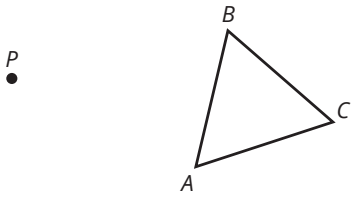
Skills Practice

Name _____ Date _____

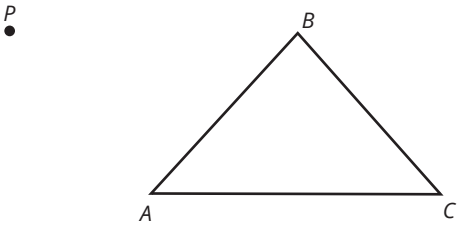
I. Dilation of Figures

A. Dilate each triangle using P as the center of dilation and the given scale factor.

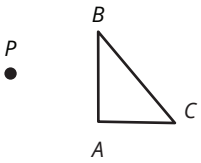
1. scale factor: 2



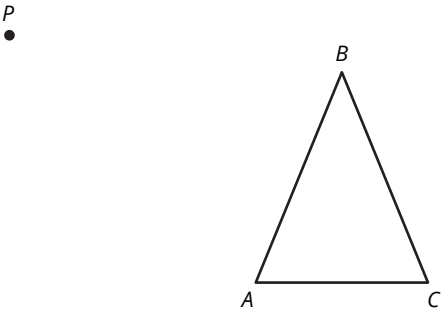
2. scale factor: $\frac{1}{2}$



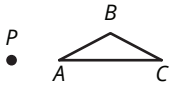
3. scale factor: 3



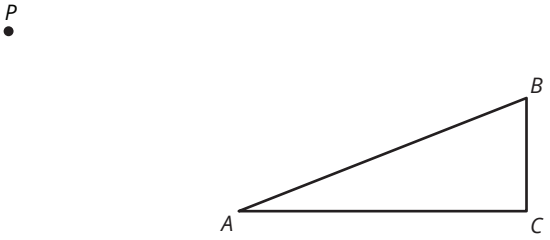
4. scale factor: $\frac{1}{3}$



5. scale factor: 4

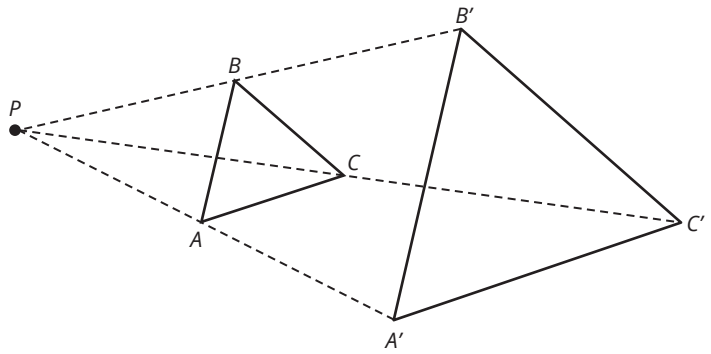


6. scale factor: $\frac{1}{4}$

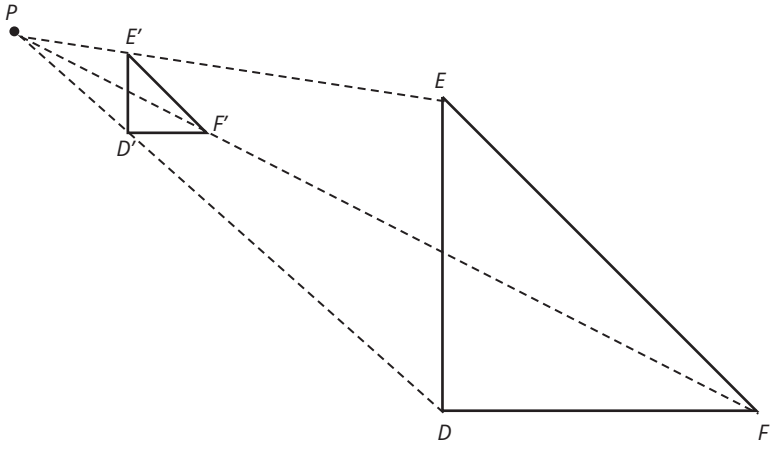


B. The triangles in each pair are similar. Identify the congruent corresponding angles and write ratios to identify the proportional sides of each triangle.

