EUREKA MATH PUSD

SOLUTIONS

Exit Tickets

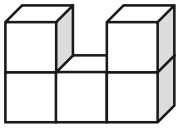
SOLUTIONS

GRADE 5
MODULE 5

Version 3

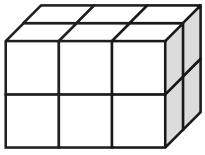
Name _____ Date _____

1. What is the volume of the figures pictured below?

a. 

$5\ u^3$

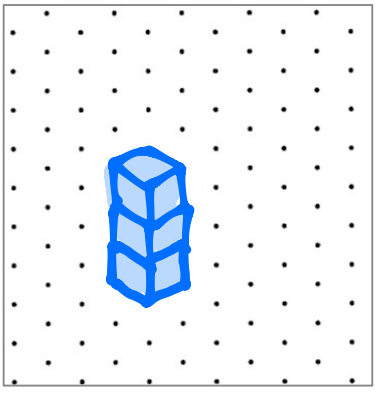
5 cubic units

b. 

$12\ u^3$

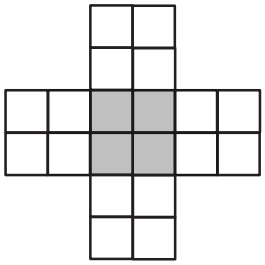
2. Draw a picture of a figure with a volume of 3 cubic units on the dot paper.

Drawings will vary.



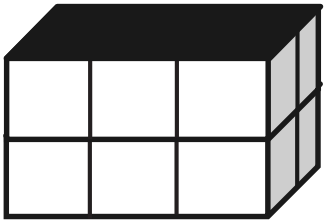
Name _____ Date _____

1. If this figure were to be folded into a box, how many cubes would fill it?



Number of cubes: 8

2. Predict how many centimeter cubes will fit in the box, and briefly explain your prediction. Use cubes to find the actual volume. (The figure is not drawn to scale.)



Prediction: $12\ u^3$

Actual: $12\ u^3$

The prism has two layers. Each layer has 6 cubes.

$6 \times 2 = 12$

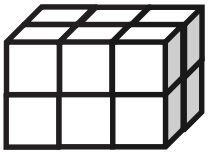
Name _____ Date _____

1. Use unit cubes to build the figure to the right, and fill in the missing information.

   Number of layers: 2

   Number of cubes in each layer: 6

   Volume: 12 cubic centimeters

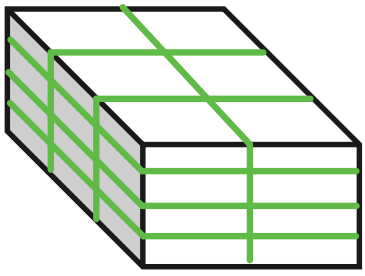


2. This prism measures 3 units by 4 units by 2 units. Draw the layers as indicated.

   Number of layers: 4

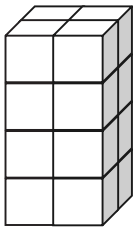
   Number of cubic units in each layer: 6

   Volume: 24 cubic centimeters



Name _____ Date _____

1. Calculate the volume of prism.



Length: 2 mm

Width: 2 mm

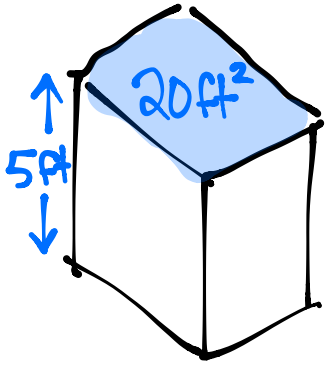
Height: 4 mm

Volume: 16 mm^3

Write the multiplication sentence that shows how you calculated the volume. Be sure to include the units.

