Name _____ Date _____

# Using Geometry in Design Problems - Guided Lesson Explanation

## Explanation#1

Start by finding the total cubic footage of the closet.

Area = length x width x height

Area = 18 x 12 x 15

Area = 3240 cubic inch.

Find the area of 1 box of cell phone.

Area = length x width x height

Area = 6 x 3 x 3

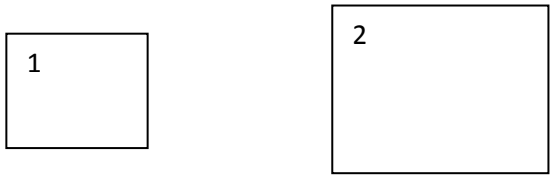
Area = 54 cubic inch.

See how many cartons you can find into the area:

3240 cubic inch ÷ 54 cubic inch = 60 boxes

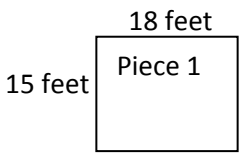
## Explanation#2

To do this the easiest way is to break the "L" shape into 2 rectangles. Such as:




We can determine the dimensions of these shapes by using what is given. Starting with the smaller piece, We know the length is 18 feet. We need to determine the height.

The height would be 40 feet – 25 feet or 15 feet.

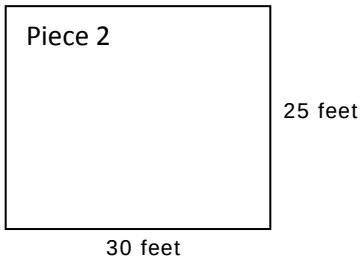


Name _____ Date _____

Square footage = 15 feet x 18 feet

Square footage = 270 $feet^2$

Now let's do the same thing for the larger piece of the tower. We know the length is 30 feet and height is 25 feet




Square footage = 25 feet x 30 feet

Square footage = 750 $feet^2$

To find the total square footage we will need to add the square footage of both pieces.

Square footage = 270 $feet^2$ + 750 $feet^2$

Square footage = 1,020 $feet^2$

Our next step is to determine the cubic footage of the tower. Since the tower is 10 feet thick throughout, we would multiply this depth by the square footage to determine the total cubic footage.

Cubic footage = 1,020 $feet^2$ x 10 feet

Cubic footage = 10,200 $feet^3$

Our last step is to determine how much water fits into that space. Every cubic foot of space can hold 7.48 gallons. So we would just multiply our cubic footage by that fixed volume.

Total gallons of water = 10,200 $feet^3$ x 7.48 gallons

Total gallons of water = 76,296 gallons

Name _____ Date _____

**Explanation # 3**

Step 1) **Triangles Area:**

We have two triangles with the same exact dimensions. If we find the area of one triangle, we can just multiply it by two to find the total area of the triangles.

Area of a triangle = ½ base x height

Area of a triangle = ½ 15 cm x 40 cm  Area of a triangle = 300 $cm^2$

Area of both triangles = 300 $cm^2$ x 2  Area of both triangles = 600 $cm^2$

**Rectangle Area:**

Area of a rectangle = width x height

Area of a rectangle = 50 cm x 40 cm  Area of a rectangle = 2,000 $cm^2$

Step 2) Find the total area of a desk.

The total area would be the sum of the area of both triangles and the rectangle.

Total area of one desk = 2,000 $cm^2$ + 600 $cm^2$

Total area of one desk = 2,600 $cm^2$

Step 3) Find the amount of wood needed for 30 desks.

We found the total amount of wood need for one desk (2,600 $cm^2$). We now need to determine how much wood we will need for 25 desks. We would just find the product of the area of 1 desk and 25.

Total wood needed = 25 desks needed x 2,600 $cm^2$ (area of 1 desk)

Total wood needed = 65,000 $cm^2$