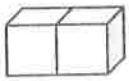
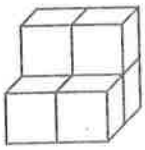
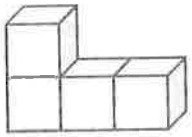
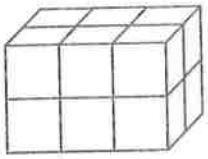
Name _____ Date _____

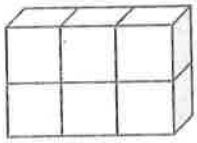
1. The following solids are made up of 1 cm cubes. Find the total volume of each figure, and write it in the chart below.

A. 

D. 

B. 

E. 

C. 

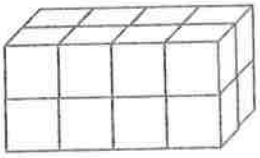
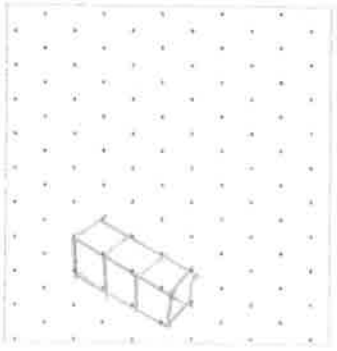
F. 

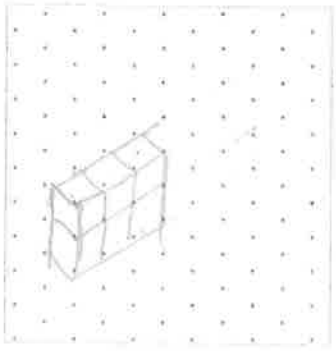
Figure	Volume	Explanation
A	2	one layer of two
B	4	three on the bottom, one on top
C	6	two layers of three
D	6	four on the bottom, two on the top
E	12	two layers of six
F	16	two layers of eight

2. Draw a figure with the given volume on the dot paper.

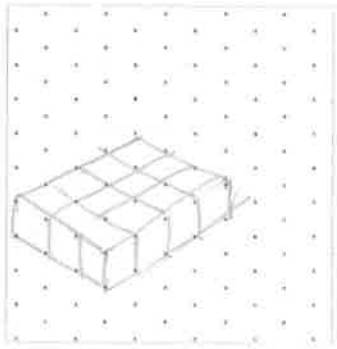
a. 3 cubic units



b. 6 cubic units

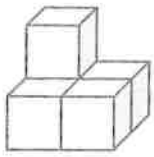


c. 12 cubic units

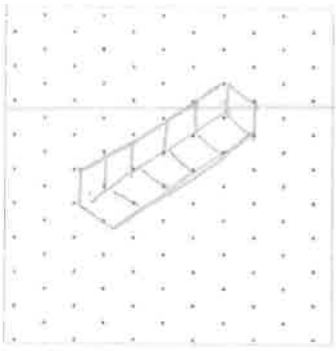


3. John built and drew a structure that has a volume of 5 cubic centimeters. His little brother tells him he made a mistake because he only drew 4 cubes. Help John explain to his brother why his drawing is accurate.

These are 5 cubes. There are four at the bottom and one on top of one at the bottom.

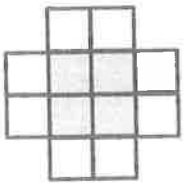


4. Draw another figure below that represents a structure with a volume of 5 cubic centimeters.



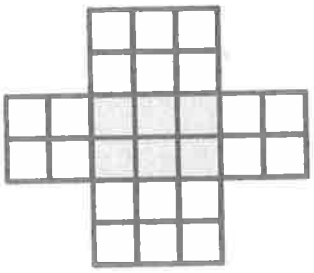
Name _____ Date _____

1. Make the following boxes on centimeter grid paper. Cut and fold each to make 3 open boxes, taping them so they hold their shapes. How many cubes would fill each box? Explain how you found the number.

a. 

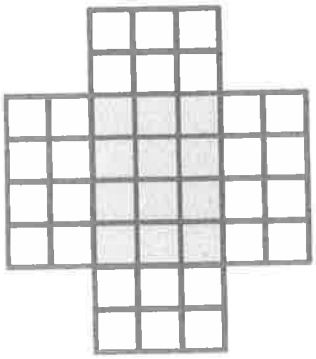
Number of cubes: 4

There is one layer of 4.

b. 

Number of cubes: 12

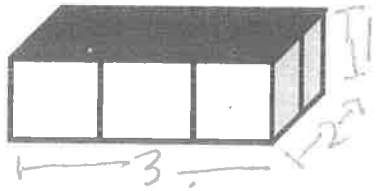
There are two layers of 6.

c. 

Number of cubes: 24

There are two layers of 12.

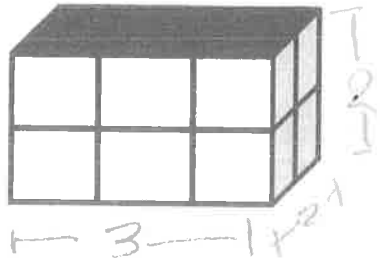
2. How many centimeter cubes would fit inside each box? Explain your answer using words and diagrams on each box. (The figures are not drawn to scale.)

a. 

Number of cubes: 6

Explanation:

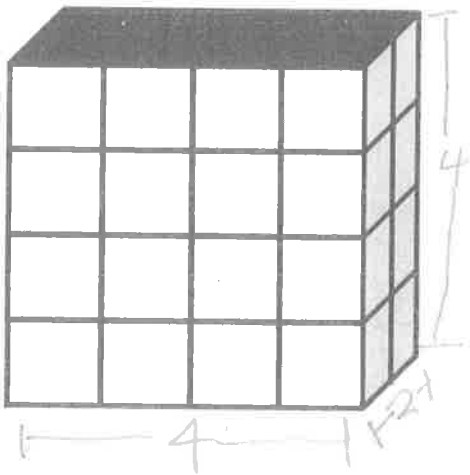
3 by 2 by 1

b. 

Number of cubes: 12

Explanation:

3 by 2 by 2

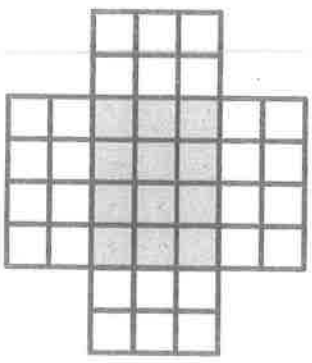
c. 

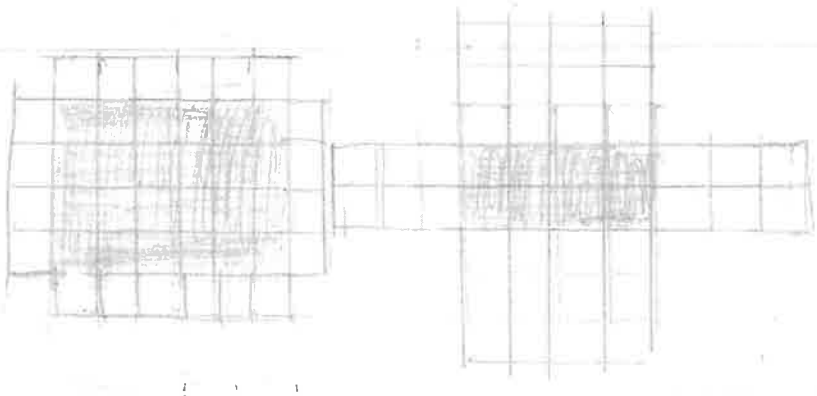
Number of cubes: 32

Explanation:

4 by 2 by 4

3. The box pattern below holds 24 1-centimeter cubes. Draw two different box patterns that would hold the same number of cubes.





EUREKA MATH

Name _____ Date _____

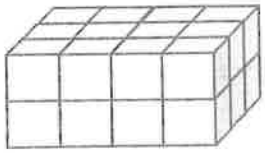
1. Use the prisms to find the volume.

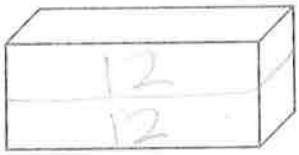
- The rectangular prisms pictured below were constructed with 1 cm cubes.
- Decompose each prism into layers in three different ways, and show your thinking on the blank prisms.
- Complete each table.

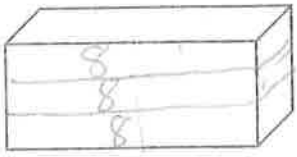
Note: These are some possible ways. Yours may be different.

a.

Number of Layers	Number of Cubes in Each Layer	Volume of the Prism
2	12	24 cubic cm
4	6	24 cubic cm
3	8	24 cubic cm

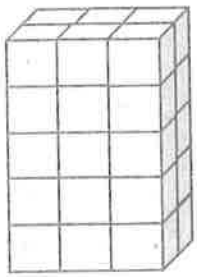


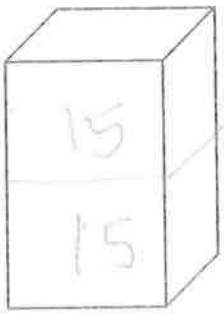


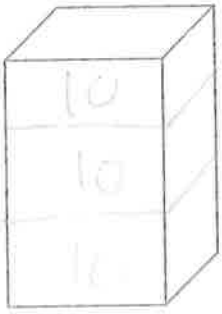


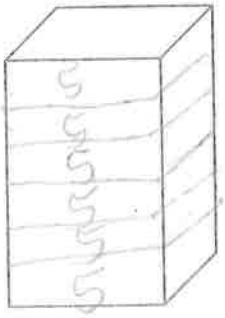
b.