$2\text{ mm} \times 2\text{ mm} \times 4\text{ mm} = 16\text{ mm}^3$

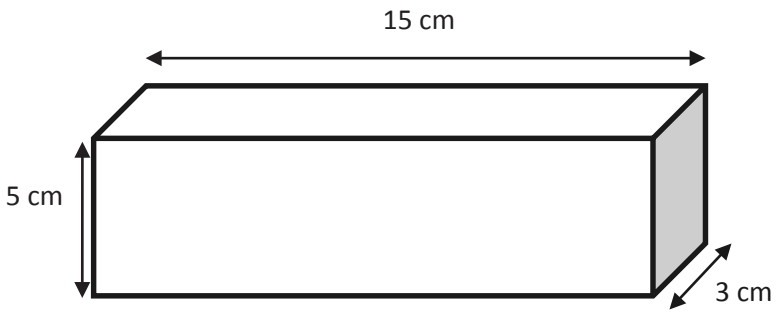
2. A rectangular prism has a top face with an area of 20 ft^2 and a height of 5 ft. What is the volume of this rectangular prism?

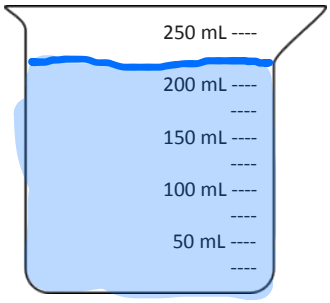


$20 \times 5 = 100$

$20\text{ ft}^2 \times 5\text{ ft} = 100\text{ ft}^3$

Name _____ Date _____





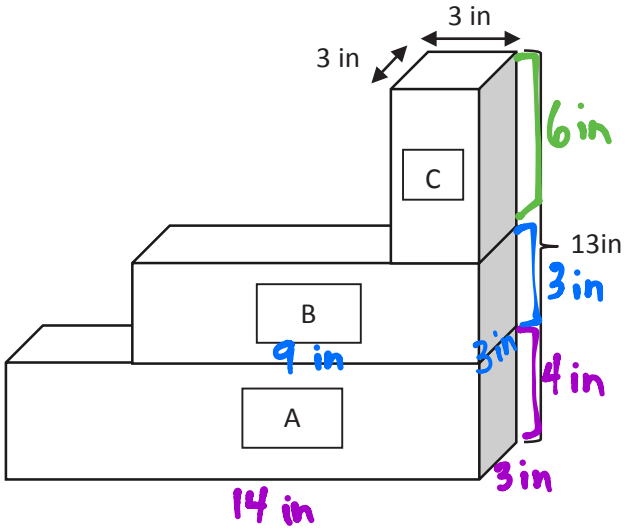
a. Find the volume of the prism.

$5\text{cm} \times 3\text{cm} \times 15\text{cm} = 225\text{cm}^3$

b. Shade the beaker to show how much liquid would fill the box.

Name _____ Date _____

The image below represents three planters that are filled with soil. Find the total volume of soil in the three planters. Planter A is 14 inches by 3 inches by 4 inches. Planter B is 9 inches by 3 inches by 3 inches.



$\text{Volume}_A = 14 \text{ in} \times 3 \text{ in} \times 4 \text{ in} = 98 \text{ in}^3$

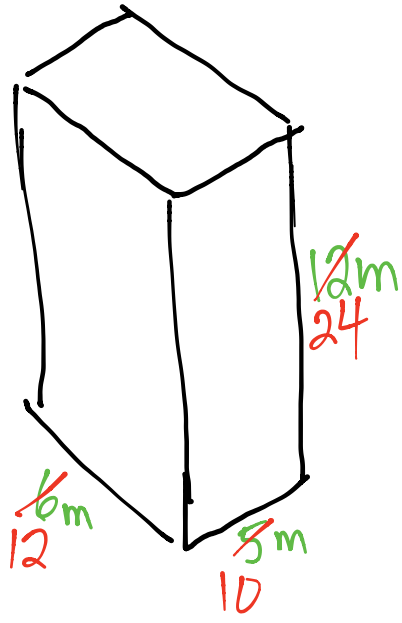
$\text{Volume}_B = 9 \text{ in} \times 3 \text{ in} \times 3 \text{ in} = 81 \text{ in}^3$

$\text{Volume}_C = 3 \text{ in} \times 3 \text{ in} \times 6 \text{ in} = 36 \text{ in}^3$

$\text{Total Volume} = 98 \text{ in}^3 + 81 \text{ in}^3 + 36 \text{ in}^3 = 215 \text{ in}^3$

Name _____ Date _____

A storage shed is a rectangular prism and has dimensions of 6 meters by 5 meters by 12 meters. If Jean were to double these dimensions, she believes she would only double the volume. Is she correct? Explain why or why not. Include a drawing in your explanation.



