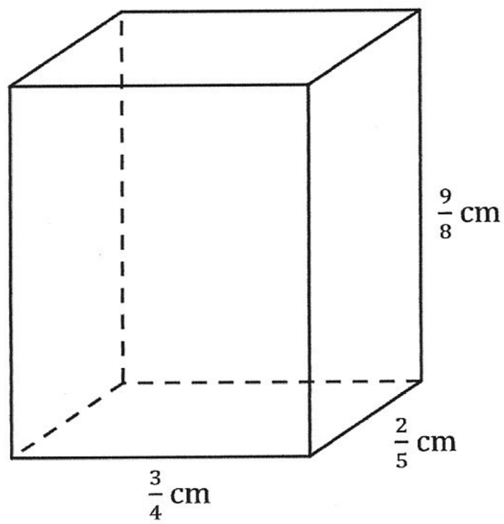
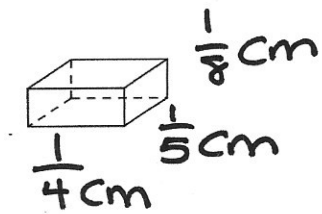
Name ______________________________ Date___________

Imagine that the prism pictured below is packed full of smaller identical prisms. The length of each edge of the small prisms is a **unit fraction**.



1. Give the dimensions of the small prisms that can be used to pack the larger prism.



2. How many of the small prisms would it take to completely fill the larger prism? Explain how you found your answer.

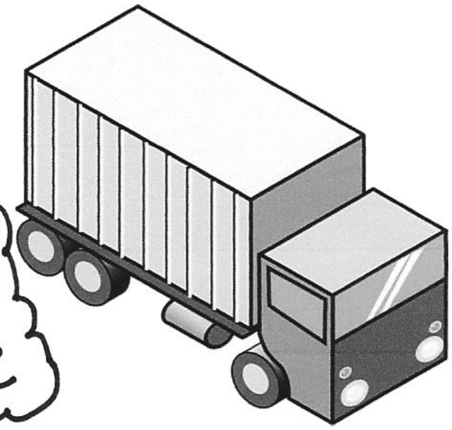
The bottom layer would have six blocks on it. There would be nine total layers. So $6 \cdot 9 = 54$ total blocks. Top view:

3. Explain how the number of the small prisms needed to fill the larger prism is related to the volume of the large prism.

The volume of each small box times the number of boxes is equal to the volume of the large box. The sum of the small boxes' volumes is the same amout of space as the large box's volume.

Name ________________________________ Date___________

The floor of a cargo truck is $22\frac{1}{2}$ square feet. What is the volume of the storage space in cubic feet if the truck is $7\frac{1}{5}$ ft high? Show, label, and explain your work.



$V = bwh$

$b \cdot w = B$
area of the base

$V = Bh$

$V = 22\frac{1}{2} \cdot 7\frac{1}{5}$

$V = \frac{\cancel{45}^{\,9}}{\cancel{2}_{\,1}} \cdot \frac{\cancel{36}^{\,18}}{\cancel{5}_{\,1}}$

$V = \frac{9}{1} \cdot \frac{18}{1}$

$$\begin{array}{r} \overset{7}{1}8 \\ \times\ 9 \\ \hline 162 \end{array}$$

$V = 162\ ft^3$

Name: ______________________ Date: __________ Pd: ______

Leo's recipe for banana bread won't fit in his favorite pan. The batter fills the 8.5 inch by 11 inch by 1.75 inch pan to the very top, but when it bakes it spills over the side. He has another pan that is 9 inches by 9 inches by 3 inches, and from past experience he thinks he needs about an inch between the top of the batter and the rim of the pan. Should he use this pan?

