6.1 Photocopy Faux Pas

A Develop Understanding Task

Burnell has a new job at a copy center helping people use the photocopy machines. Burnell thinks he knows everything about making photocopies, and so he didn't complete his assignment to read the training manual.

Mr. and Mrs. Donahue are making a scrapbook for Mr. Donahue's grandfather's 75th birthday party, and they want to enlarge a sketch of their grandfather which was drawn when he was in World War II. They have purchased some very expensive scrapbook paper, and they would like this image to be centered on the page. Because they are unfamiliar with the process of enlarging an image, they have come to Burnell for help.

"We would like to make a copy of this image that is twice as big, and centered in the middle of this very expensive scrapbook paper," Mrs. Donahue says. "Can you help us with that?"

"Certainly," says Burnell. "Glad to be of service."

Burnell taped the original image in the middle of a white piece of paper, placed it on the glass of the photocopy machine, inserted the expensive scrapbook paper into the paper tray, and set the enlargement feature at 200%.

In a moment, this image was produced.

"You've ruined our expensive paper," cried Mrs. Donahue. "Much of the image is off the paper instead of being centered."

"And this image is more than twice as big," Mr. Donahue complained. "One fourth of grandpa's picture is taking up as much space as the original."
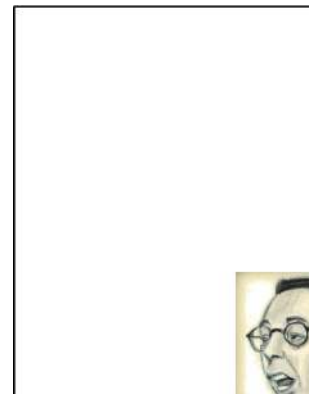
In the diagram below, both the original image—which Burnell taped in the middle of a sheet of paper—and the copy of the image have been reproduced in the same figure.

1. Explain how the photocopy machine produced the partial copy of the original image.

   Picture put directly in middle of paper

2. Using a "rubber band stretcher" finish the rest of the enlarged sketch.

   Finished on Geogebra on website

3. Where should Burnell have placed the original image if he wanted the final image to be centered on the paper?

   Top left

4. Mr. Donahue complained that the copy was four times bigger than the original. What do you think? Did Burnell double the image or quadruple it? What evidence would you use to support your claim?

   Double segments / Quadruple Area

   3×5   6×10
   15   60

5. Transforming a figure by shrinking or enlarging it in this way is a called a *dilation.* Based on your thinking about how the photocopy was produced, list all of the things you need to pay attention to when dilating an image.

   ratio ⟹ Scale Factor

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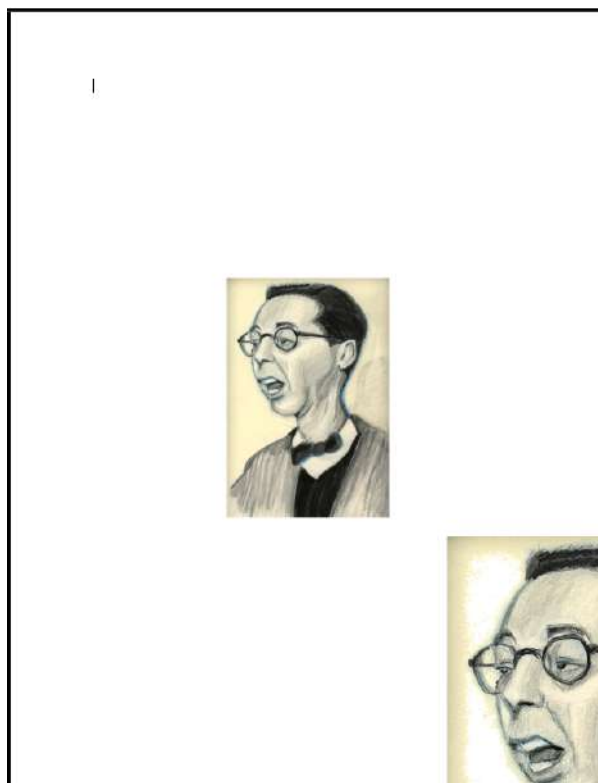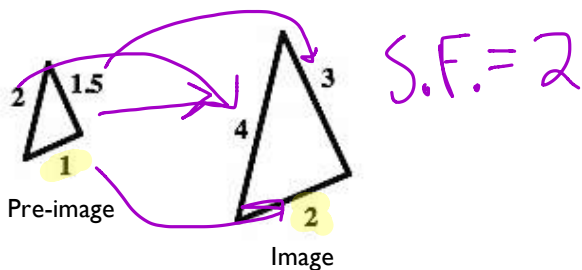
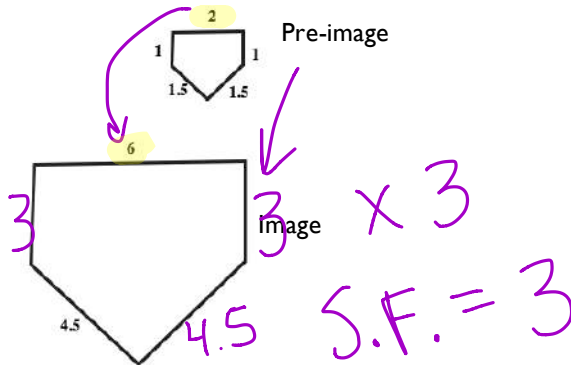| READY, SET, GO!	Name	Period	Date

