

NAME: _____

Math 7.1, Periods 1 and 2

Mr. Rogove

Date: _____

LEARNING OBJECTIVE: We will create scale drawings by identifying the scale factor. (G7M4L12)

CONCEPT DEVELOPMENT:

Scale Factor: the scale factor is calculated from the ratio of any length in the scale drawing to its corresponding length in the actual picture.

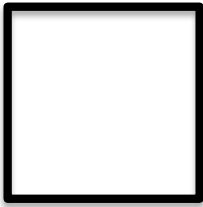
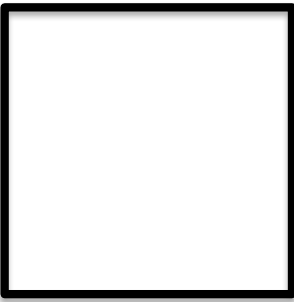

Other ways to describe the scale factor:

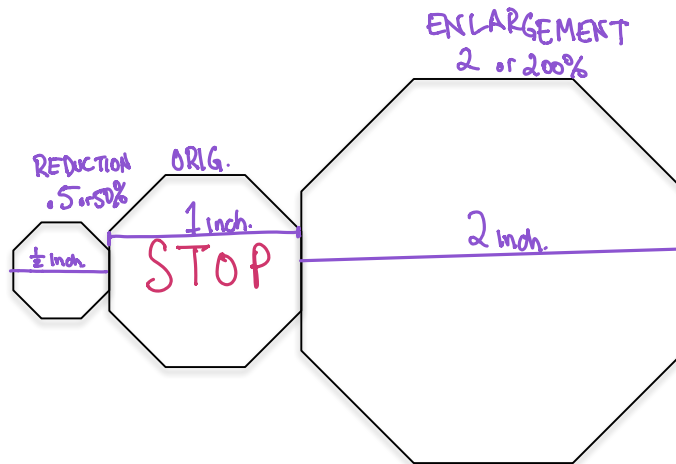
UNIT RATE
CONSTANT OF PROPORTIONALITY
RATIO

$(\text{new picture}) = (\text{scale factor}) \cdot (\text{orig. picture})$
 $y = k \cdot x$

Scaling by factors greater than 1 (or more than 100%) enlarges the segment.
Scaling by factors less than 1 (or less than 100%) reduces the segment.

Example:

<p>Original: 1 inch square</p> 	<p>SCALE FACTOR = 1.5 or 150%</p> <p>Enlargement: $1\frac{1}{2}$ inch square</p> 	<p>SCALE FACTOR = .5 or 50%</p> <p>Reduction: $\frac{1}{2}$ inch square</p> 
---	---	---



NAME: _____

Math 7.1, Periods 1 and 2

Mr. Rogove

Date: _____

GUIDED PRACTICE:

Steps for Checking Proportionality for Scale Drawings and Original Objects

1. Measure the lengths of the scale drawing and record it on a table.
2. Measure the corresponding lengths on actual pictures and record on a table.
3. Check for the constant of proportionality.
4. Identify the scale factor as both a unit rate and a percent.

Below is a picture of the flag of the Czech Republic. Use a scale factor of 3 to create a scale drawing of the picture.

ORIG	SCALE
1.5	4.5
1	3
.75	2.25

4.5 inches

Using the same flag, create a scale drawing that uses a scale factor of 50%.

ORIG	SCALE
1.5	.75
1	.5

NAME: _____

Math 7.1, Periods 1 and 2

Mr. Rogove

Date: _____

Lifetouch comes each year to take school photos. The largest photo taken is 9 inches by 12 inches. The smallest ones are wallet sized photos. They are created by using a scale factor of $\frac{1}{6}$. Draw the outline of the dimensions of the wallet sized photos below.

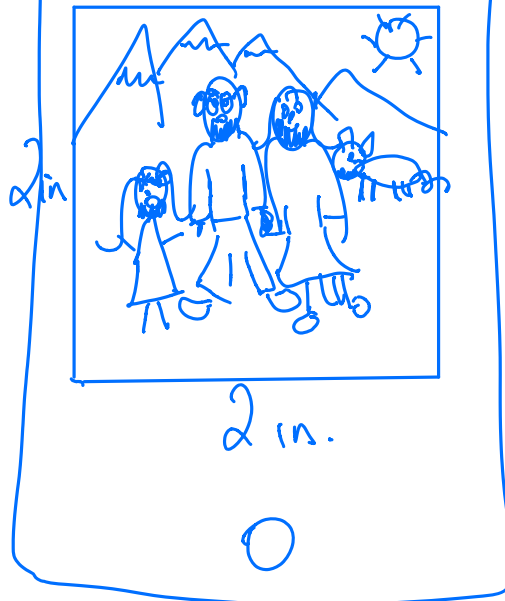
	ORIG	WALLET
L	$9 \times \frac{1}{6}$	$1\frac{1}{2}$ in.
H	$12 \times \frac{1}{6}$	2



You recently unearthed a family portrait from a long time ago. Your Aunt Barb asked you to take a picture of the portrait using your cell phone and send it to her so she could post it online for Throwback Thursday. If the original portrait was 3 feet by 3 feet and the scale factor is $\frac{1}{18}$, draw the scale drawing that would be the size of the portrait on your phone.