1

$V = bwh$

$V = 8.5 \cdot 11 \cdot 1.75$

$V = 93.5 \cdot 1.75$

$V = 163.625\ in^3$

$$\begin{array}{r} 8.5 \\ \times\ 11 \\ \hline 85 \\ +\ 850 \\ \hline 93.5 \end{array} \qquad \begin{array}{r} 93.5 \\ \times\ 1.75 \\ \hline 4675 \\ 65450 \\ +\ 93500 \\ \hline 163.625 \end{array}$$

2 New Pan

$V = bwh$

$V = 9 \cdot 9 \cdot 3$

$V = 81 \cdot 3$

$V = 243\ in^3$

$$\begin{array}{r} 81 \\ \times\ 3 \\ \hline 243 \end{array}$$

It will fit, but will there be one inch at the top?

$$\begin{array}{r} 3 \\ -\ 2 \\ \hline 1\ in \end{array}$$

3

$163.625 = 9 \cdot 9 \cdot h$

$\frac{163.625}{81} = \frac{81h}{81}$

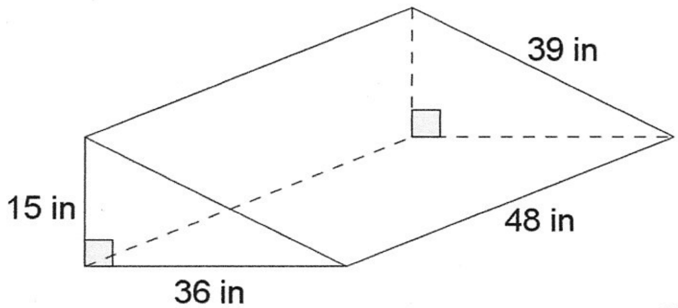
$2\ in. \approx h$

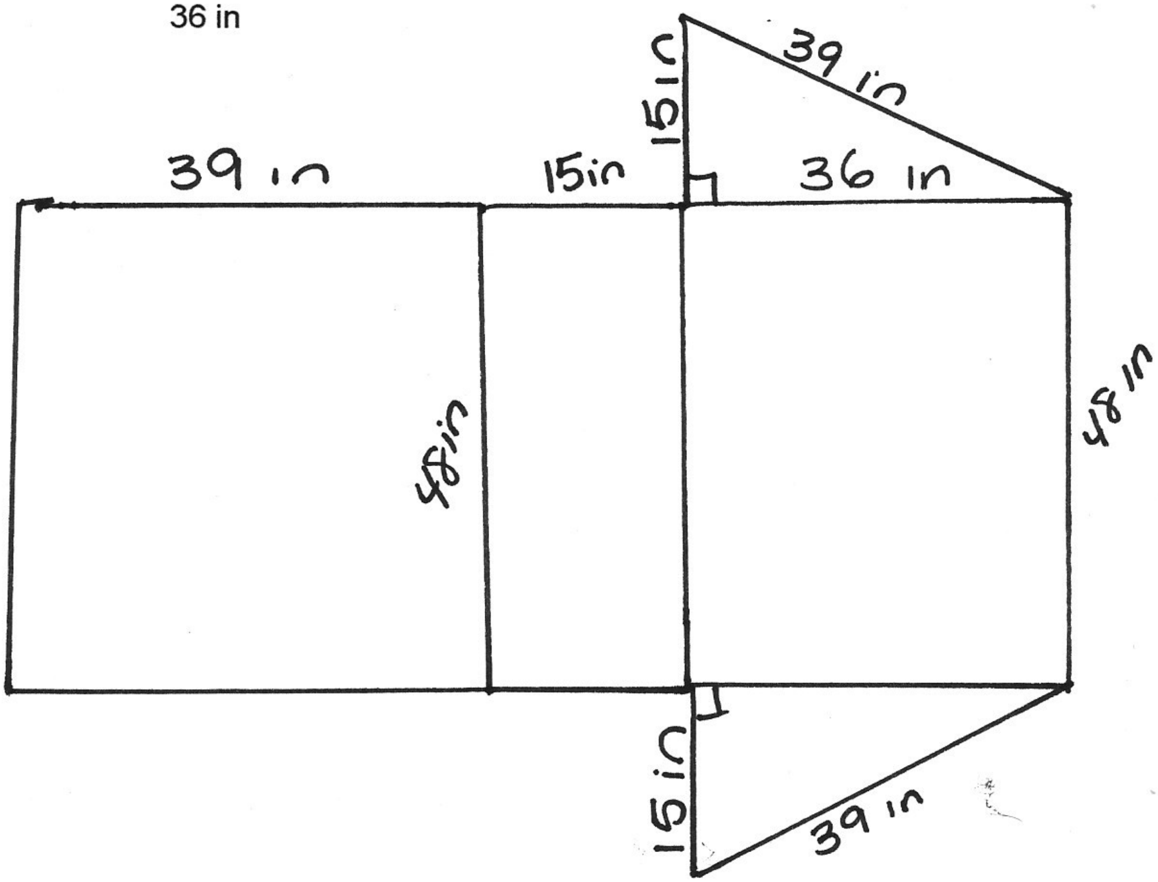
You will have one inch at the top.