Number of Layers	Number of Cubes in Each Layer	Volume of the Prism
2	15	30 cubic cm
3	10	30 cubic cm
6	5	30 cubic cm

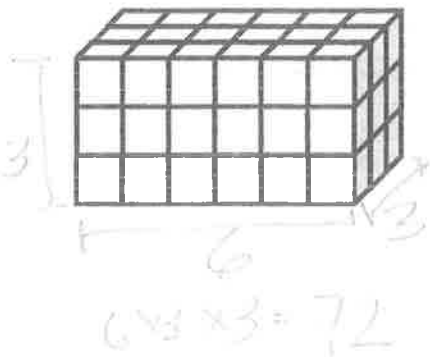








2. Stephen and Chelsea want to increase the volume of this prism by 72 cubic centimeters. Chelsea wants to add eight layers, and Stephen says they only need to add four layers. Their teacher tells them they are both correct. Explain how this is possible.



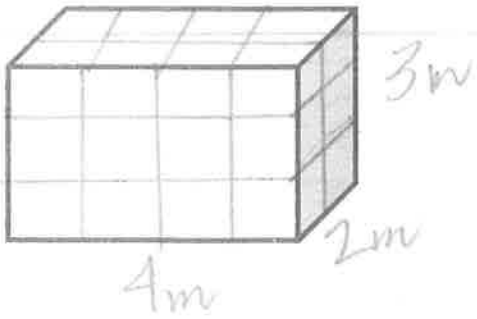
Chelsea is thinking about adding 8 layers of 9, which is 72.
Stephen is thinking about adding 4 layers of 18, which also is 72.

3. Juliana makes a prism 4 inches across and 4 inches wide but only 1 inch tall. She then decides to create layers equal to her first one. Fill in the chart below, and explain how you know the volume of each new prism.

4×4×1 = 16 in³

Number of Layers	Volume	Explanation
3	48 in³	4×4×3 = 48 in³
5	80 in³	4×4×5 = 80 in³
7	112 in³	4×4×7 = 112 in³

4. Imagine the rectangular prism below is 4 meters long, 3 meters tall, and 2 meters wide. Draw horizontal lines to show how the prism could be decomposed into layers that are 1 meter in height.



It has 3 layers from top to bottom.

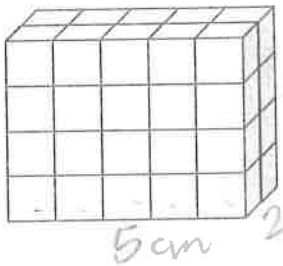
Each horizontal layer contains 8 cubic meters.

The volume of this prism is 24

Name _____ Date _____

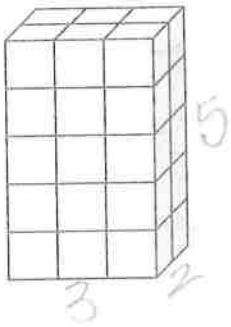
1. Each rectangular prism is built from centimeter cubes. State the dimensions, and find the volume.

a.



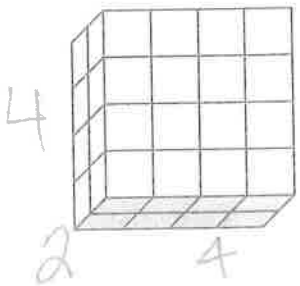
Length: 5 cm
Width: 2 cm
Height: 4 cm
Volume: 40 cm^3

b.



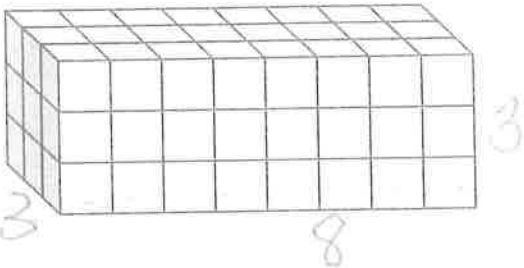
Length: 2 cm
Width: 3 cm
Height: 5 cm
Volume: 30 cm^3

c.



Length: 4 cm
Width: 2 cm
Height: 4 cm
Volume: 32 cm^3

d.



Length: 8 cm
Width: 3 cm
Height: 3 cm
Volume: 72 cm^3

2. Write a multiplication sentence that you could use to calculate the volume for each rectangular prism in Problem 1. Include the units in your sentences.

a. 5cm x 2cm x 4cm

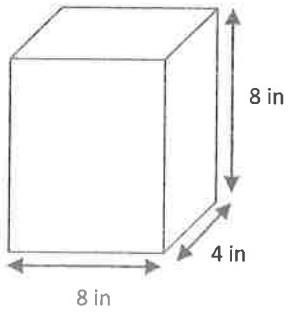
b. 4cm x 2cm x 4cm

c. 3cm x 2cm x 5cm

d. 8cm x 3cm x 3cm

3. Calculate the volume of each rectangular prism. Include the units in your number sentences.

a.

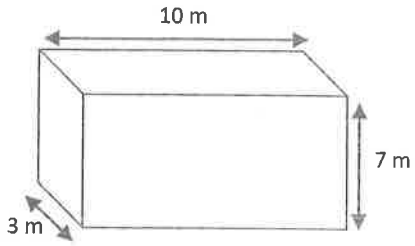


64 x4 256

Volume: 256 in³

8 in x 4 in x 8 in

b.



Volume: 210 in³

10 in x 3 in x 7 in

4. Mrs. Johnson is constructing a box in the shape of a rectangular prism to store clothes for the summer. It has a length of 28 inches, a width of 24 inches, and a height of 30 inches. What is the volume of the box?

28 in x 24 in x 30 in =

35 x 30 = 840

840 x 24 = 20,160

V = 20,160 in³

5. Calculate the volume of each rectangular prism using the information that is provided.

a. Face area: 56 square meters

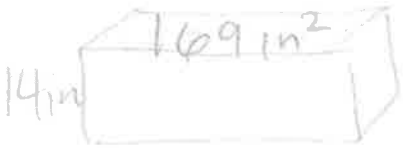
Height: 4 meters

56 x 4 = 224

224 m³

b. Face area: 169 square inches

Height: 14 inches



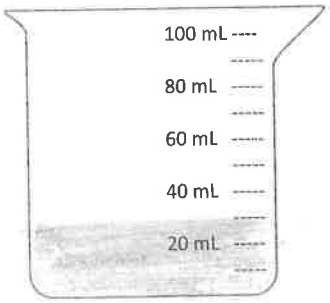
169 x 14 = 676 + 1690 = 2366

2,366 in²

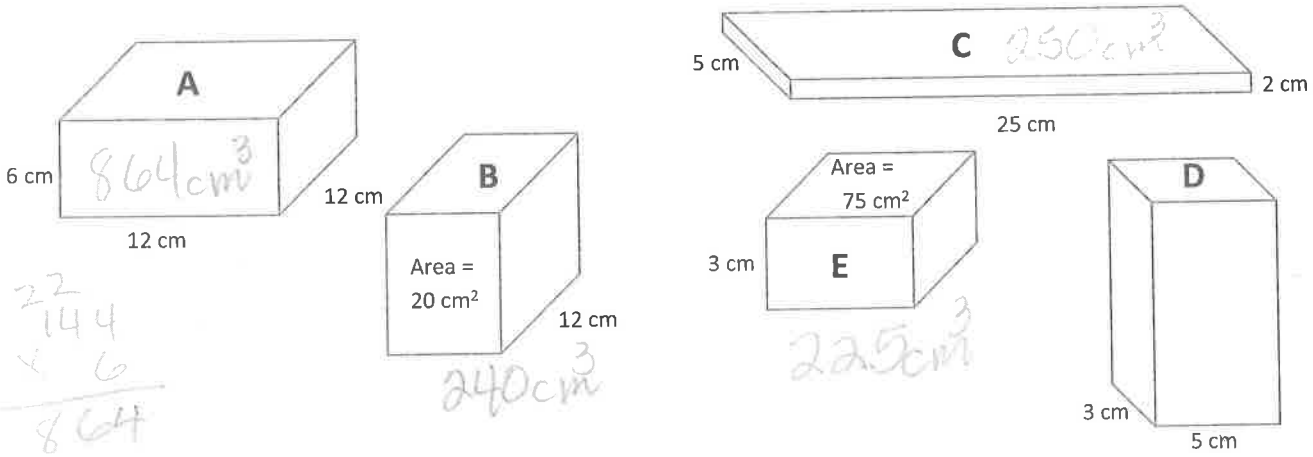
EUREKA MATH™

Name _____ Date _____

1. Johnny filled a container with 30 centimeter cubes. Shade the beaker to show how much water the container will hold. Explain how you know.



2. A beaker contains 250 mL of water. Jack wants to pour the water into a container that will hold the water. Which of the containers pictured below could he use? Explain your choices.



22
144
× 6
864

240 cm³

225 cm³

A and C can hold 250 mL of water

3. On the back of this paper, describe the details of the activities you did in class today. Include what you learned about cubic centimeters and milliliters. Give an example of a problem you solved with an illustration.

Cubic centimeters and milliliters are equivalent.

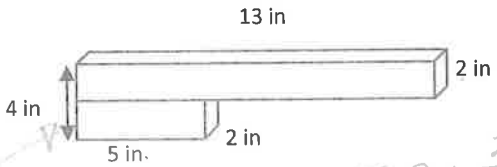
1,000 cm³

1 Liter

Name _____ Date _____

1. Find the total volume of the figures, and record your solution strategy.

a.

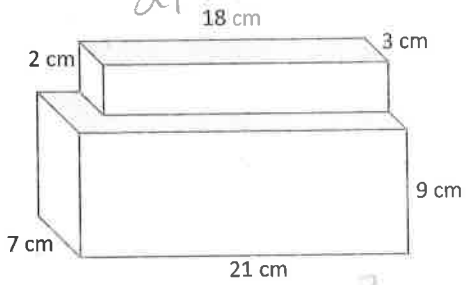


Volume: 72 in³

Solution Strategy: 4-2=2. The height of the bottom box is 2.

A = 6×3×4 = 72 mm³
B = 11×3×4 = 132 mm³
C = 3×3×5 = 45 mm³

b.

