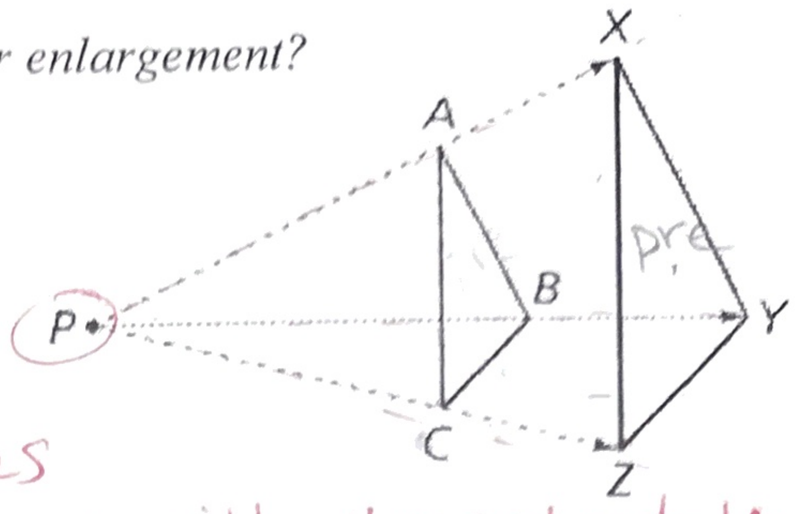
Name: _____ Date: March 10 Hour: 6th

Unit 6C Day 20: Defining Dilation

Focus Question: How can I tell if a dilation is an isometry, reduction, or enlargement?



A. Dilation Vocabulary

The picture at right shows a dilation.

Just like rotations, dilations have a center.

The center of dilation in the picture is point P.

1. What does it mean to be the center of dilation?

"starting point": if you connect the vertices of the pre image & image, they will all meet at the center

Dilations also have a **scale factor** which tells you **the number of times one figure is than the other.** It is represented by the letter k.

2. Since scale factor is the number of times one figure is than the other, what operation does this imply?

multiply

3. If ABC is the pre-image, what happened to the triangle? It got bigger This is called an enlargement and the scale factor (k) is greater than 1.

K=2 or k=9 or K=12

4. If XYZ is the pre-image, what happened to the triangle? It got smaller This is called a reduction and the scale factor (k) is more than 0 but less than 1.

K=0.25 or K=½ or k=0.75

5. If a dilation has a scale factor of 1, does the shape change? Explain.

NO b/c multiplying by 1 doesn't change anything

6. Label the following scale factor as either enlargement, reduction, or isometrie.

E R I(≅)