$$\begin{array}{r} 2.020 \\ 81\,\overline{)\,163.625} \\ -\ 162 \\ \hline 1.62 \\ -\ 1\ 62 \\ \hline 05 \end{array}$$

Name ________________________________ Date___________

Blaise wants to persuade his dad to help him build a ramp in the shape of a triangular prism, so he can learn to perform tricks on his skateboard. Mr. Powers told Blaise to make a diagram to help figure the cost of materials. Draw a net that Blaise can show his dad, and label the dimensions in inches.



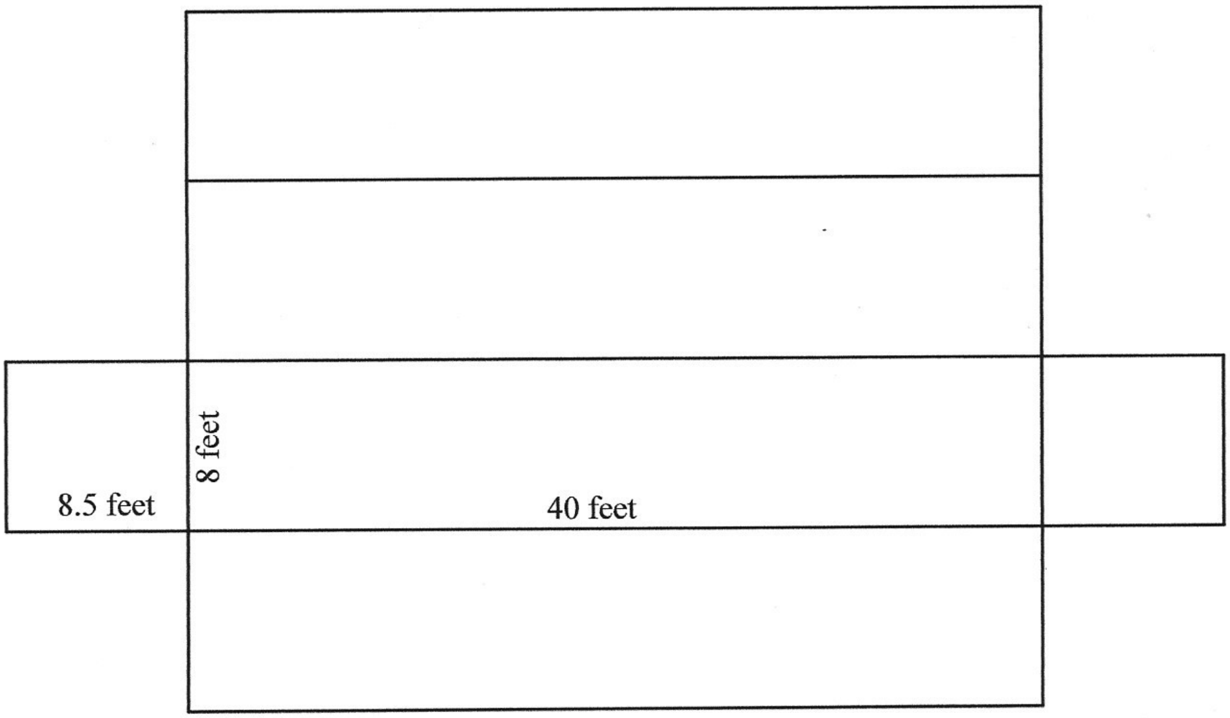


Not drawn to scale.

Name ______________________________ Date__________

A company needs to paint one of its shipping containers (in the shape of a rectangular prism) with anti-rust paint. Each bucket of paint will cover 1000 square feet.

Use the net below to determine how many buckets of paint the company will need to buy to paint the shipping container. Explain how you found your answer.