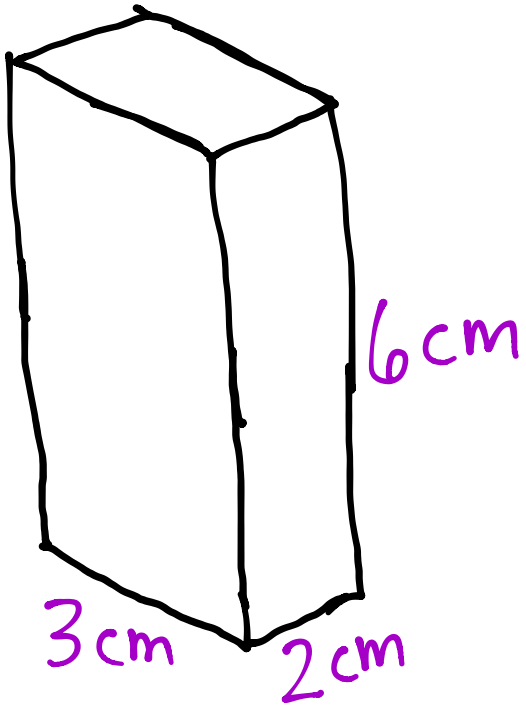
Original Volume = 6m x 5m x 12m = 360 m^3

New Volume = 12m x 10m x 24m = 2880 m^3

We can see that doubling each dimension results in a new volume that is much greater than doubling the original volume.

Name _____ Date _____

Sketch a rectangular prism that has a volume of 36 cubic cm. Label the dimensions of each side on the prism. Fill in the blanks that follow.



Height: 6 cm

Length: 3 cm

Width: 2 cm

Volume: 36 cubic cm

Answers will vary. Make sure the three dimensions have a product of 36. Since multiplication is commutative, we do not need to worry whether the height, length, and width of the prism match the filled in blanks.

Name _____ Date _____

A student designed this sculpture. Using the dimensions on the sculpture, find the dimensions of each rectangular prism. Then, calculate the volume of each prism.