a) 3.5 E 3.5>1

b) 2/5 R 0<2/5<1

c) 0.6 R 0<0.6<1

d) 1 I 1=1

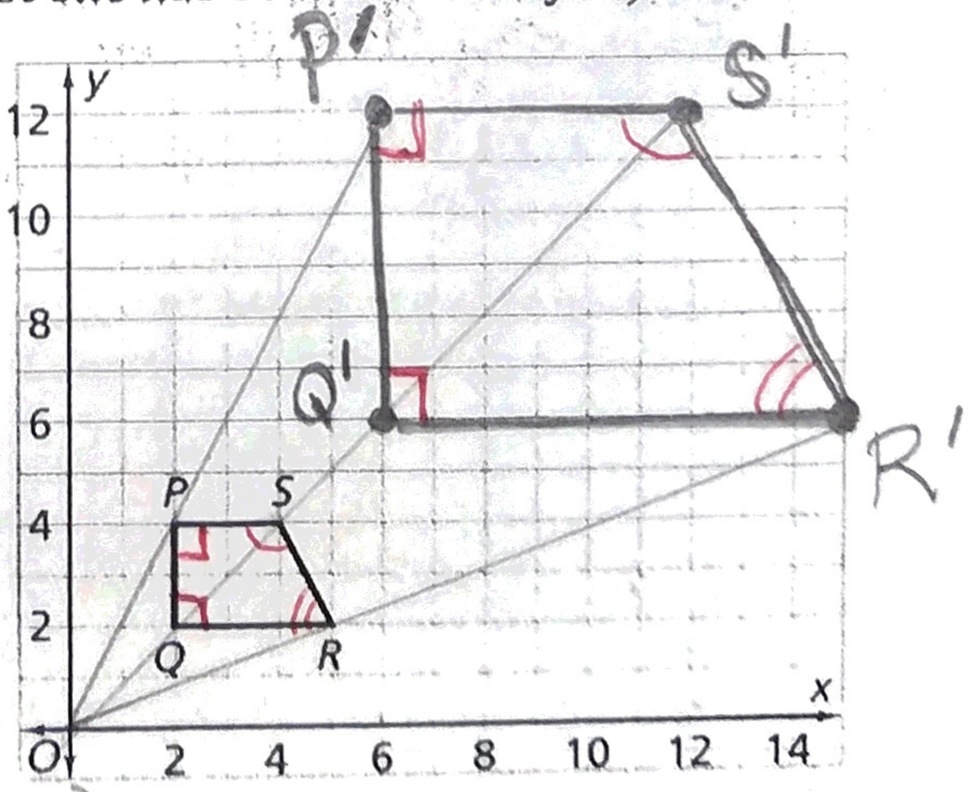
e) 4/3 E 4/3>1

f) 5/8 R 0<5/8<1

B. Side Lengths and Angle Measures

1. Draw the image of quadrilateral $PQRS$ after a dilation with center (0, 0) and scale factor 3, by completing the table and plotting the points (the first one has been done for you). Label corresponding points P', Q', R' and S'.

Point	Coordinates	Coordinates after scaling by 3
P	(2, 4) ·3 ·3	(6, 12)
Q	(2, 2) ·3 ·3	(6, 6)
R	(5, 2) ·3 ·3	(15, 6)
S	(4, 4) ·3 ·3	(12, 12)



(0,0) center

2. Was the dilation a reduction, enlargement, or isometry? Explain.

$k=3$ $3>1$

3. Find the side lengths of quadrilateral PQRS and quadrilateral P'Q'R'S' and fill in the table.

Side	Length	Side	Length	Side	Length
$\overline{PQ}$	2.3	$\overline{QR}$	3.3	$\overline{SP}$	2.3
$\overline{P'Q'}$	6	$\overline{Q'R'}$	9	$\overline{S'P'}$	6

4. What do you noticed happened to the side lengths of the pre-image?

They were multiplied by 3
(b/c 3 was the scale factor)

5. When a figure is dilated on the coordinate plane, in this class we will always use (0,0) as the center of dilation. Does this move the figure? Yes

6. Is there ever a point that won't move when it is dilated? Explain.

(0,0) b/c its the center

7. Use a piece of patty paper to determine the relationship of the corresponding angles of the pre-image and image. Do the angle measures of the figure change? No, the angles stay the same

$\cong$ Congruent sameshape, same size

8. Fill in the blanks: Two figures are similar (symbol: ~) if the angles are congruent, but the side lengths are multiplied by the scale factor

9. What is a dilation?

when a figure is multiplied by a scale factor

10. A similarity statement shows two figures are similar. It names congruent angles in corresponding places. Write a similarity statement for the figures from the start of the lesson.