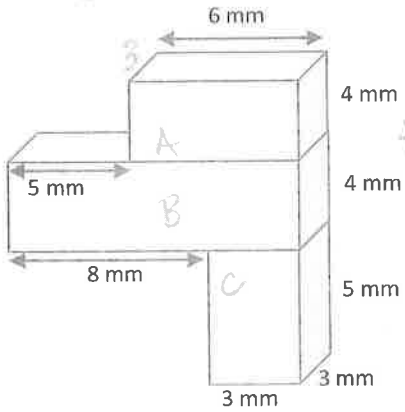


18×3×2 = 108 cm³
21×7×9 = 1,326 cm³

Volume: 1,431 cm³

Solution Strategy: I just calculated the volume of both and added them.

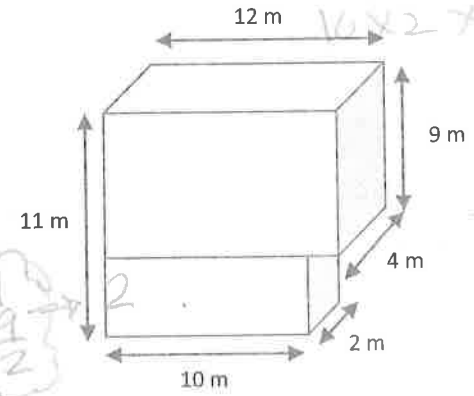
c.



Volume: 249 mm³

Solution Strategy: The width of the top figure is 3 mm.

d.

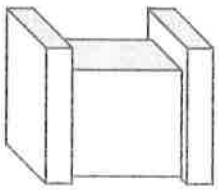


12×4×9 = 432 m³
10×2×2 = 40 m³

Volume: 472 m³

Solution Strategy: The height of the figure at the bottom is 2m

2. The figure below is made of two sizes of rectangular prisms. One type of prism measures 3 inches by 6 inches by 14 inches. The other type measures 15 inches by 5 inches by 10 inches. What is the total volume of this figure?



$3 \times (6 \times 14) =$ $15 \times 5 \times 10 =$

$3 \times 84 =$ $75 \times 10 =$

252 in^3 750 in^3

$252 \times 2 = 504 \text{ in}^3$

$750 + 504 = 1254 \text{ in}^3$

The total volume is $1,254 \text{ in}^3$

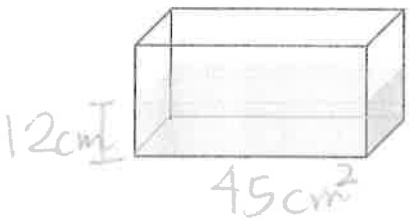
3. The combined volume of two identical cubes is 250 cubic centimeters. What is the measure of one cube's edge?

$250 \div 2 = 125 \text{ cm}^3$

$125 = 5 \text{ cm} \times 5 \text{ cm} \times 5 \text{ cm}$

The measure of one edge is 5 cm

4. A fish tank has a base area of 45 cm^2 and is filled with water to a depth of 12 cm. If the height of the tank is 25 cm, how much more water will be needed to fill the tank to the brim?



$45 \times 25 =$ $45 \times 12 =$

$1,125 \text{ cm}^3$ 540 cm^3

$1,125$

$+ \ 540$

585

585 mL will be needed to fill the tank.

5. Three rectangular prisms have a combined volume of 518 cubic feet. Prism A has one-third the volume of Prism B, and Prisms B and C have equal volume. What is the volume of each prism?

518

$74 \times 7 = 518$

49

28

28

0

$74 \times 3 = 222$

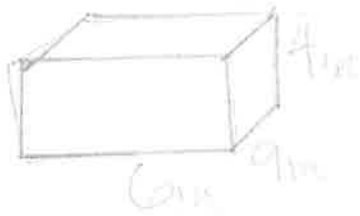
Prism A is 74 ft^3, and Prism B and C are 222 ft^3 each

Name _____ Date _____

Wren makes some rectangular display boxes.

1. Wren's first display box is 6 inches long, 9 inches wide, and 4 inches high. What is the volume of the display box? Explain your work using a diagram.

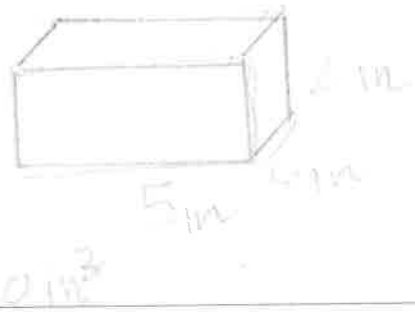
$V = 6 \times 9 \times 4 = 54 \times 4 = 216 \text{ in}^3$



2. Wren wants to put some artwork into three shadow boxes. She knows they all need a volume of 60 cubic inches, but she wants them all to be different. Show three different ways Wren can make these boxes by drawing diagrams and labeling the measurements.

Shadow Box A

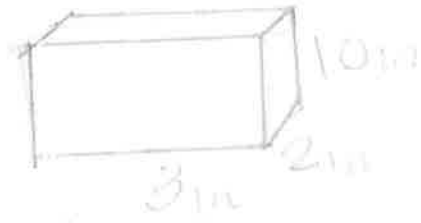
$5 \times 6 \times 2$



60 in^3

Shadow Box B

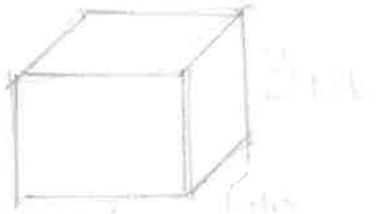
$3 \times 2 \times 10$



60 in^3

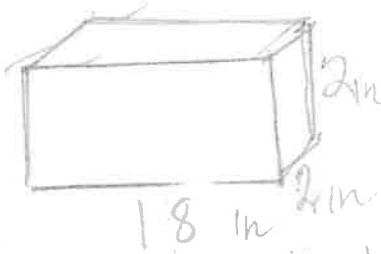
Shadow Box C

$1 \times 5 \times 3$



3. Wren wants to build a box to organize her scrapbook supplies. She has a stencil set that is 12 inches wide that needs to lay flat in the bottom of the box. The supply box must also be no taller than 2 inches. Name one way she could build a supply box with a volume of 72 cubic inches.

V = 72 in
h = 2 in



2 | 72 → 36
2 | 36 → 18
2 | 18 → 9

Wren can use a box that is 18 in by 2 in by 2 in

4. After all of this organizing, Wren decides she also needs more storage for her soccer equipment. Her current storage box measures 1 foot long by 2 feet wide by 2 feet high. She realizes she needs to replace it with a box with 12 cubic feet of storage, so she doubles the width.

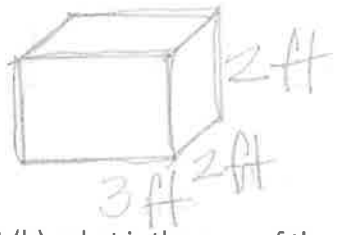
a. Will she achieve her goal if she does this? Why or why not?

1 × 2 × 2 = 4 ft3
1 × 4 × 2 = 8 ft3

She will not achieve her goal. By doubling the width, she only doubles the volume.

b. If she wants to keep the height the same, what could the other dimensions be for a 12-cubic-foot storage box?

3 × 2 × 2



12 ft3

l × w × h
a) 3 × 2 × 2 = 12
b) 1 × 6 × 2 = 12
c) 4 × 3 × 1 = 12

c. If she uses the dimensions in part (b), what is the area of the new storage box's floor?

3ft × 2ft = 6ft2

6ft2

The area will be 6ft2

d. How has the area of the bottom in her new storage box changed? Explain how you know.

Her first box had 4ft2 of area
Her second box had 6ft2 of area

Name ______________________________ Date ________________

1. I have a prism with the dimensions of 6 cm by 12 cm by 15 cm. Calculate the volume of the prism, and then give the dimensions of three different prisms that each have $\frac{1}{3}$ of the volume.

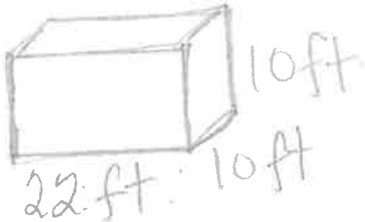
	Length	Width	Height	Volume
Original Prism	6 cm	12 cm	15 cm	1,080 cm^3
Prism 1	2 cm	12 cm	15 cm	360 cm^3
Prism 2	6 cm	4 cm	15 cm	360 cm^3
Prism 3	6 cm	12 cm	5 cm	360 cm^3

2. Sunni's bedroom has the dimensions of 11 ft by 10 ft by 10 ft. Her den has the same height but double the volume. Give two sets of the possible dimensions of the den and the volume of the den.

Bedroom $11 \times 10 \times 10 = 1,100 ft^3$

Den 1 $22 \times 10 \times 10 = 2,200 ft^3$

Den 2 $11 \times 20 \times 10 = 2,200 ft^3$



Name _____ Date _____

1. Find three rectangular prisms around your house. Describe the item you are measuring (cereal box, tissue box, etc.), and then measure each dimension to the nearest whole inch, and calculate the volume.

   a. Rectangular Prism A Cereal Box

   Item:

   Height: 13 inches

   Length: 10 inches

   Width: 3 inches

   Volume: 390 cubic inches

   $130 \times 3 = 390$

   b. Rectangular Prism B Cupcakes flair box

   Item:

   Height: 7 inches

   Length: $5\frac{1}{2}$ inches

   Width: $1\frac{1}{2}$ inches

   Volume: 72 cubic inches

   $7 \times (5\frac{1}{2} \times 1\frac{1}{2}) =$

   $7 \times (5 + \frac{5}{2} + \frac{1}{2} + \frac{1}{4}) = 7 \times 8\frac{1}{4} =$

   $56 + \frac{56}{4} = 56 + 16 = 72$

   c. Rectangular Prism C Pencils' box

   Item:

   Height: 5 inches

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

   Width: $\frac{1}{2}$ inches

   Volume: 10 cubic inches

   $8 \times (2\frac{1}{2} \times \frac{1}{2}) =$

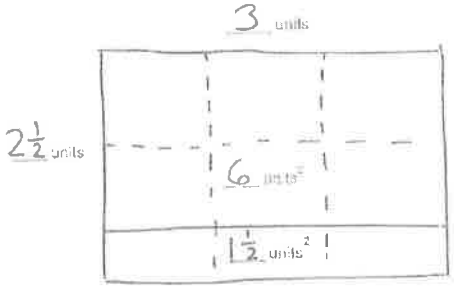
   $8 \times (2\frac{1}{2} + \frac{1}{4}) = 8 \times 1\frac{1}{4} = 8 + \frac{8}{4} =$