□ $A = bh$

$A = 8.5 \cdot 8$

$A = 68\ ft^2$

$$\begin{array}{r} \scriptstyle 4 \\ 8.5 \\ \times\ \ 8 \\ \hline 68.0 \end{array}$$

□ + □ + □ + □ + □ + □ = Total Area.

or

$(68 \cdot 2) + (320 \cdot 4) =$ TOTAL AREA

$136 + 1280 = 1416$ sq ft.

▭ $A = bh$

$A = 40 \cdot 8$

$A = 320\ ft^2$

$$\begin{array}{r} 40 \\ \times\ \ 8 \\ \hline 320 \end{array}$$

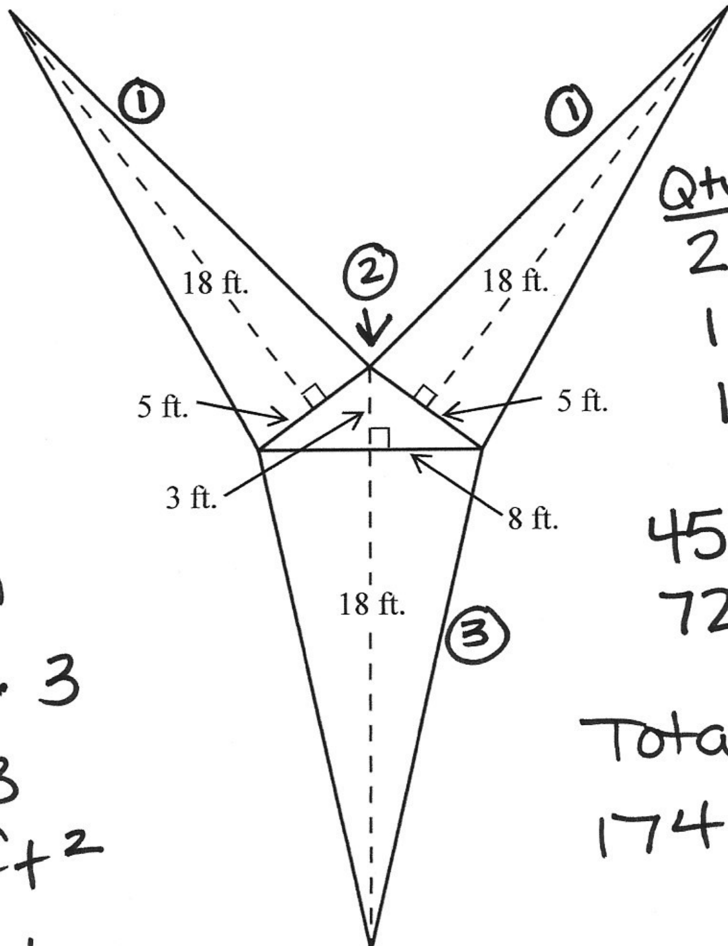
$$\begin{array}{r} 1.2 \\ 1000 \overline{)\,12800} \\ -1000 \\ \hline 2800 \end{array}$$

Two buckets of paint needed.

Name ______________________________ Date___________

When landing a plane, it is important for pilots to know which way the wind is blowing. In the past, some airfields without control towers used large tetrahedrons (triangular pyramids) that would rotate in the wind to show the direction the pilot should land.

An airstrip's tetrahedron is made by covering the exterior of its steel frame in sheet metal. Use the net below to calculate the area of sheet metal needed. All measurements are in feet.



①

$A = \frac{1}{2}bh$

$A = \frac{1}{2} \cdot 5 \cdot 18$

$A = 5 \cdot 9$

$A = 45 \text{ ft}^2$

② $A = \frac{1}{2}bh$

$A = \frac{1}{2} \cdot 8 \cdot 3$

$A = 4 \cdot 3$

$A = 12 \text{ ft}^2$

③ $A = \frac{1}{2}bh$

$A = \frac{1}{2} \cdot 8 \cdot 18$

$A = 8 \cdot 9$

$A = 72 \text{ ft}^2$

Qty	
2	△ 1
1	△ 2
1	△ 3

$45 + 45 + 12 + 72 = \text{Total Area}$

Total Area is 174 ft^2.