$\triangle ABC \sim \triangle XYZ$

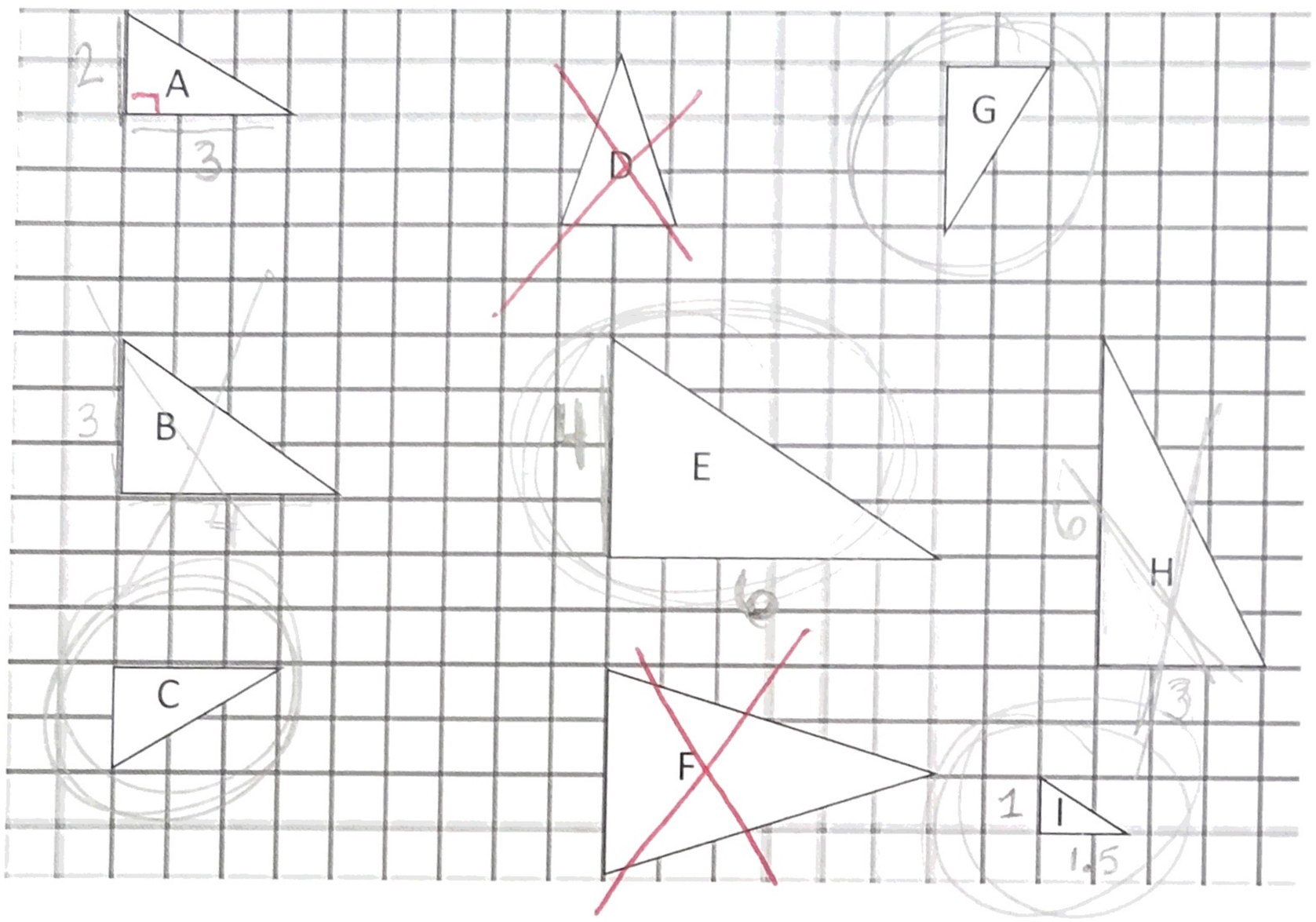
7

11. Use the following worksheet to practice identifying dilations.

Identifying dilations Practice

Similar (same shape)