   10

Name _____ Date _____

1. John tiled some rectangles using square units. Sketch the rectangles if necessary. Fill in the missing information, and then confirm the area by multiplying.

a. **Rectangle A:**

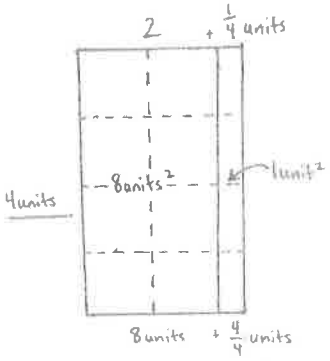


Rectangle A is

3 units long 2 1/2 units wide

Area = 7 1/2 units²

b. **Rectangle B:**



Rectangle B is

2 1/4 units long 4 units wide

4 × 2 1/4 = 8 + 4/4 = 9

Area = 9 units²

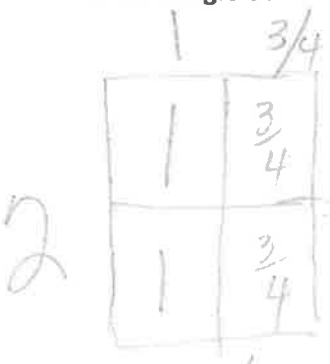
c. **Rectangle C:**

Rectangle C is 4 × 3/4 = 12/4 = 3

3/4 units long 4 units wide

Area = 3 units²

d. **Rectangle D:**



$2 + \frac{6}{4} = 3\frac{2}{4} = 3\frac{1}{2}$

Rectangle D is

2 units long $\frac{3}{4}$ units wide

Area = $3\frac{1}{2}$ units^2

2. Rachel made a mosaic from different color rectangular tiles. Three tiles measured $3\frac{1}{2}$ inches × 3 inches. Six tiles measured 4 inches × $3\frac{1}{4}$ inches. What is the area of the whole mosaic in square inches?

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

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

$10\frac{1}{2}$ in^2

$3 \times 10\frac{1}{2} = 30 + \frac{3}{2} =$ $31\frac{1}{2}$ in^2

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

$12 + \frac{4}{4} =$

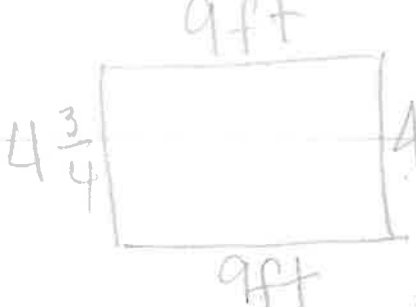
13 in^2

$6 \times 13 =$ 48 in^2

$31\frac{1}{2} + 48 = 79\frac{1}{2}$

The area of the whole mosaic is $79\frac{1}{2}$ in^2

3. A garden box has a perimeter of $27\frac{1}{2}$ feet. If the length is 9 feet, what is the area of the garden box?



$27\frac{1}{2} - 18 = 9\frac{1}{2}$

$9\frac{1}{2} \div 2 = 9\frac{1}{2} \times \frac{1}{2} =$

$\frac{19}{2} \times \frac{1}{2} = \frac{19}{4} =$ $4\frac{3}{4}$

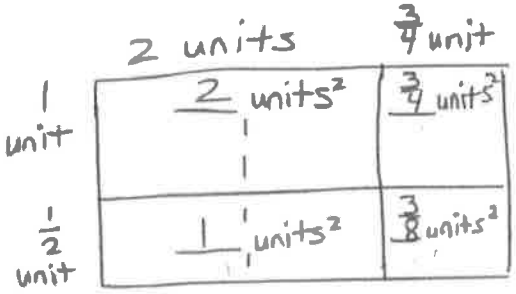
$A = 9 \times 4\frac{3}{4} = 36 + \frac{27}{4} = 36 + 6\frac{3}{4} =$ $42\frac{3}{4}$

The area of the garden is $42\frac{3}{4}$ ft^2

Name _____ Date _____

1. Kristen tiled the following rectangles using square units. Sketch the rectangles, and find the areas. Then, confirm the area by multiplying. Rectangle A has been sketched for you.

a. **Rectangle A:**



Rectangle A is

2 3/4 units long × 1 1/2 units wide

Area = 3 1/8 units²

$2\frac{3}{4} \times 1\frac{1}{2} = 2 + \frac{2}{2} + \frac{3}{4} + \frac{3}{8} = 3 + \frac{6}{8} + \frac{3}{8} = 3 + \frac{9}{8} = 4\frac{1}{8}$

b. **Rectangle B:**

Rectangle B is

$2\frac{1}{2}$ units long × $\frac{3}{4}$ unit wide

Area = 1 7/8 units²

$2\frac{1}{2} \times \frac{3}{4} = \frac{6}{4} + \frac{3}{8} = 1\frac{1}{2} + \frac{3}{8} = 1\frac{4}{8} + \frac{3}{8} = 1\frac{7}{8}$

c. **Rectangle C:**

Rectangle C is

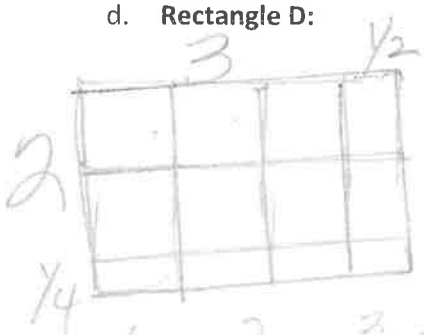
$3\frac{1}{3}$ units long × $2\frac{1}{2}$ units wide

Area = 8 1/3 units²

$3\frac{1}{3} \times 2\frac{1}{2} = 6 + \frac{3}{2} + \frac{2}{3} + \frac{1}{6} = 6 + \frac{9}{6} + \frac{4}{6} + \frac{1}{6} = 6 + \frac{14}{6} = 8\frac{2}{6} = 8\frac{1}{3}$

$6 + \frac{3}{2} + \frac{2}{3} + \frac{1}{6} = 6 + \frac{9}{6} + \frac{4}{6} + \frac{1}{6} = 6 + \frac{14}{6} = 8\frac{2}{6} = 8\frac{1}{3}$

d. **Rectangle D:**



Rectangle D is

$3\frac{1}{2}$ units long × $2\frac{1}{4}$ units wide

Area = 7 7/8 units²

$6 + \frac{2}{2} + \frac{3}{4} + \frac{1}{8} =$

$7 + \frac{3}{4} + \frac{1}{8} = 7 + \frac{6}{8} + \frac{1}{8}$

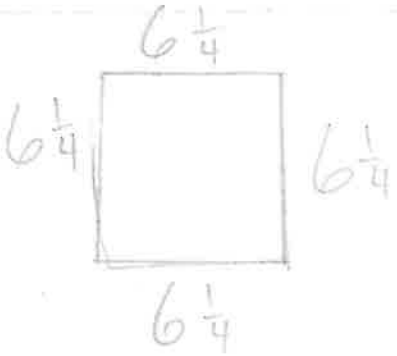
$7\frac{7}{8}$

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

$6 + \frac{3}{4} + \frac{2}{2} + \frac{1}{8} =$

$7 + \frac{6}{8} + \frac{1}{8} = 7\frac{7}{8}$

2. A square has a perimeter of 25 inches. What is the area of the square?



$25 \div 4 = 6\frac{1}{4}$

$A = 6\frac{1}{4} \times 6\frac{1}{4} =$

$36 + \frac{6}{4} + \frac{6}{4} + \frac{1}{16} =$

$36 + \frac{12}{4} + \frac{1}{16} =$

$39\frac{1}{16}$

Name _____ Date _____

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

a.

b.

c.

d.

e.

2. Find the area of rectangles with the following dimensions. Explain your thinking using the area model.

a. $2\frac{1}{4}$ yd × $\frac{1}{4}$ yd

$2\frac{1}{4} \times \frac{1}{4} = \frac{2}{4} + \frac{1}{16} =$

$\frac{8}{16} + \frac{1}{16} =$

$\frac{2}{4} + \frac{1}{16} = \frac{8}{16} + \frac{1}{16} = \frac{9}{16}$

$\frac{9}{16}$ yd²

b. $2\frac{1}{2}$ ft × $1\frac{1}{4}$ ft

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

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

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

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

$3\frac{1}{8}$ ft²

3. Kelly buys a tarp to cover the area under her tent. The tent is 4 feet wide and has an area of 31 square feet. The tarp she bought is $5\frac{1}{3}$ feet by $5\frac{3}{4}$ feet. Can the tarp cover the area under Kelly's tent? Draw a model to show your thinking.

Tent Volume 31 ft²
Width 4 ft
length = 7¾ ft

Tarp $5\frac{1}{3} \times 5\frac{3}{4} =$

$25 + \frac{15}{4} + \frac{5}{3} + \frac{3}{12} =$

$25 + 3\frac{3}{4} + 1\frac{2}{3} + \frac{1}{4} = 30\frac{2}{3}$

$30\frac{2}{3}$ ft²

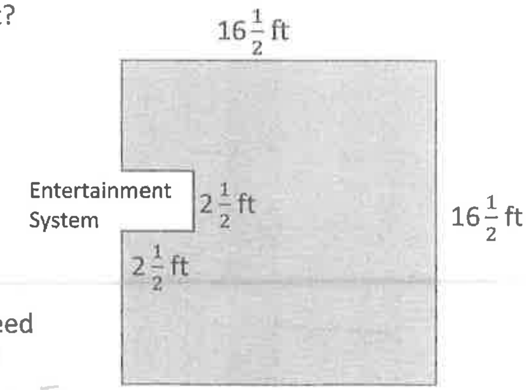
The tarp cannot cover the area under the tent

4. Shannon and Leslie want to carpet a $16\frac{1}{2}$-ft by $16\frac{1}{2}$-ft square room. They cannot put carpet under an entertainment system that juts out. (See the drawing below.)

a. In square feet, what is the area of the space with no carpet?