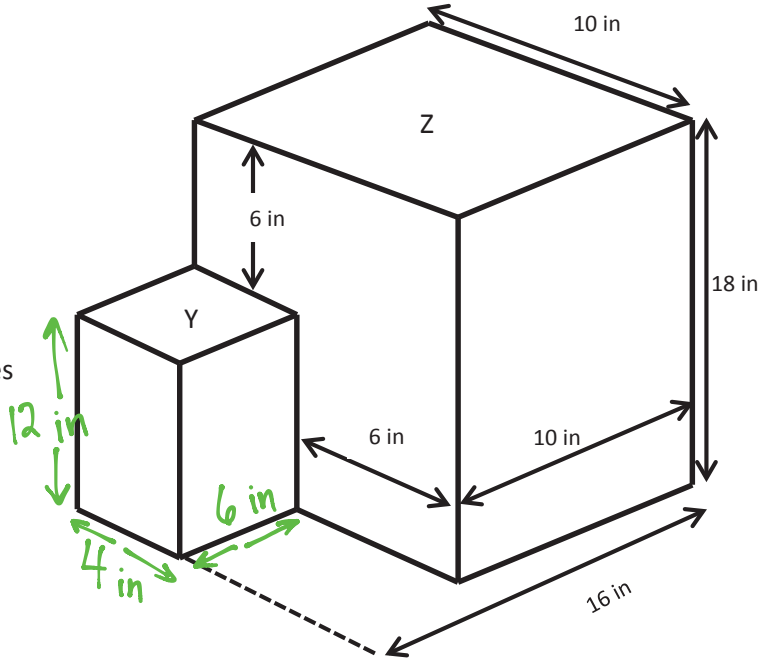
a. Rectangular Prism Y

Height: 12 inches

Length: 4 inches

Width: 6 inches

Volume: 288 cubic inches



b. Rectangular Prism Z

Height: 18 inches

Length: 10 inches

Width: 16 inches

Volume: 2880 cubic inches

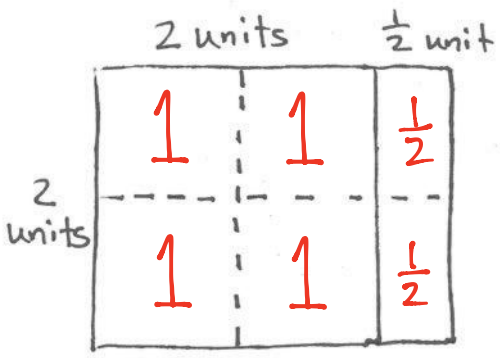
c. Find the total volume of the sculpture. Label the answer.

$288 \text{ in}^3 + 2880 \text{ in}^3 = 3168 \text{ in}^3$

$$\begin{array}{r} {\scriptstyle 1} \\ 2880 \\ +\ 288 \\ \hline 3168 \end{array}$$

Name _____ Date _____

Emma tiled a rectangle and then sketched her work. Fill in the missing information, and multiply to find the area.



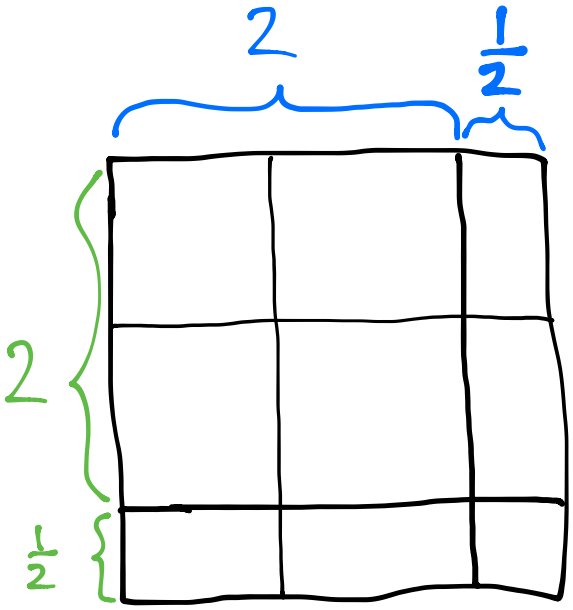
Emma's Rectangle:

2 units long $2\frac{1}{2}$ units wide

Area = 5 units^2

Name _____ Date _____

To find the area, Andrea tiled a rectangle and sketched her answer. Sketch Andrea's rectangle, and find the area. Show your multiplication work.



Rectangle is

$2\frac{1}{2}$ units × $2\frac{1}{2}$ units

Area = $6\frac{1}{4}$ u²

$2\frac{1}{2} \times 2\frac{1}{2}$

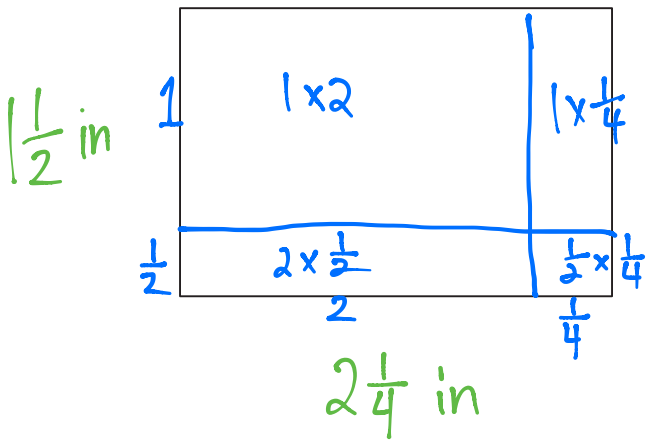
$= (2 \times 2) + (2 \times \frac{1}{2}) + (2 \times \frac{1}{2}) + (\frac{1}{2} \times \frac{1}{2})$

$= 4 + 1 + 1 + \frac{1}{4}$

$= 6\frac{1}{4}$ u²

Name _____ Date _____

Measure the rectangle to the nearest $\frac{1}{4}$ inch with your ruler, and label the dimensions. Find the area.