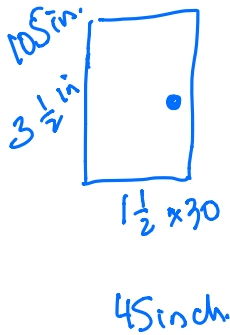
	ORIG	PHONE
	$3 \text{ ft.} \times \frac{1}{18}$	$\frac{1}{6} \text{ ft.} = 2 \text{ in.}$
	$3 \text{ ft.} \times \frac{1}{18}$	$\frac{1}{6} \text{ ft.} = 2 \text{ in.}$

↑
SCALE FACTOR



A three-dimensional scale model of our house was built. Our actual house is a 3000% enlargement of the scale model. On the scale model, our front window was 2 inches by 3 inches. What are the dimensions of the actual window?

30 times as big. Scale factor is 30



Model	Actual
2 x 30	60 in 5 ft. x
3 x 30	90 in 7 1/2 ft.

Actual window was
5 ft x 7 1/2 ft.

Using the scale model from above, if the actual dimensions of our rectangular living room are 18 feet by 15 feet, how big would the living room be in our scale model?

$$\begin{array}{r} \times 12 \\ \hline 216 \text{ inches} \\ \hline 30 \end{array} \quad \begin{array}{r} \times 12 \\ \hline 180 \text{ inches} \\ \hline 30 \end{array}$$

Converts from feet to inches

7.2 inches x 6 inches

Scale factor

NAME: _____

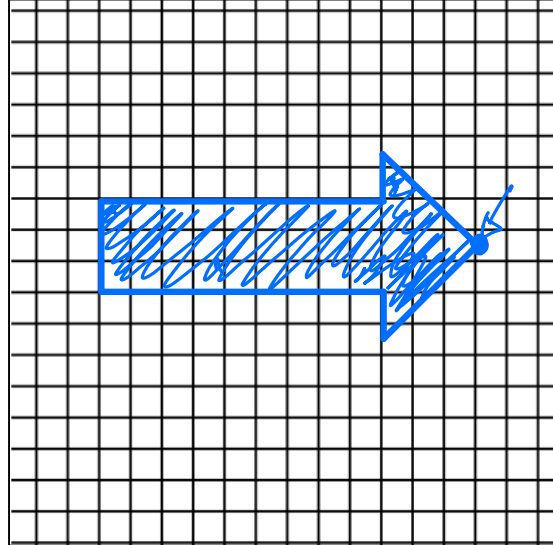
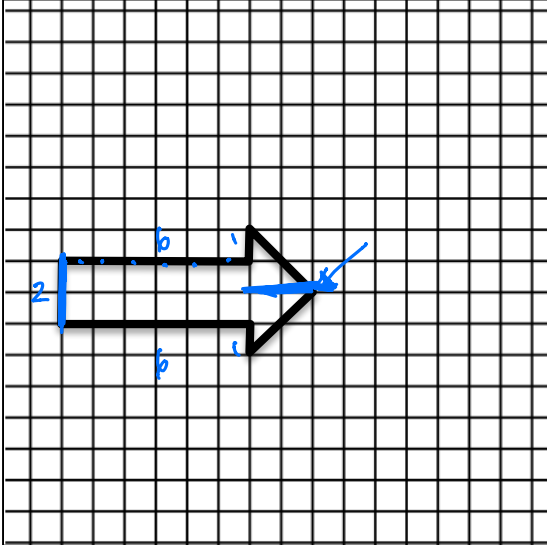
Math 7.1, Periods 1 and 2

Mr. Rogove

Date: _____

Create a scale drawing of the arrow below using a scale factor of 150%.