1. Idenify all triangles that are a dilation of Triangle A. Give the scale factor that created it.



$\Delta A \sim \Delta$ I and k = 1/2

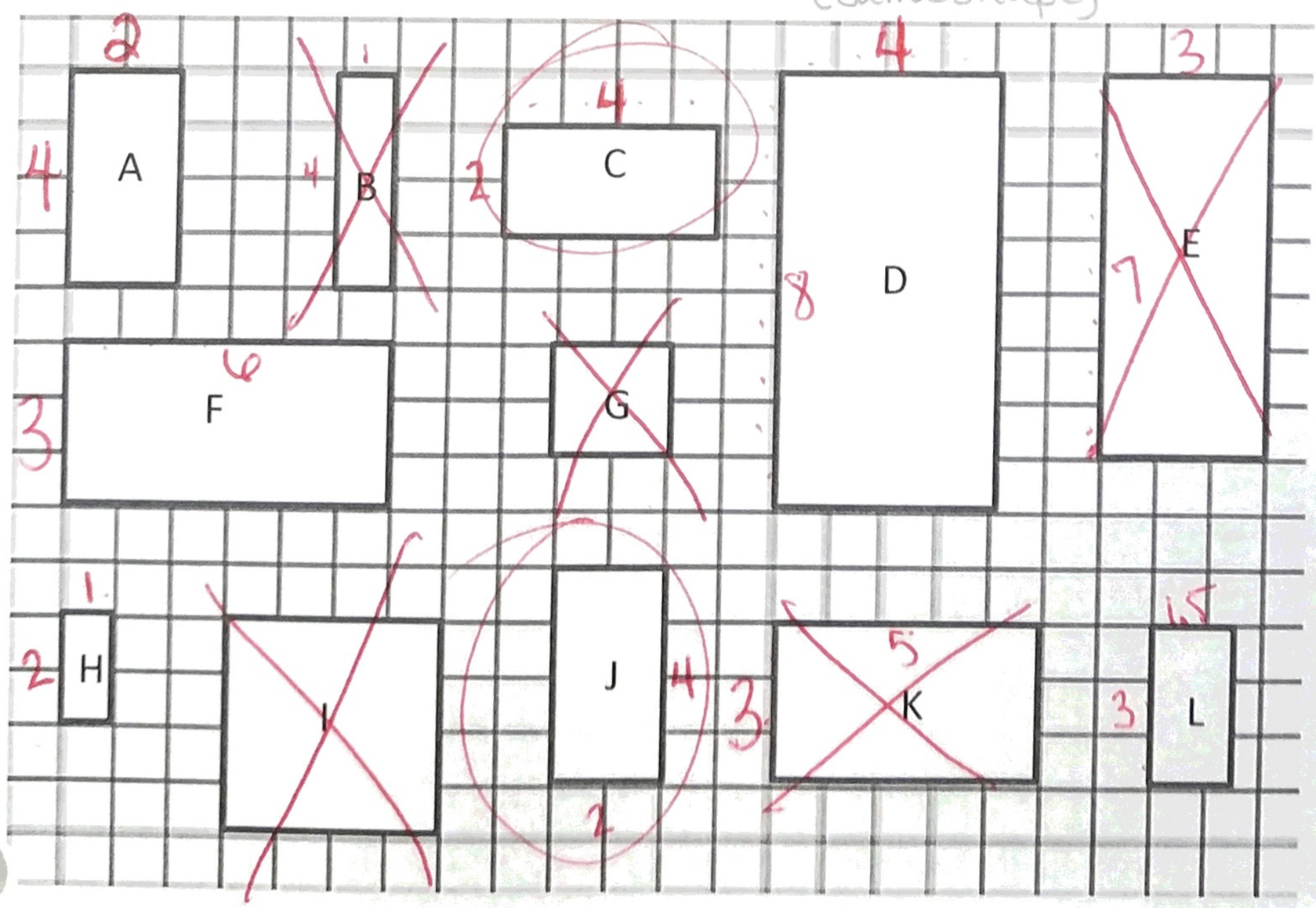
$\Delta A \sim \Delta$ E and k = 2

$\Delta A \cong \Delta$ G and k = 1

$\Delta A \cong \Delta$ C and k = 1

2. Identify all quadrilaterals that are a dilation of quadrilateral A. Give the scale factor

Similar (same shape)



A ≅ C K = 1

A ≅ J K = 1

A ~ D K = 2

A ~ F K = 1.5

A ~ H K = 1/2

A ~ L K = 0.75

$\frac{2x}{2} = \frac{1.5}{2}$

$x = 0.75$