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

$6\frac{1}{4}$ ft²



b. How many square feet of carpet will Shannon and Leslie need to buy?

$16\frac{1}{2} \times 16\frac{1}{2} = 256 + \frac{16}{2} + \frac{16}{2} + \frac{1}{4} =$

$256 + 16 + \frac{1}{4} = 272\frac{1}{4}$ ft²

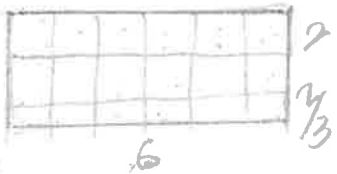
$272\frac{1}{4} - 6\frac{1}{4} = 266$

They need to buy 266 ft²

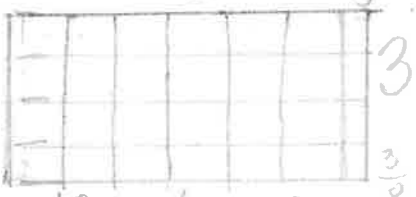
Name _____ Date _____

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

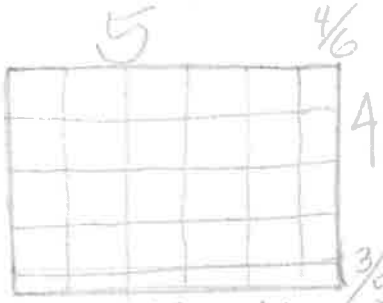
a. $\frac{8}{3}$ cm × $\frac{24}{4}$ cm



b. $\frac{32}{5}$ ft × $3\frac{3}{8}$ ft

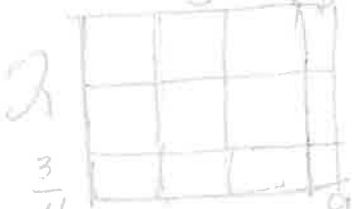


c. $5\frac{4}{6}$ in × $4\frac{3}{5}$ in



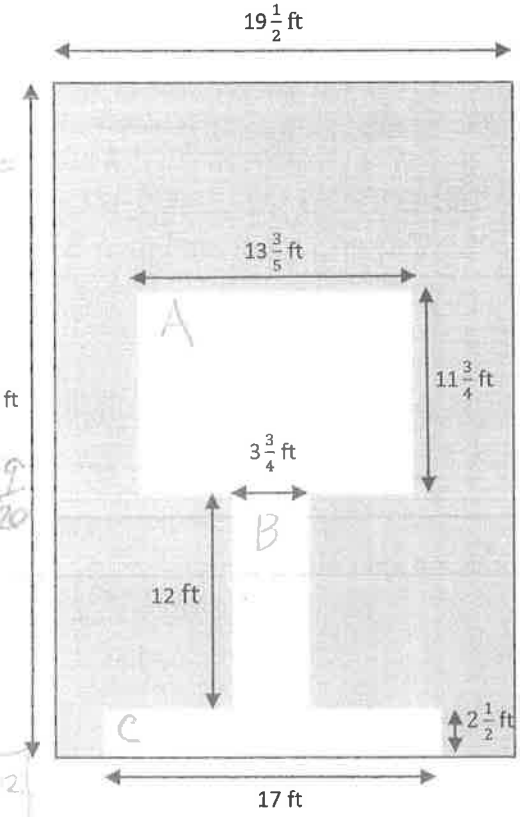
d. $\frac{5}{7}$ m × $6\frac{3}{5}$ m

2. Chris is making a tabletop from some leftover tiles. He has 9 tiles that measure $3\frac{1}{8}$ inches long and $2\frac{3}{4}$ inches wide. What is the greatest area he can cover with these tiles?



The greatest area is $77\frac{11}{32}$ in^2.

3. A hotel is recarpeting a section of the lobby. Carpet covers the part of the floor as shown below in gray. How many square feet of carpeting will be needed?



$31\frac{7}{8} \times 19\frac{1}{2} = 589 + \frac{31}{2} + \frac{133}{8} + \frac{7}{16}$

$589 + 15\frac{1}{2} + 16\frac{5}{8} + \frac{7}{16}$

$620 + \frac{1}{2} + \frac{5}{8} + \frac{7}{16} = 630 + \frac{8}{16} + \frac{10}{16} + \frac{7}{16} =$

$620\frac{25}{16} =$ $621\frac{9}{16}$ ft²

19 × 31 = 19 + 570 = 589

(A) $13\frac{3}{5} \times 11\frac{3}{4} = 143 + \frac{39}{4} + \frac{33}{5} + \frac{9}{20}$

$143 + 9\frac{3}{4} + 6\frac{3}{5} + \frac{9}{20} = 158 + \frac{3}{4} + \frac{3}{5} + \frac{9}{20}$

$158 + \frac{15}{20} + \frac{12}{20} + \frac{9}{20} = 158\frac{36}{20}$

$159\frac{16}{20} =$ $159\frac{4}{5}$ ft²

(B) $12 \times 3\frac{3}{4} = 36 + \frac{36}{4} =$ 45 ft²

(C) $17 \times 2\frac{1}{2} = 34 + \frac{17}{2} = 34 + 8\frac{1}{2} =$ $42\frac{1}{2}$ ft²

$159\frac{4}{5}\left(\frac{8}{10}\right)$

$+ \quad 45$

$42\frac{1}{2}\left(\frac{5}{10}\right)$

$246 \quad \frac{13}{10}$

$247\frac{3}{10}$ ft²

$621\frac{9}{16} - 247\frac{3}{10} = 374$

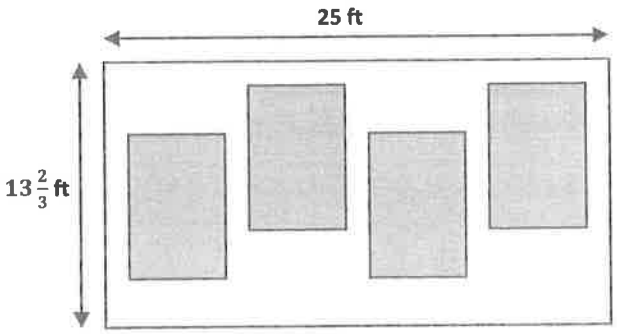
$\frac{90}{160}$ $\frac{48}{160}$ $\frac{42}{160} = \frac{21}{80}$

$384\frac{21}{80}$ ft²

There will be needed $384\frac{21}{80}$ ft²

Name _____ Date _____

1. Mr. Albano wants to paint menus on the wall of his café in chalkboard paint. The gray area below shows where the rectangular menus will be. Each menu will measure 6-ft wide and $7\frac{1}{2}$-ft tall.



- How many square feet of menu space will Mr. Albano have?

1st $6 \times 7\frac{1}{2} = 42 + \frac{6}{2} = 45 ft^2$

2nd $45 \times 4 =$ $180 ft^2$

Menus will have 180 ft^2 of space

- What is the area of wall space that is not covered by chalkboard paint?

$25 \times 13\frac{2}{3} = 325 + \frac{50}{3} = 325 + 16\frac{2}{3} = 341\frac{2}{3} ft^2$

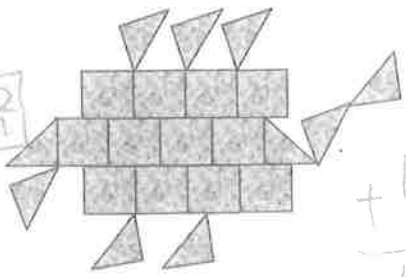
$341\frac{2}{3} - 180 = 161\frac{2}{3}$

The area is not covered is $161\frac{2}{3}$

2. Mr. Albano wants to put tiles in the shape of a dinosaur at the front entrance. He will need to cut some tiles in half to make the figure. If each square tile is $4\frac{1}{4}$ inches on each side, what is the total area of the dinosaur?

$4\frac{1}{2} \times 4\frac{1}{2} = 16 + \frac{4}{2} + \frac{4}{2} + \frac{1}{4} =$

$16 + 2 + 2 + \frac{1}{4} = 20\frac{1}{4} in^2$



$+\frac{12}{5}$

17

$20\frac{1}{4} \times 17 = 340\frac{1}{4} in^2$.

The total area is $340\frac{1}{4} in^2$

3. A-Plus Glass is making windows for a new house that is being built. The box shows the list of sizes they must make.

15 windows $4\frac{3}{4}$-ft long and $3\frac{3}{5}$-ft wide
7 windows $2\frac{4}{5}$-ft wide and $6\frac{1}{2}$-ft long

How many square feet of glass will they need?

$4\frac{3}{4} \times 3\frac{3}{5} = 12 + \frac{12}{5} + \frac{9}{4} + \frac{9}{20} = 12 + 2\frac{2}{5} + 2\frac{1}{4} + \frac{9}{20} =$

$16 + \frac{2}{5} + \frac{1}{4} + \frac{9}{20} = 16 + \frac{8}{20} + \frac{5}{20} + \frac{9}{20} = 16\frac{22}{20}$ = $17\frac{1}{10}$ ft

$15 \times 17\frac{1}{10} = 255 + \frac{15}{10} = 256\frac{5}{10}$ = $256\frac{1}{2}$ ft²

$2\frac{4}{5} \times 6\frac{1}{2} = 12 + \frac{3}{2} + \frac{24}{5} + \frac{4}{10} = 12 + 1 + 4\frac{4}{5} + \frac{2}{10} = 17 + \frac{6}{5}$ = $18\frac{1}{5}$ ft²

$17\frac{1}{10} + 18\frac{1}{5} = 35 + \frac{1}{10} + \frac{2}{10}$ = $35\frac{3}{10}$ ft²

They will need $35\frac{3}{10}$ ft²

4. Mr. Johnson needs to buy seed for his backyard lawn.

   - If the lawn measures $40\frac{4}{5}$ ft by $50\frac{7}{8}$ ft, how many square feet of seed will he need to cover the entire area?