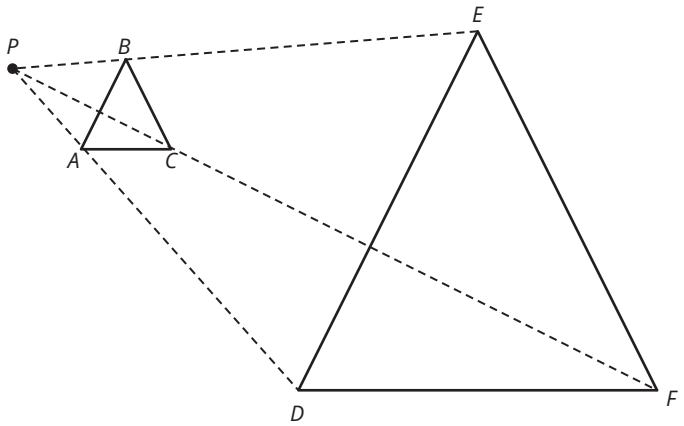
1. $\Delta ABC \sim \Delta A'B'C'$



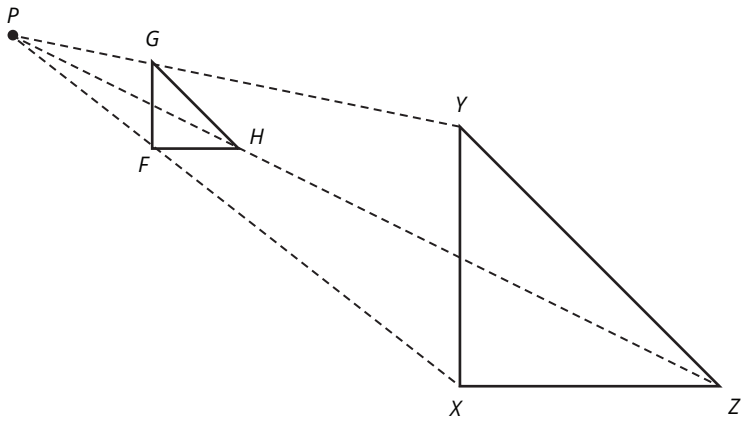
2. $\Delta DEF \sim \Delta D'E'F'$



3. $\Delta ABC \sim \Delta DEF$



4. $\Delta FGH \sim \Delta XYZ$



5. $\Delta ABC \sim \Delta MNP$

6. $\Delta RST \sim \Delta XYZ$

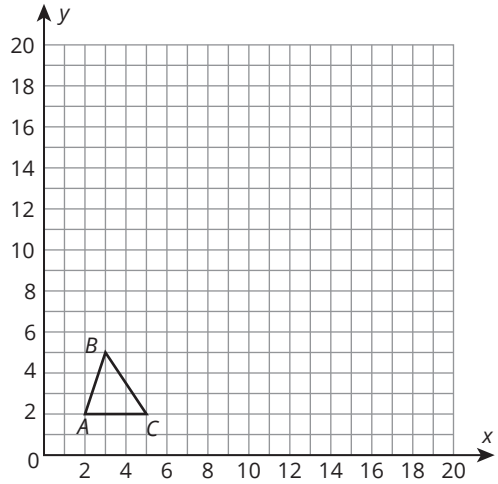
7. $\Delta XYZ \sim \Delta GHJ$

8. $\Delta KLM \sim \Delta RST$

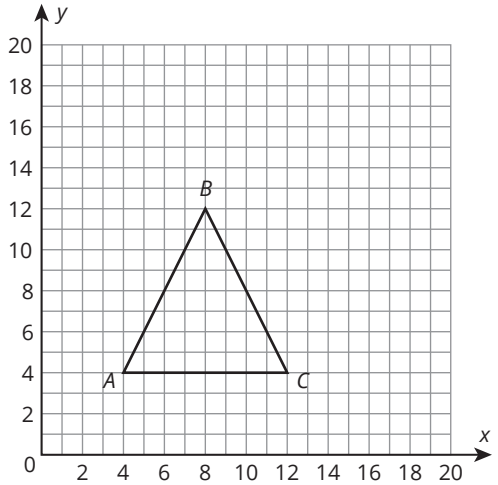
II. Dilating Figures on the Coordinate Plane