Length = $1\frac{1}{2}$ inches

Width = $2\frac{1}{4}$ inches

Area = $3\frac{3}{8}$ in^2

$1\frac{1}{2} \times 2\frac{1}{4}$

$= (1 \times 2) + (1 \times \frac{1}{4}) + (2 \times \frac{1}{2}) \times (\frac{1}{2} \times \frac{1}{4})$

$= 2 + \frac{1}{4} + 1 + \frac{1}{8}$

$= 3 + \frac{1}{4} + \frac{1}{8}$

$= 3 + \frac{2}{8} + \frac{1}{8}$

$= 3\frac{3}{8}$ in^2

Name _____ Date _____

Find the area of the following rectangles. Draw an area model if it helps you.

1. $\frac{7}{2}$ mm × $\frac{14}{5}$ mm

$\frac{7}{2} \times \frac{14}{5} = \frac{98}{10} = 9\frac{8}{10}$ mm^2

$= 9\frac{4}{5}$ mm^2

2. $5\frac{7}{8}$ km × $\frac{18}{4}$ km

$= \frac{47}{8} \times \frac{18}{4}$

$= \frac{846}{32}$

$= 26\frac{14}{32}$

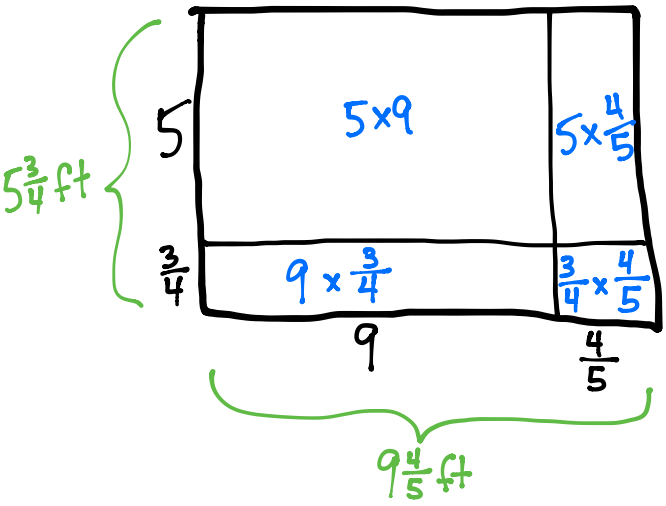
$= 26\frac{7}{16}$ km^2

$$\begin{array}{r} 26 \\ 32\overline{)846} \\ \underline{64} \\ 206 \\ \underline{-192} \\ 14 \end{array}$$

It is not required that students reduce the answer to simplest terms. Ex: Both $9\frac{8}{10}$ and $9\frac{4}{5}$ should receive full credit.

Name _____ Date _____

Mr. Klimek made his wife a rectangular vegetable garden. The width is $5\frac{3}{4}$ ft, and the length is $9\frac{4}{5}$ ft. What is the area of the garden?



$5\frac{3}{4} \times 9\frac{4}{5}$

$= (5 \times 9) + (5 \times \frac{4}{5}) + (9 \times \frac{3}{4}) + (\frac{3}{4} \times \frac{4}{5})$

$= 45 + \frac{20}{5} + \frac{27}{4} + \frac{12}{20}$

$= 45 + 5 + 6\frac{3}{4} + \frac{12}{20}$

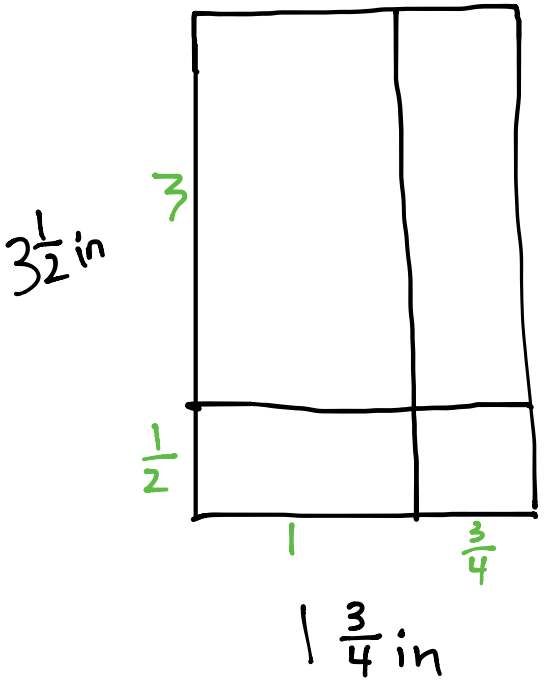
$= 56\frac{3}{4} + \frac{12}{20}$ ($\times 5$, $\times 5$)