$40\frac{4}{5} \times 50\frac{7}{8} = 2000 + \frac{280}{8} + \frac{200}{5} + \frac{28}{40} = 2000 + 35 + 40 + \frac{7}{10}$

$2075\frac{7}{10}$ ft²

He will need $2,075\frac{7}{10}$ ft² of seed.

   - One bag of seed will cover 500 square feet if he sets his seed spreader to its highest setting and 300 square feet if he sets the spreader to its lowest setting. How many bags of seed will he need if he uses the highest setting? The lowest setting?

$2,075\frac{7}{10} \div 500 = 4\frac{76}{500} = 5$

$2,075\frac{7}{10} \div 300 = 6\frac{276}{300} = 7$

He needs 5 bags for the highest or 3 for the lowest setting.

$500\overline{)2076}$ (2000, 76)

$300\overline{)2076}$ (1800, 276)

Name _____ Date _____

1. The width of a picnic table is 3 times its length. If the length is $\frac{5}{6}$-yd long, what is the area of the picnic table in square feet?

$\frac{5}{6} \times 3 = \frac{15}{6} = 2\frac{1}{6} = 2\frac{1}{2}$

$2\frac{1}{2} \times \frac{5}{6} = \frac{5}{2} \times \frac{5}{6} = \frac{25}{12}$ $2\frac{1}{12}$

$5/6$ yd

The area of the table is $2\frac{1}{2}$ yd^2

2. A painting company will paint this wall of a building. The owner gives them the following dimensions:

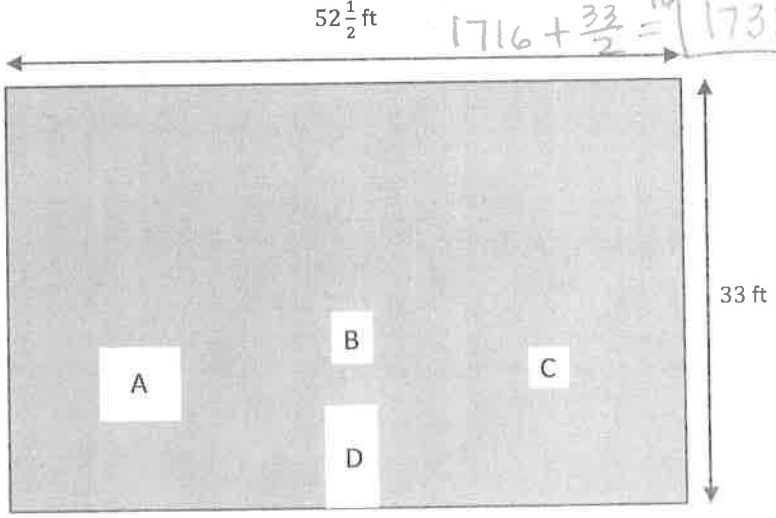
Window A is $6\frac{1}{4}$ ft × $5\frac{3}{4}$ ft.

Window B is $3\frac{1}{8}$ ft × 4 ft.

Window C is $9\frac{1}{2}$ ft^2.

Door D is 4 ft × 8 ft.

What is the area of the painted part of the wall?



$52\frac{1}{2} \times 33 =$

$1716 + \frac{33}{2} = 1732\frac{1}{2}$

$(4\frac{1}{2})(1\frac{1}{4})$

$6\frac{1}{4} \times 5\frac{3}{4} = 30 + \frac{18}{4} + \frac{5}{4} + \frac{3}{16} =$

$35 + \frac{8}{16} + \frac{4}{16} + \frac{3}{16}$

A = $35\frac{15}{16}$ ft^2

$35\frac{15}{16} + 12\frac{1}{2} + 9\frac{1}{2} + 32$

$88 + \frac{15}{16} + \frac{1}{2} + \frac{1}{2}$

$89\frac{15}{16}$

B = $3\frac{1}{8} \times 4 = 12\frac{4}{8} = 12\frac{1}{2}$ ft^2

C = $9\frac{1}{2}$ ft^2

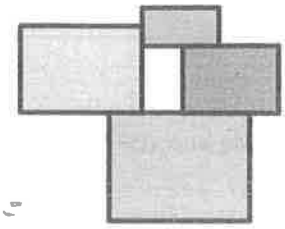
D = $4 \times 8 = 32$ ft^2

$1732\frac{1}{2} - 89\frac{15}{16}$

$1643\frac{9}{16}$

The area of the painted part is $1643\frac{9}{16}$ ft^2

3. A decorative wooden piece is made up of four rectangles as shown to the right. The smallest rectangle measures $4\frac{1}{2}$ inches by $7\frac{3}{4}$ inches. If $2\frac{1}{4}$ inches are added to each dimension as the rectangles get larger, what is the total area of the entire piece?



(3) (3½)

① $4\frac{1}{2} \times 7\frac{3}{4} = 28 + \frac{12}{4} + \frac{7}{2} + \frac{3}{8} = 34 + \frac{1}{2} + \frac{3}{8} =$ $34\frac{7}{8}$

② $6\frac{3}{4} \times 10 = 60 + \frac{30}{4} = 67\frac{2}{4}$ $67\frac{1}{2}$

③ $9 \times 12\frac{1}{4} = 108 + \frac{9}{4} =$ $2\frac{1}{4}$ $110\frac{1}{4}$

(5½) (3½)

④ $11\frac{1}{4} \times 14\frac{1}{2} = 154 + \frac{11}{2} + \frac{14}{4} + \frac{1}{8} =$ $163\frac{1}{8}$

$163\frac{1}{8} + 110\frac{1}{4} + 67\frac{1}{2} + 34\frac{3}{8} =$

$374 + \left(\frac{1}{8} + \frac{3}{8}\right) + \frac{1}{2} + \frac{1}{4}$

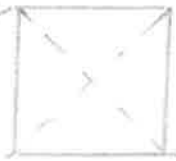
$375\frac{3}{4}$

1 1
163
110
67
34
374

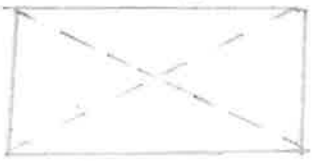
The total area of the entire piece is $375\frac{3}{4}$ in^2

Quadrilaterals

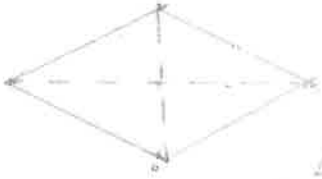
square



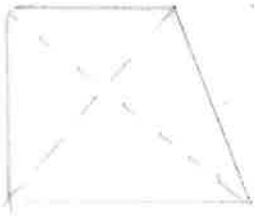
rectangle



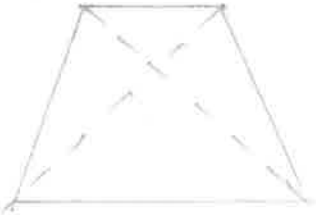
rhombus



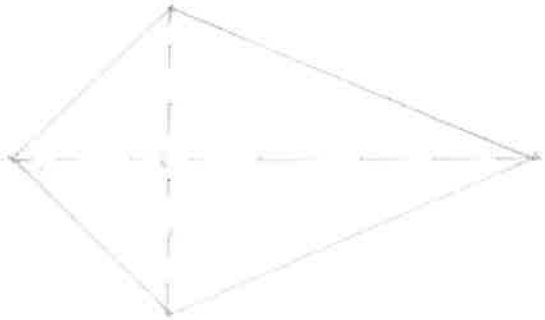
parallelogram



trapezoid



isosceles trapezoid



Kite

Trapezoids 

Parallelograms 

Rectangles 

Rhombuses 

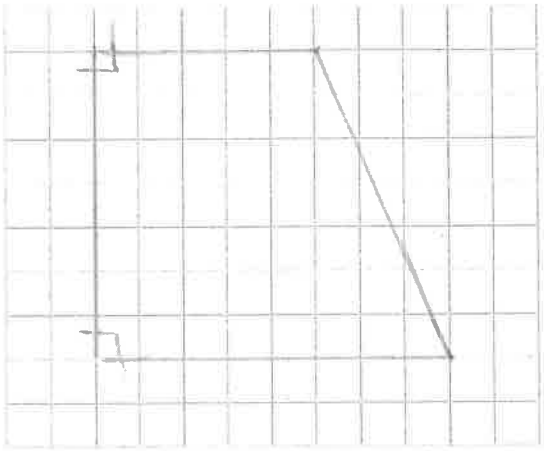
Squares 

Kites 

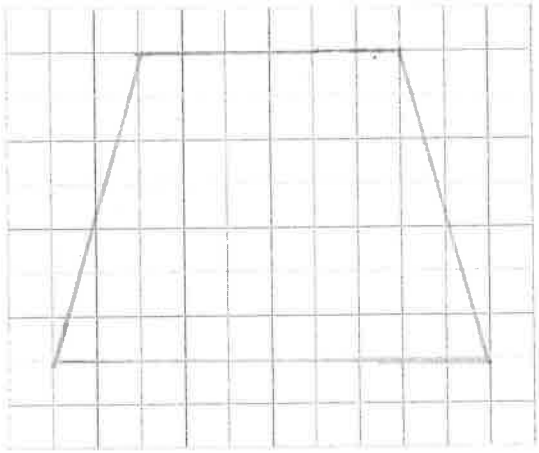
Name _____ Date _____

1. Use a straightedge and the grid paper to draw:

   a. A trapezoid with exactly 2 right angles.