A. Answer each question using the information provided. Then write the algebraic representation for a dilation of the point (x, y) using the given scale factor.

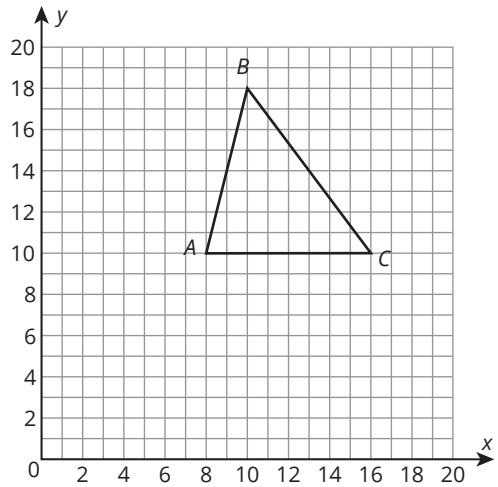
1. Dilate triangle *ABC* on the coordinate plane using the origin (0, 0) as the center of dilation and a scale factor of 2.



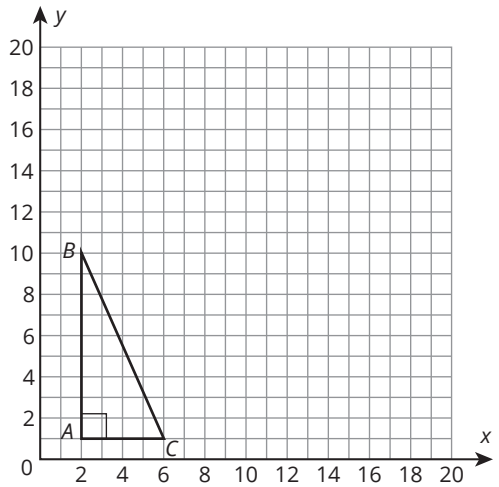
2. Dilate triangle *ABC* on the coordinate plane using the origin (0, 0) as the center of dilation and a scale factor of $\frac{1}{2}$.



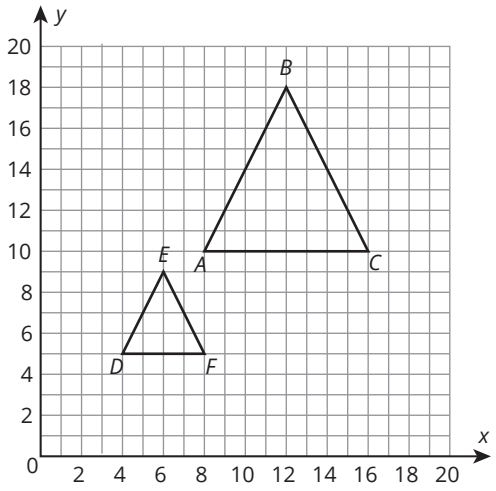
3. Dilate triangle *ABC* on the coordinate plane using the origin (0, 0) as the center of dilation and a scale factor of $\frac{1}{2}$.



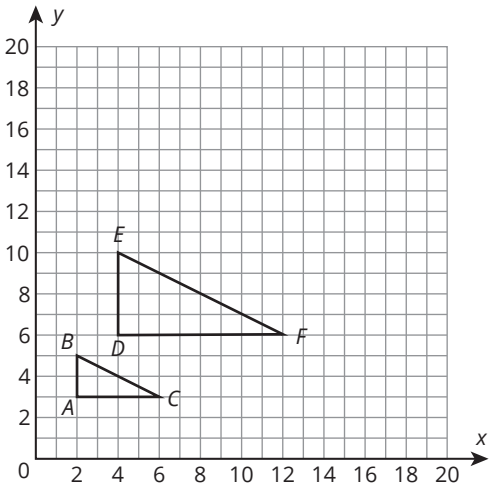
4. Dilate ΔABC to form ΔDEF using the origin (0, 0) as the center of dilation and a scale factor of 2.