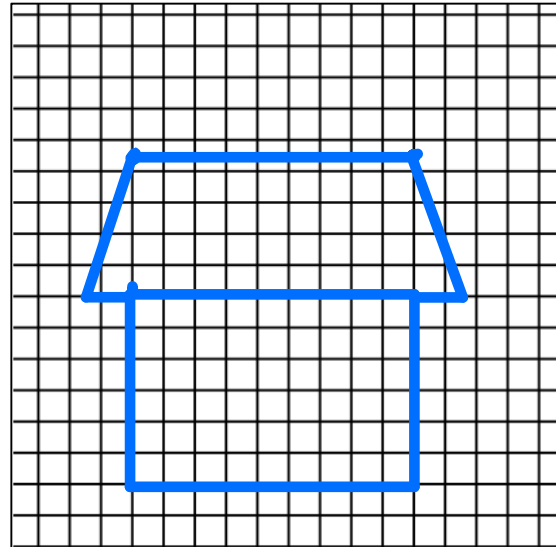
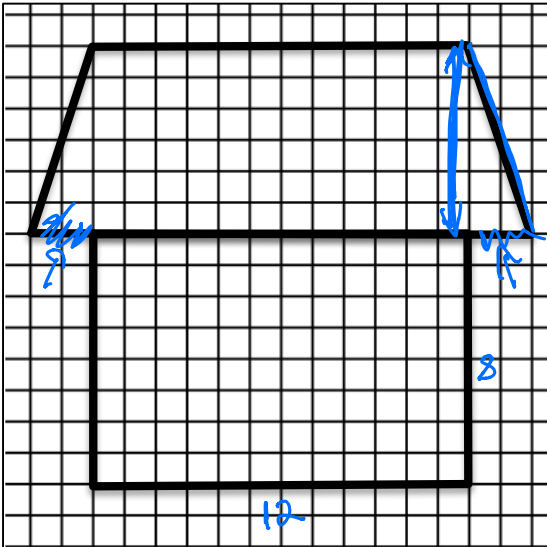
1.5



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

Create a scale drawing of the house using a scale factor of 75%.

0.75 or $\frac{3}{4}$



$$12 \times \frac{3}{4} = 9$$
$$8 \times \frac{3}{4} = 6$$

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

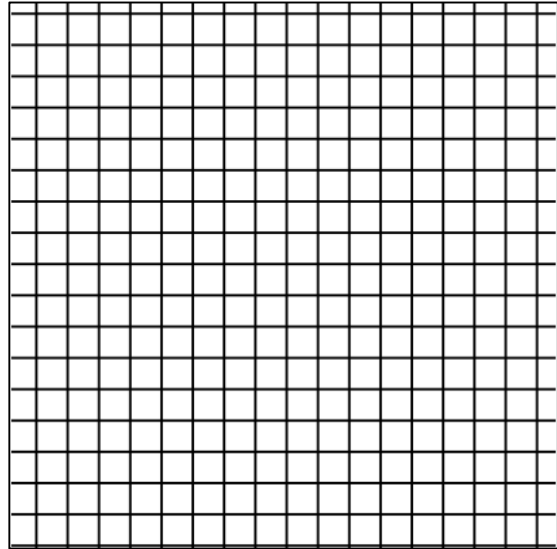
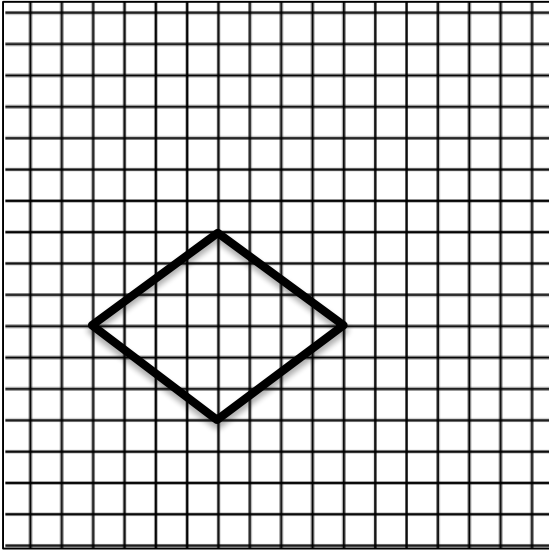
NAME: _____

Math 7.1, Periods 1 and 2

Mr. Rogove

Date: _____

Create a scale drawing of the following drawing using a horizontal scale factor of 200% and a vertical scale factor of $66\frac{2}{3}\%$.



Write down 3 things you learned today about scale factors:

1.

2.

3.

4.

5.

6.

NAME: _____

Math 7.1, Periods 1 and 2

Mr. Rogove

Date: _____

INDEPENDENT PRACTICE:

Maybe give Lesson 17 or lesson 12 problem set for independent practice?

ACTIVATING PRIOR KNOWLEDGE:

CLOSURE:

Problem #3 from Lesson 12 for closure?

NOTES:

Accompanies Lesson 17, Mod 1 and Lesson 12 Mod 4 from grade 7.

Homework is exit tickets from Lesson 17 AND lesson 12