \cdot 5) + (2 \cdot 12 \cdot h) + (2 \cdot 5 \cdot h)$$

$$324 \text{ in}^2$$



Find the surface area of this triangular prism:

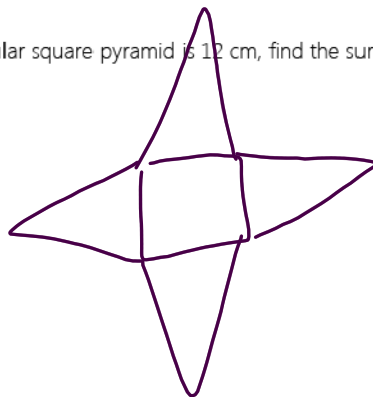
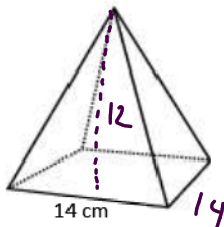


$$2\left(\frac{1}{2}bh\right) + (5)(10) + (3)(10) + (4)(10)$$

$$2\left(\frac{1}{2} \cdot 3 \cdot 4\right) + 50 + 30 + 40$$

$$12 + 50 + 30 + 40 = 132 \text{ units}^2$$

If the slant height of this regular square pyramid is 12 cm, find the surface area of the pyramid.

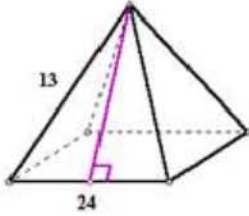


$$4\left(\frac{1}{2}bh\right) + s^2$$

$$4\left(\frac{1}{2} \cdot 14 \cdot 12\right) + 14^2$$

$$532 \text{ cm}^2$$

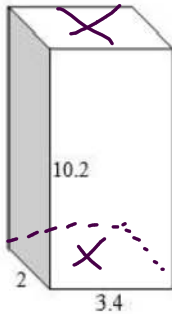
What is the surface area of this square pyramid?



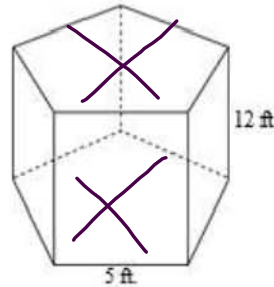
★ LATERAL AREA

To calculate the lateral area of a figure *the sum of the faces, not including the bases (top and bottom)*

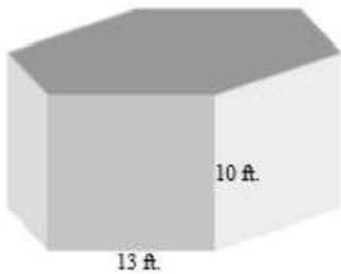
Calculate the lateral area of the figures below (assume top and bottom of rectangular prisms are bases)



$$2(10.2 \cdot 3.4) + 2(10.2 \cdot 2)$$



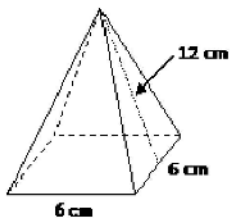
$$5(5 \cdot 12) + 5(60) = 300 \text{ ft}^2$$



What is the lateral area of a regular decagonal (10 sides) prism whose height is 5 inches, and whose base perimeter is 60 inches?

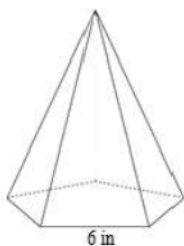
Practice Problems

1. Calculate the lateral area of the figure below:



$$4\left(\frac{1}{2}bh\right)$$

2. The slant height of this regular pentagonal pyramid is 10 inches. What is its lateral area?



3. A gallon of paint will cover approximately 450 square feet. An artist wants to paint all the outside surfaces of a cube measuring 12 feet on each edge. What is the least number of gallons of paint he must buy to paint the cube?

4. If the volume of a cube is 8 cubic centimeters, what is its surface area, in square centimeters?

5. A company is deciding which box to use for their merchandise. The first box measures 8 inches by 6.25 inches by 10.5 inches. The second box measures 9 inches by 5.5 inches by 11.75 inches. Which box required more material to make?

6. If each box (from #5) used material that cost \$0.03 per square inch to make, how much does a company save by choosing to make fifty boxes of the smaller box in comparison to fifty boxes of the larger box?

7. You are painting a room that is 18 ft long, 14 ft wide and 8 ft high. Find the area of the four walls that you are going to paint.

If the paint costs \$6.50 a gallon and each gallon covers 128 ft² of wall, how much will it cost to paint the room?