5. Triangle *DEF* is the image that resulted from a dilation of Δ*ABC* using the origin as the center of dilation. What scale factor was used to dilate Δ*ABC*?



6. Triangle *DEF* is the image that resulted from a dilation of Δ*ABC* using the origin as the center of dilation. What scale factor was used to dilate Δ*ABC*?



B. Use the given information to answer each question.

1. A flag is represented by the coordinates *A* (3, 9), *B* (15, 9), *C* (15, 3), and *D* (3, 3). Suppose you were to dilate the figure by a scale factor of $\frac{1}{3}$ using the origin as the center of dilation.

a. What are the coordinates of the dilated figure?

b. Compare and contrast the corresponding angles and corresponding side lengths of the original figure and the dilated figure.

c. How does the perimeter of the original figure compare to the perimeter of the dilated figure?

d. How does the area of the original figure compare to the area of the dilated figure?

2. How does dilating a figure affect its perimeter?

3. How does dilating a figure affect its area?

4. Triangle ABC is dilated by a scale factor of 2 to form triangle $A'B'C'$.

Perimeter ΔABC = 18 in.

Perimeter $\Delta A'B'C'$

Area ΔABC = 20 in.^{2}

Area $\Delta A'B'C'$

5. Triangle LMN is dilated by a scale factor of 4 to form triangle $L'M'N'$.

Perimeter ΔLMN = 8 cm

Perimeter $\Delta L'M'N'$

Area ΔLMN = 12 cm^2

Area $\Delta L'M'N'$

6. Triangle GHI is dilated by a scale factor of 3 to form triangle $G'H'I'$.

Perimeter ΔGHI = 13.2 ft

Perimeter $\Delta A'B'C'$

Area ΔGHI = 15.4 ft^2

Area $\Delta G'H'I'$

7. Triangle MNO is dilated by a scale factor of 2.5 to form triangle $M'N'O'$.

Perimeter ΔMNO = 22.5 m

Perimeter $\Delta M'N'O'$

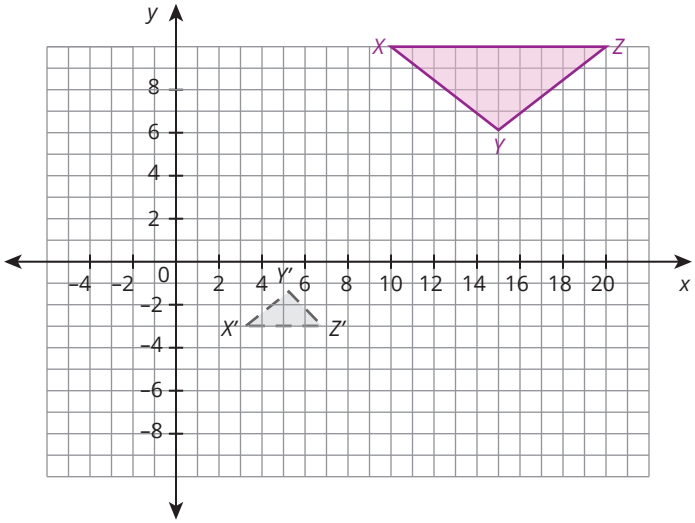
Area ΔMNO = 9.8 m^2

Area $\Delta M'N'O'$

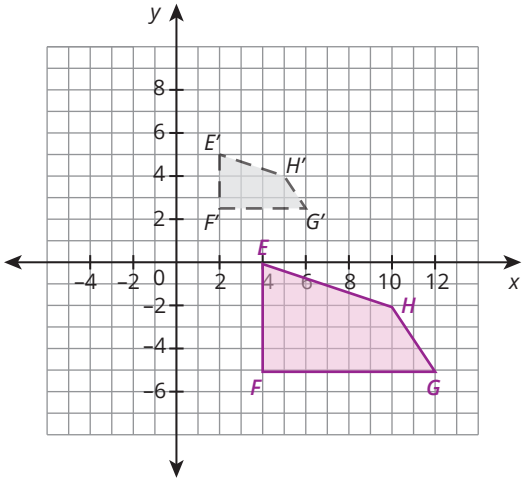
III. Mapping Similar Figures Using Transformations

