

4-1-19

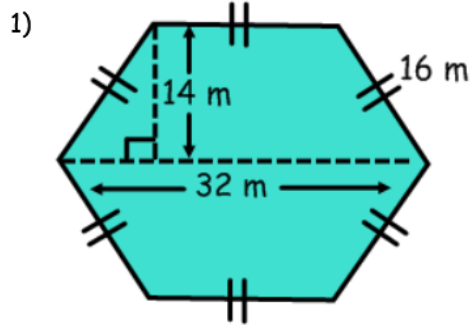
Aim: SWBAT calculate the surface area of prisms and pyramids.

HW: Packet Pages 16 - 17 (not pyramids)

Do Now: Correct hw

Homework - Area of Irregular Shapes

Find the area of the shaded regions; round to the nearest tenth when necessary.



$$2 \left(\frac{1}{2} (b_1 + b_2) h \right)$$

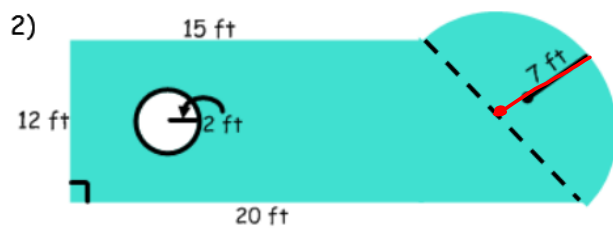
$$2 \left(\frac{1}{2} (16 + \frac{32}{2}) 14 \right)$$

$$2 \left(\frac{1}{2} (48) 14 \right)$$

$$672$$

$$672 \text{ m}^2$$

$$\boxed{\approx 672 \text{ m}^2}$$



$$\frac{1}{2}(15+20)(12) + \frac{\pi(7)^2}{2} - \pi(2)^2$$

$$210 + \frac{49\pi}{2} - 4\pi$$

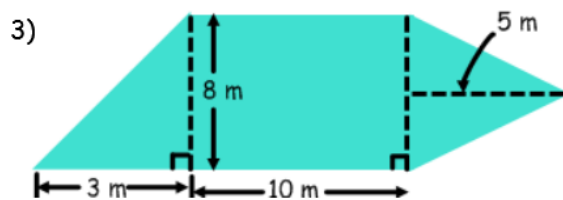
$$210 + 20.5\pi$$

$$274.4026 \dots$$

$$274.4$$

$$274.37$$

$$\boxed{\approx 274.4 \text{ ft}^2}$$



$$\frac{3(8)}{2} + 8(10) + \frac{8(5)}{2}$$

$$12 + 80 + 20$$

$$\boxed{112 \text{ m}^2}$$

Aim: SWBAT calculate the surface area of prisms and pyramids.

Notes.

* **Estimate** means you must round the numbers **BEFORE** you find the surface area.

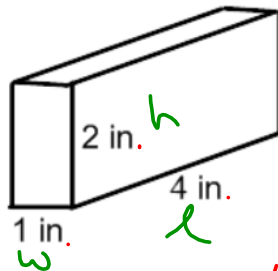
Surface area is the sum of the areas of the faces of a 3-dimensional figure.

When looking at 3-Dimensional figures, here are some important terms you will need to understand.

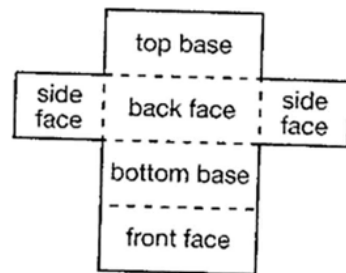
- The flat surfaces of 3-dimensional figures are called **faces**
- The faces meet at **edges**
- The **bases** of a prism are its parallel faces
- The **edges** are line segments
- The edges ~~meet~~ ^{meet} at **vertices** (plural for vertex)

Last year, you learned to use nets to represent rectangular prisms. In this lesson, you will learn to find surface area of rectangular prisms and other right prisms.

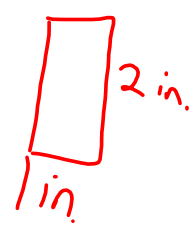
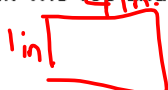
Example 1) Let's find the surface area of the building block in Ben's construction set shown below:



Net (Rectangular Prism)



- A) How many faces does the block have? 6
- B) What shape are the faces? rectangles
- C) Draw the top and bottom faces of the block and label their dimensions.
- D) Draw the front and back faces of the block and label their dimensions.
- E) Draw the side faces of the block and label their dimensions.



F) How could you find the surface area of the block? add the areas of the rectangles

G) Find the surface area of the building block. Remember to label your answer.

$$SA = 2(4 \cdot 1) + 2(4 \cdot 2) + 2(1 \cdot 2)$$

$$SA = 2 \cdot 4 + 2 \cdot 8 + 2 \cdot 2$$

$$SA = 8 + 16 + 4$$

$$SA = 28 \text{ in.}^2$$

area of the base
perimeter of the base
height of the prism

** To find the surface area of a rectangular prism, you can also use the following formula. **

Formula: $SA = 2wl + 2lh + 2wh$ OR $SA = 2B + Ph$

H) Now find the surface area of the building block using the formula.

$$SA = 2(1 \cdot 4) + 2(4 \cdot 2) + 2(1 \cdot 2)$$

$$SA = 2 \cdot 4 + 2 \cdot 8 + 2 \cdot 2$$

$$SA = 8 + 16 + 4$$

$$SA = 28 \text{ in.}^2$$

$$SA = 2(4 \cdot 1) + (4 + 4 + 1 + 1)(2)$$

$$SA = 2 \cdot 4 + 10 \cdot 2$$

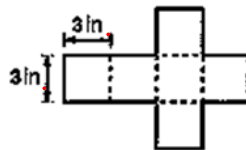
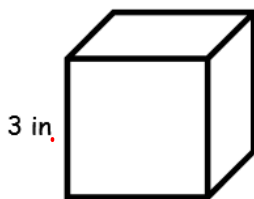
$$SA = 8 + 20$$

$$SA = 28 \text{ in.}^2$$

Example 2) How could we find the surface area of a cube with edge length 3 inches?