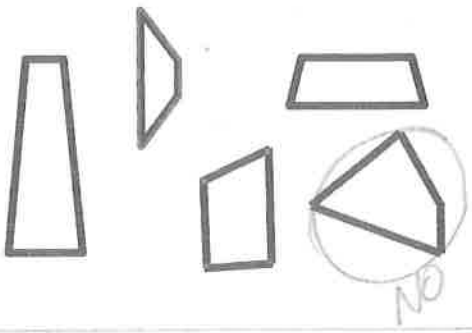
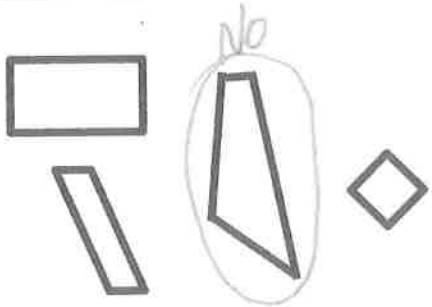


   b. A trapezoid with no right angles.



2. Kaplan incorrectly sorted some quadrilaterals into trapezoids and non-trapezoids as pictured below.

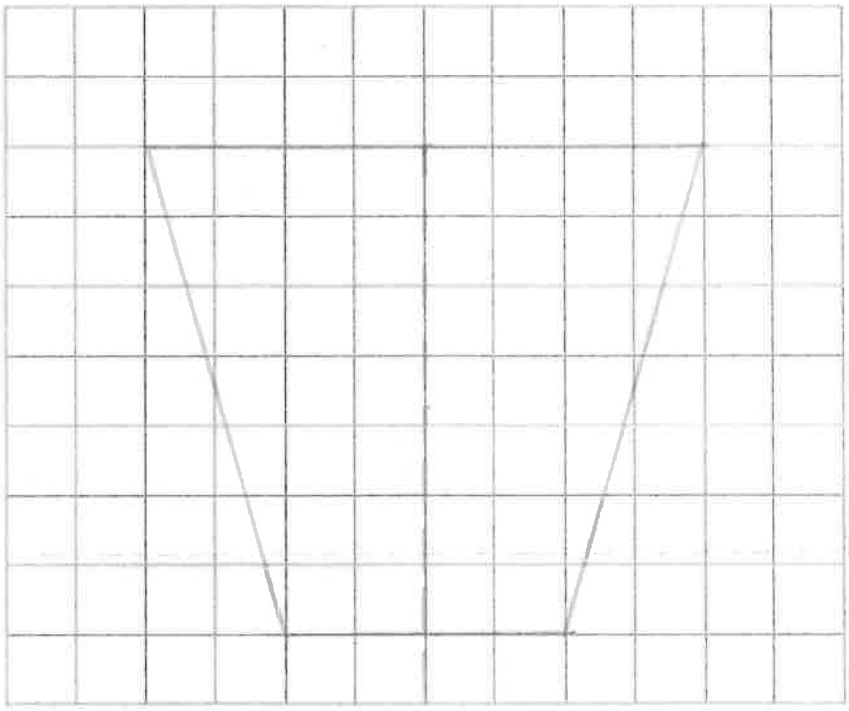
   a. Circle the shapes that are in the wrong group, and tell why they are sorted incorrectly.

Trapezoids	Non-Trapezoids
	

   b. Explain what tools would be necessary to use to verify the placement of all the trapezoids.

A straighead and a 45° degree triangle. to check on the parallel lines.

3. a. Use a straightedge to draw an isosceles trapezoid on the grid paper.

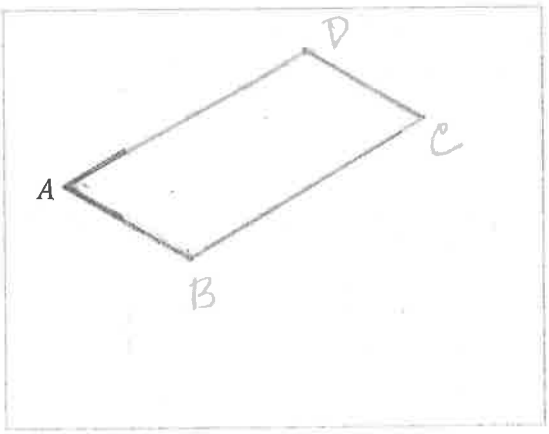


b. Why is this shape called an isosceles trapezoid?

It is an isoseles trapezoid because a line of symetry can bisect the figure into two opposite sides. Also, it has 2 equal sides.

Name _____ Date _____

1. $\angle A$ measures 60°. ∠ is the symbol for angle



a. Extend the rays of $\angle A$, and draw parallelogram $ABCD$ on the grid paper.

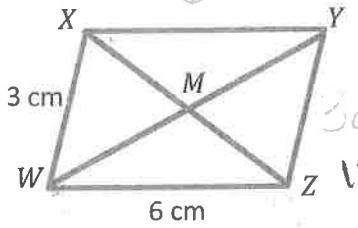
b. What are the measures of $\angle B$, $\angle C$, and $\angle D$?

∠B 120°
∠C 60°
∠D 120°

360 − 120 = 240

240 ÷ 2 = 120°

2. $WXYZ$ is a parallelogram not drawn to scale.



a. Using what you know about parallelograms, give the measure of sides XY and YZ.

b. $\angle WXY = 113°$. Use what you know about angles in a parallelogram to find the measure of the other angles.

360 − 226 = 134

3 cm

134 ÷ 2 = 67

$\angle XYZ =$ 67 ° $\angle YZW =$ 113 ° $\angle ZWX =$ 67 °

3. Jack measured some segments in Problem 2. He found that $\overline{WY}$ = 8 cm and $\overline{MZ}$ = 3 cm.

Give the lengths of the following segments:

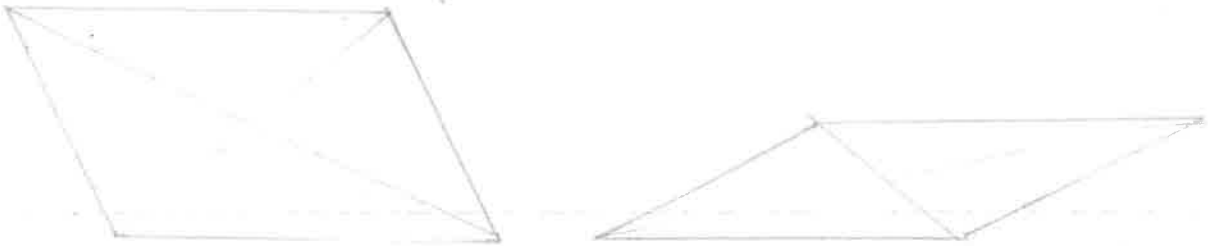
$WM =$ 4 cm $MY =$ 4 cm

$XM =$ 3 cm $XZ =$ 6 cm

4. Using the properties of shapes, explain why all parallelograms are trapezoids.

Parallelograms have two sets of parallel lines, while trapezoids have at least one set of parallel lines. Both have diagonal lines that bisect one another.

5. Teresa says that because the diagonals of a parallelogram bisect each other, if one diagonal is 4.2 cm, the other diagonal must be half that length. Use words and pictures to explain Teresa's error.

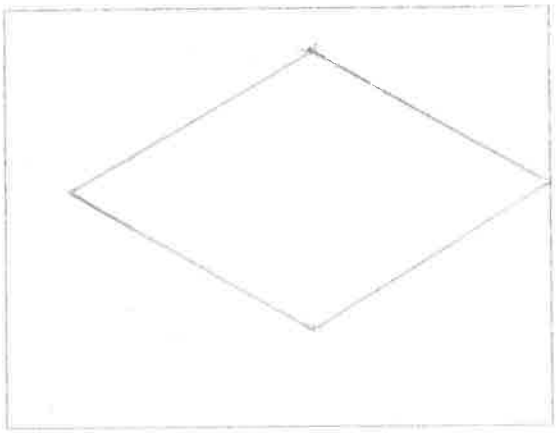


The two diagonals do not have that relationship. The can be equal or different, it varies.

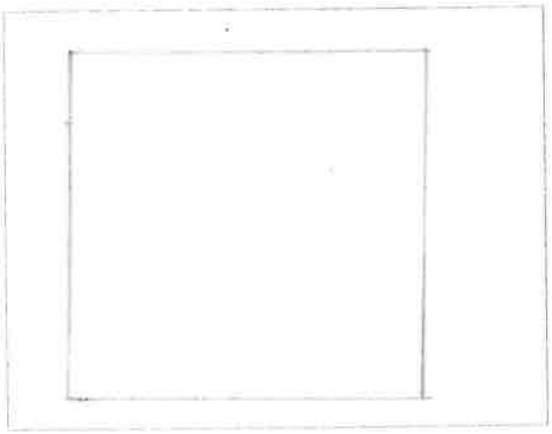
Name _____ Date _____

1. Use the grid paper to draw.

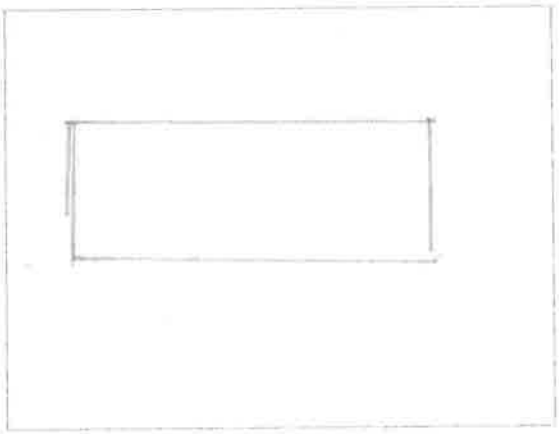
a. A rhombus with no right angles



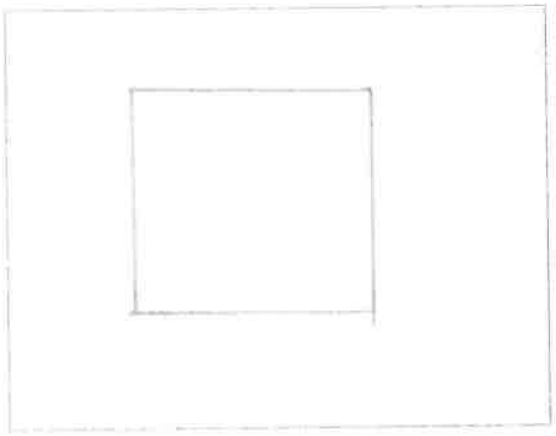
b. A rhombus with 4 right angles



c. A rectangle with not all sides equal



d. A rectangle with all sides equal

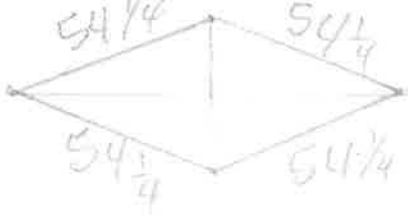


2. A rhombus has a perimeter of 217 cm. What is the length of each side of the rhombus?

$217 \div 4 = 54\frac{1}{4}$

$$\begin{array}{r} 54 \\ 4\overline{)217} \\ 20 \\ \hline 17 \\ 16 \\ \hline 1 \end{array}$$