READY

Topic: Scale factors for similar shapes

Give the factor by which each pre-image was multiplied to create the image. Use the scale factor to fill in any missing lengths.
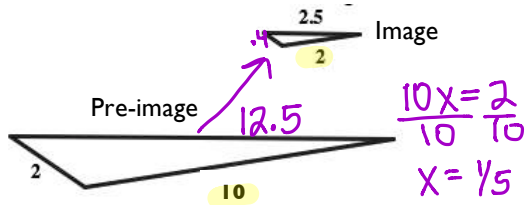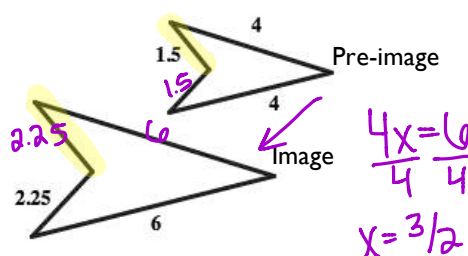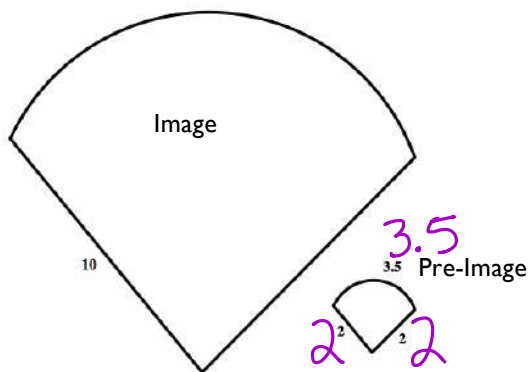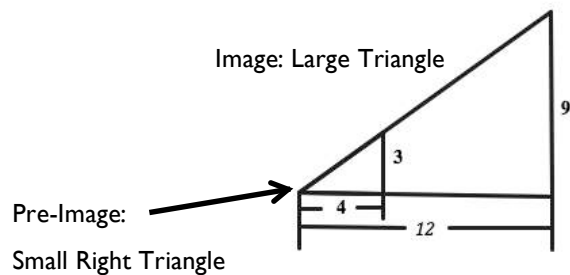
1.

2

1.5

3

4

1

Pre-image

2

Image

S.F. = 2

2.

2

1

1

1.5   1.5

Pre-image

6

3

Image

4.5

3

x 3

4.5

S.F. = 3

3.

2.5

Image

.4

2

Pre-image

12.5

2

10

$\frac{10x}{10} = \frac{2}{10}$

$x = \frac{1}{5}$

4.

4

1.5

1.5

4

Pre-image

2.25

6

Image

2.25

6

$\frac{4x}{4} = \frac{6}{4}$

$x = \frac{3}{2}$

5.

Image

10

3.5

3.5   Pre-Image

2^2 2 2

6.

Image: Large Triangle

9

3

Pre-Image:

4

Small Right Triangle

12

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SET

Topic: Dilations in real world contexts

For each real-world context or circumstance determine the center of the dilation and the tool being used to do the dilation.

7.

Fran walks backward to a distance that will allow her family to all show up in the photo she is about to take.

8.

The theatre technician plays with the zoom in and out buttons in effort to fill the entire movie screen with the image.

9.

Melanie estimates the height of the waterfall by holding out her thumb and using it to see how many thumbs tall to the top of the waterfall from where she is standing. She then uses her thumb to see that a person at the base of the waterfall is half a thumb tall.

10.

A digital animator creates artistic works on her computer. She is currently doing an animation that has several telephone poles along a street that goes off into the distance.

11.

Ms. Sunshine is having her class do a project with a rubber-band tracing device that uses three rubber bands.

12.

A copy machine is set at 300% for making a photo copy.

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GO

Topic: Rates of change related to linear, exponential and quadratic functions

Determine whether the given representation is representative of a linear, exponential or quadratic function, classify as such and justify your reasoning.

13.

X	Y
2	7
3	12
4	19
5	28

Type of function:

Justification:

14.
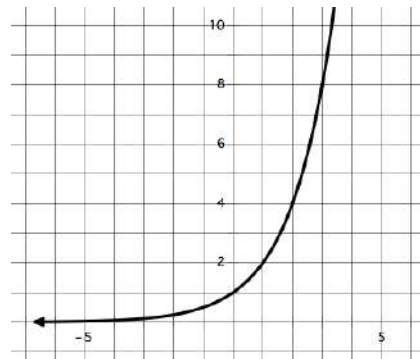

Type of function:

Justification:

15. $y = 3x^2 + 3x$

Type of function:

Justification:

16. $y = 7x - 10$

Type of function:

Justification:

17.

Type of function:

Justification:

18.

X	Y
2	-5
7	5
14	19
25	41

Type of function:

Justification:

Need help? Visit **www.rsgsupport.org**

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