$= 56\frac{15}{20} + \frac{12}{20}$

$= 57\frac{7}{20}$ ft^2

Name _____ Date _____

Wheat grass is grown in planters that are $3\frac{1}{2}$ inch by $1\frac{3}{4}$ inch. If there is a 6 × 6 array of these planters with no space between them, what is the area covered by the planters?



$3\frac{1}{2} \times 1\frac{3}{4}$

$= (3 \times 1) + (3 \times \frac{3}{4}) + (1 \times \frac{1}{2}) + (\frac{1}{2} \times \frac{3}{4})$

$= 3 + \frac{9}{4} + \frac{1}{2} + \frac{3}{8}$

$= 3 + 2\frac{1}{4} + \frac{1}{2} + \frac{3}{8}$

$= 5 + \frac{2}{8} + \frac{4}{8} + \frac{3}{8}$

$= 5\frac{9}{8}$

$= 6\frac{1}{8}$ in^2 [1 planter]

$36 \times 6\frac{1}{8} = 216 + \frac{36}{8}$

$= 216 + 4\frac{4}{8}$

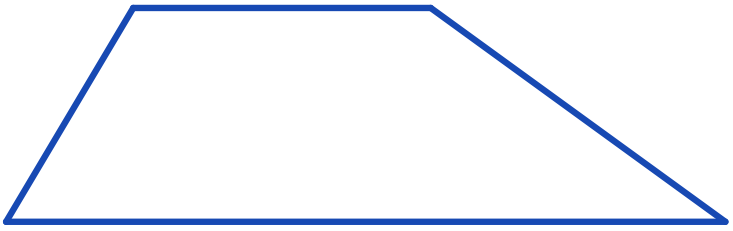
$= 220\frac{1}{2}$ in^2

The total area is $220\frac{1}{2}$ in^2.

Name _____ Date _____

a. Use a ruler and a set square to draw a trapezoid.

Answers will vary. Here is one example.



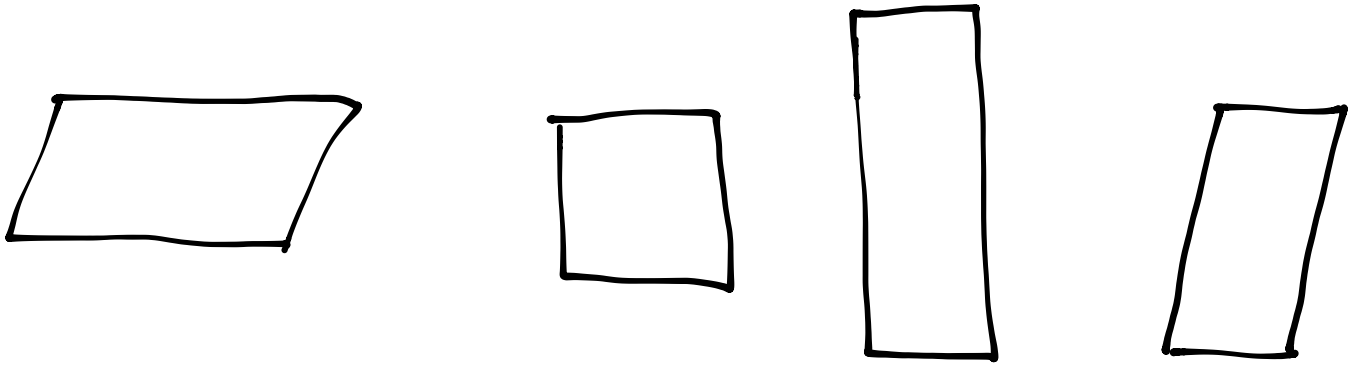
b. What attribute must be present for a quadrilateral to also be a trapezoid?

There needs to be at least one pair of parallel lines.