$54\frac{1}{4}$



3. List the properties that all rhombuses share.

Rhombuses have 4 equal sides
Their diagonals bisect each other
Rhombuses are parallelograms
Rhombuses are trapezoids

4. List the properties that all rectangles share.

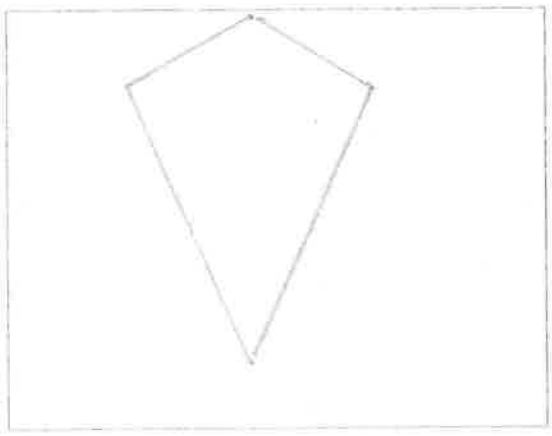
Rectangles have 4 right angles
Their diagonals bisect each other
Rectangles are a type of parallelogram
Rectangles are a type of trapezoid

Name _____ Date _____

1. a. Draw a kite that is not a parallelogram on the grid paper.

b. List all the properties of a kite.

A kite has 2 adjacent lines equal in length. The other 2 lines are equal as well.



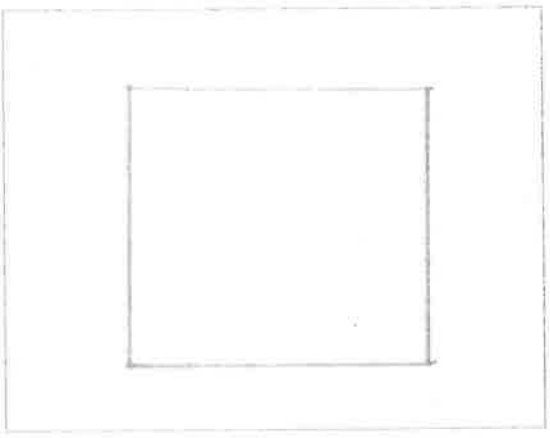
c. When can a parallelogram also be a kite?

A parallelogram can be a kite when is a square or a rhombus.

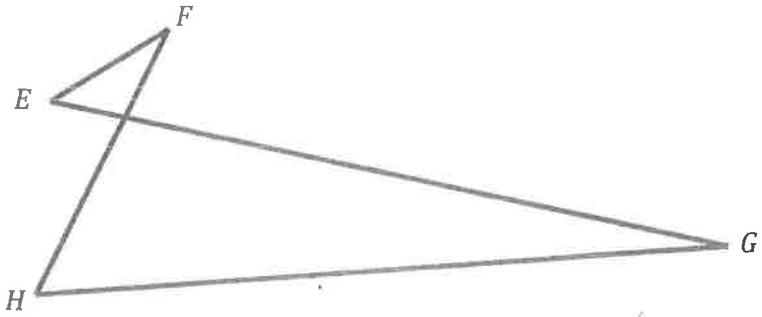
2. If rectangles must have right angles, explain how a rhombus could also be called a rectangle.

A rhombus is a rectangle when is a square. A square has 4 equal sides.

3. Draw a rhombus that is also a rectangle on the grid paper.



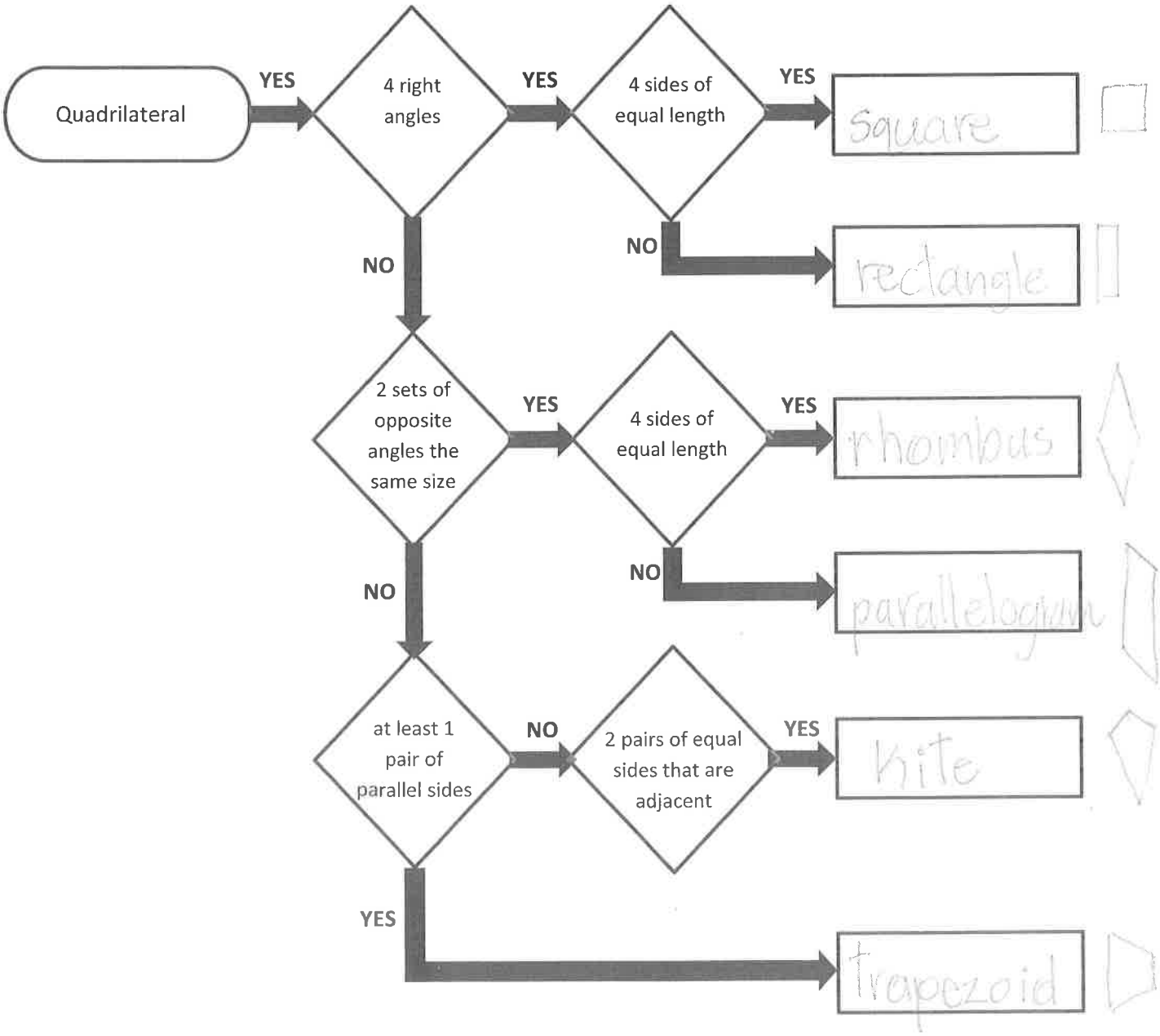
4. Kirkland says that figure $EFGH$ below is a quadrilateral because it has four points in the same plane and four segments with no three endpoints collinear. Explain his error.



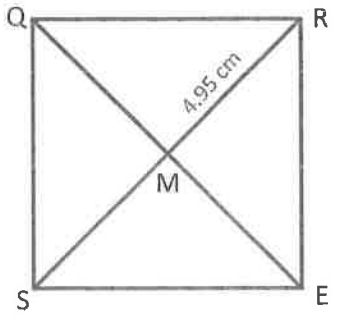
A quadrilateral is a plane figure that is closed. It has has four angles. And it has two diagonal lines. This figure has two lines that intersect.

Name _____ Date _____

1. Follow the flow chart, and put the name of the figure in the boxes.



2. $SQRE$ is a square with an area of 49 cm^2, and RM = 4.95 cm. Find the measurements using what you know about the properties of squares.



a. RS = 9.90 cm

b. QE = 9.90 cm

c. Perimeter = 28 cm

d. $m\angle QRE$ = 90 °

e. $m\angle RMQ$ = 90 °

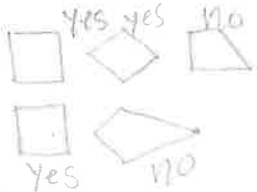
$49 = 7 \times 7$

$7 \times 4 = 28$

Name _____ Date _____

1. Answer the questions by checking the box.

	Sometimes	Always
a. Is a square a rectangle?		✓
b. Is a rectangle a kite?	✓	
c. Is a rectangle a parallelogram?		✓
d. Is a square a trapezoid?		✓
e. Is a parallelogram a trapezoid?		✓
f. Is a trapezoid a parallelogram?	✓	
g. Is a kite a parallelogram?	✓	



h. For each statement that you answered with *sometimes*, draw and label an example that justifies your answer.

2. Use what you know about quadrilaterals to answer each question below.

a. Explain when a trapezoid is not a parallelogram. Sketch an example.

A trapezoid is not a parallelogram when it has only one set of parallel lines.

b. Explain when a kite is not a parallelogram. Sketch an example.

A kite is not a parallelogram when it does not have any parallel lines.