A. Describe the transformations needed to map each pre-image onto each image.

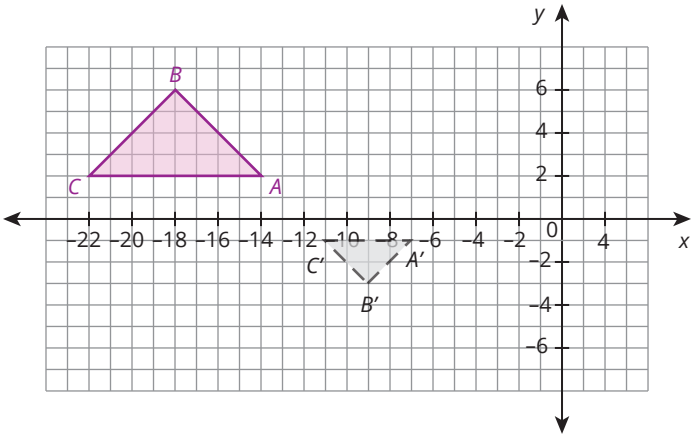
1. pre-image: Triangle *XYZ*
image: Triangle *X′Y′Z′*



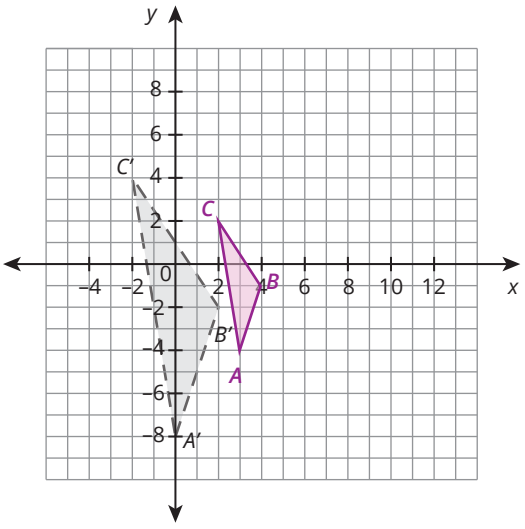
2. pre-image: Quadrilateral *EFGH*
image: Quadrilateral *E′F′G′H′*



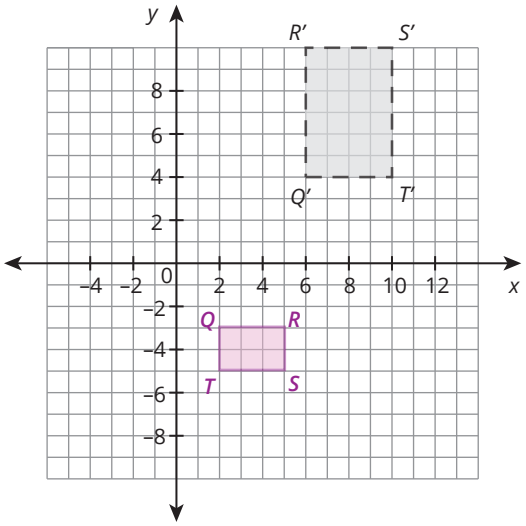
3. pre-image: Triangle *ABC*
image: Triangle *A′B′C′*



4. pre-image: Triangle *ABC*
image: Triangle *A′B′C′*



5. pre-image: Quadrilateral *QRST*
image: Quadrilateral *Q′R′S′T′*



6. pre-image: Quadrilateral *WXYZ*
image: Quadrilateral *W′X′Y′Z′*