Name _____ Date _____

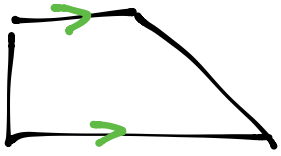
1. Draw a parallelogram.

Pictures will vary. Here are some examples.

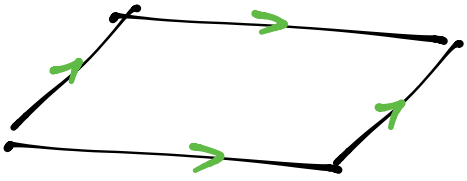


2. When is a trapezoid also called a parallelogram?

A trapezoid has at least one pair of parallel lines. So a trapezoid is also called a parallelogram when it has two pairs of parallel lines.



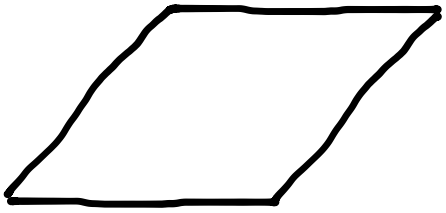
One pair of parallel lines. Not a parallelogram.



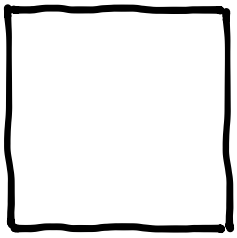
Two pairs of parallel lines. A parallelogram.

Name _____ Date _____

1. Draw a rhombus.

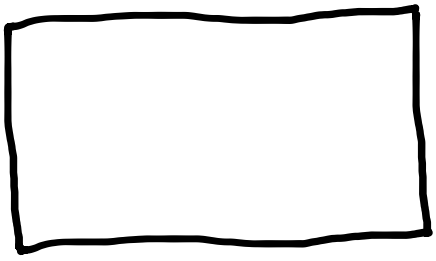


or

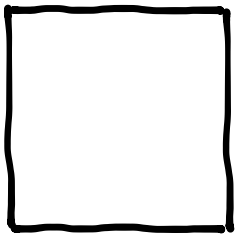


All four sides are of equal length.

2. Draw a rectangle.



or



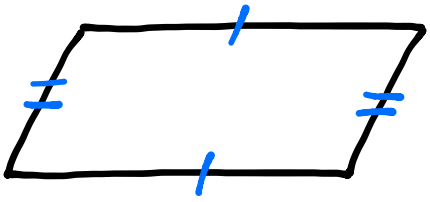
Four right angles

Name _____ Date _____

1. List the property that must be present to call a rectangle a square.

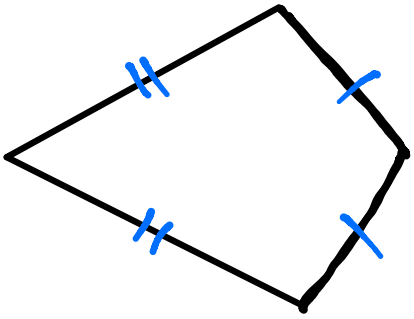
A square is a rectangle with all four sides having the same length.

2. Excluding rhombuses and squares, explain the difference between parallelograms and kites.



Parallelogram

Opposite sides have the same length.

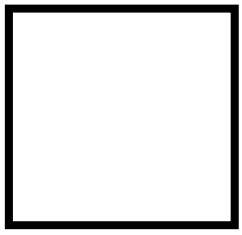


kite

Adjacent sides have the same length.

Name _____ Date _____

Use your tools to draw a square in the space below. Then, fill in the blanks with an attribute. There is more than one answer to some of these.



a. Because a square is a kite, it must have adjacent sides are the same length.

b. Because a square is a rhombus, it must have four equal sides.

c. Because a square is a rectangle, it must have four right angles.

d. Because a square is a parallelogram, it must have opposite sides are parallel.

e. Because a square is a trapezoid, it must have at least one pair of parallel sides.

f. Because a square is a quadrilateral, it must have four sides.

Name _____ Date _____

1. Use the word bank to fill in the blanks.

trapezoids	parallelograms

All parallelograms are trapezoids, but not all trapezoids are parallelograms.

2. Use the word bank to fill in the blanks.

kites	rhombuses

All rhombuses are kites, but not all kites are rhombuses.