Six times the area of one square face.

Example 3) Find the surface area of a cube with edge length 3 inches.

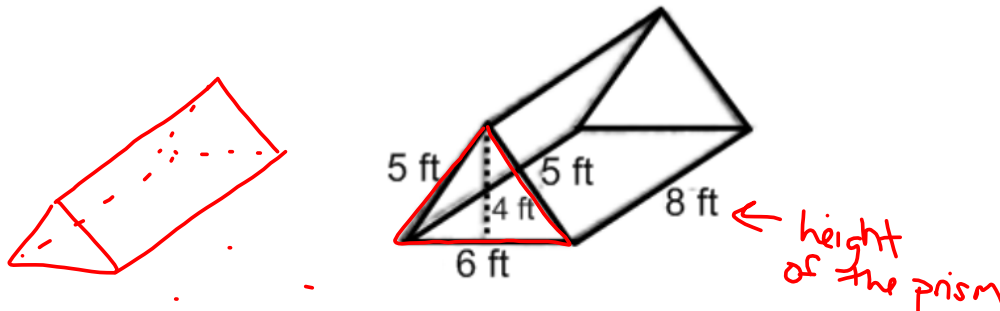


What formula could we use to find the surface area of a cube? $SA = 6s^2$

$$SA = 6 \cdot 3^2$$

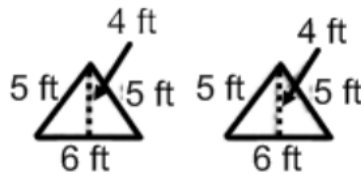
$$SA = 54 \text{ in.}^2$$

Example 4) How many square feet of a nylon would be needed to make the camping tent shown below?

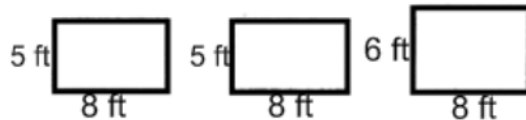


First we can draw and label the dimensions of the five faces of this prism.

The tent is in the shape of a right triangular prism. The bases of the prism are two triangles that are the same size and shape:



The other faces of the prism are three rectangles:



Next, we find the surface area of the camping tent. Remember to label your answer.

$SA = 2 \cdot (\text{area of triangle base}) + \text{Area of rectangle 1} + \text{Area of rectangle 2} + \text{Area of rectangle 3}$

$$SA = 2 \left(\frac{6 \cdot 4}{2} \right) + (5 \cdot 8) + (5 \cdot 8) + (6 \cdot 8)$$

$$SA = 24 + 40 + 40 + 48$$

$$SA = 152 \text{ ft}^2$$

OR $SA = 2B + Ph$

$$SA = 2 \left(\frac{6 \cdot 4}{2} \right) + (5 + 5 + 6) \cdot 8$$

$$SA = 24 + 16 \cdot 8$$

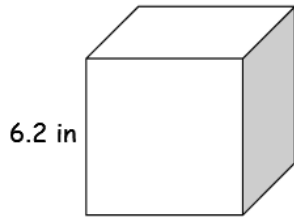
$$SA = 24 + 128$$

$$SA = 152 \text{ ft}^2$$

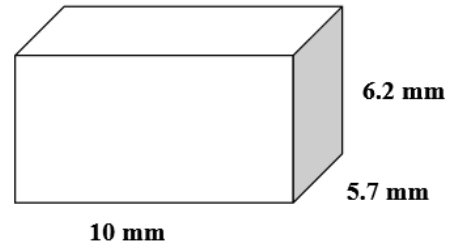
HOMEWORK - Surface Area of Prisms and Pyramids

Find the surface area of each of the following.

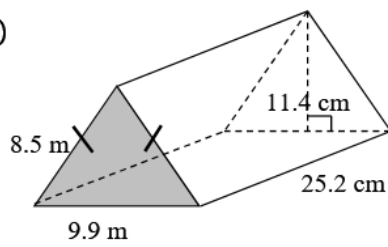
1)



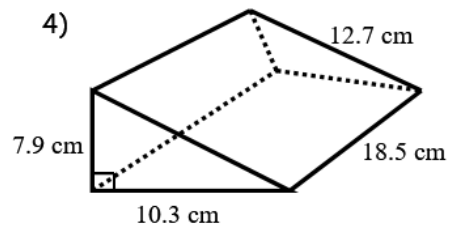
2)



3)

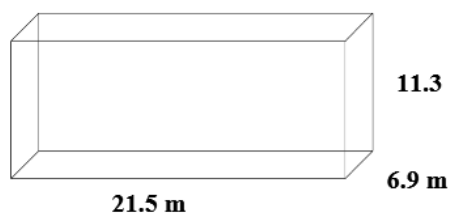


4)



5) **Estimate** the surface area of the prism.

**** Remember, estimate means to round the numbers FIRST, before you calculate the surface area.**



6)

