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Unit 2, Lesson 6: Similarity

Let's explore similar figures.

6.1: Equivalent Expressions

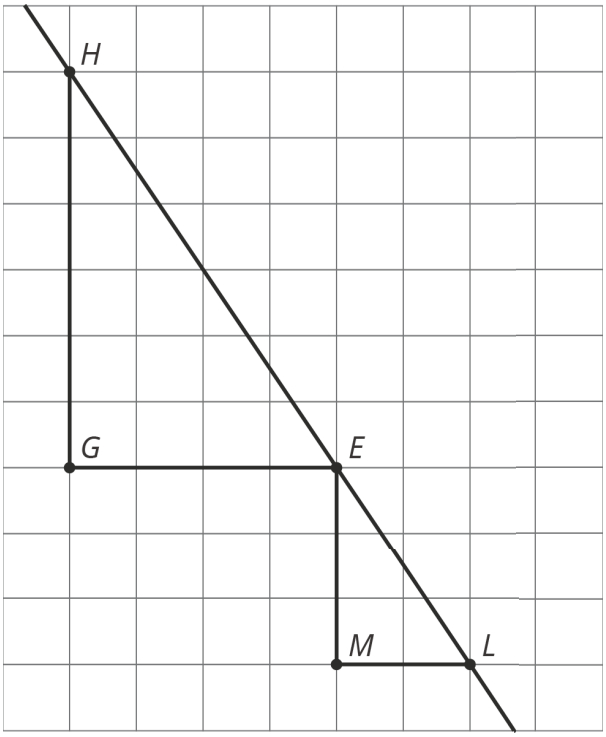
Use what you know about operations and their properties to write three expressions equivalent to the expression shown.

$$10(2 + 3) - 8 \cdot 3$$

6.2: Similarity Transformations (Part 1)

m.openup.org/1/8-2-6-2

1. Triangle EGH and triangle LME are **similar**. Find a sequence of translations, rotations, reflections, and dilations that shows this.



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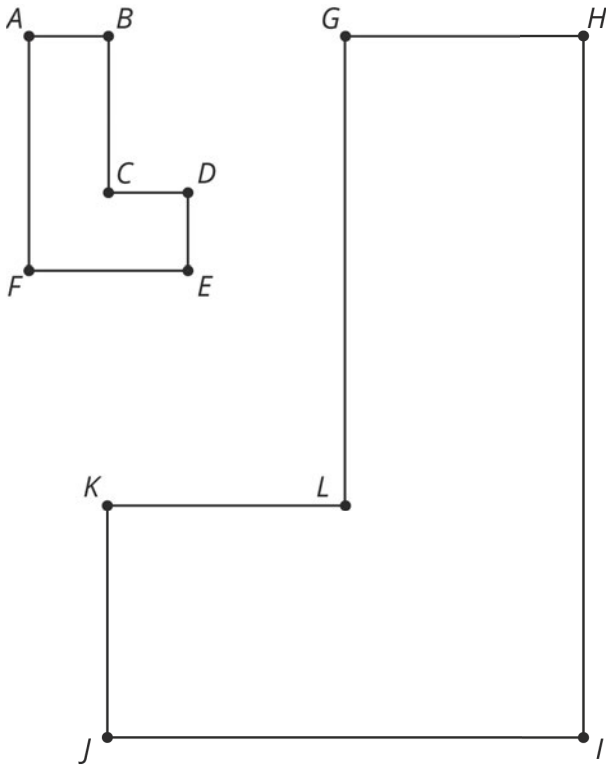
2. Hexagon $ABCDEF$ and hexagon $HGLKJI$ are similar. Find a sequence of translations, rotations, reflections, and dilations that shows this.



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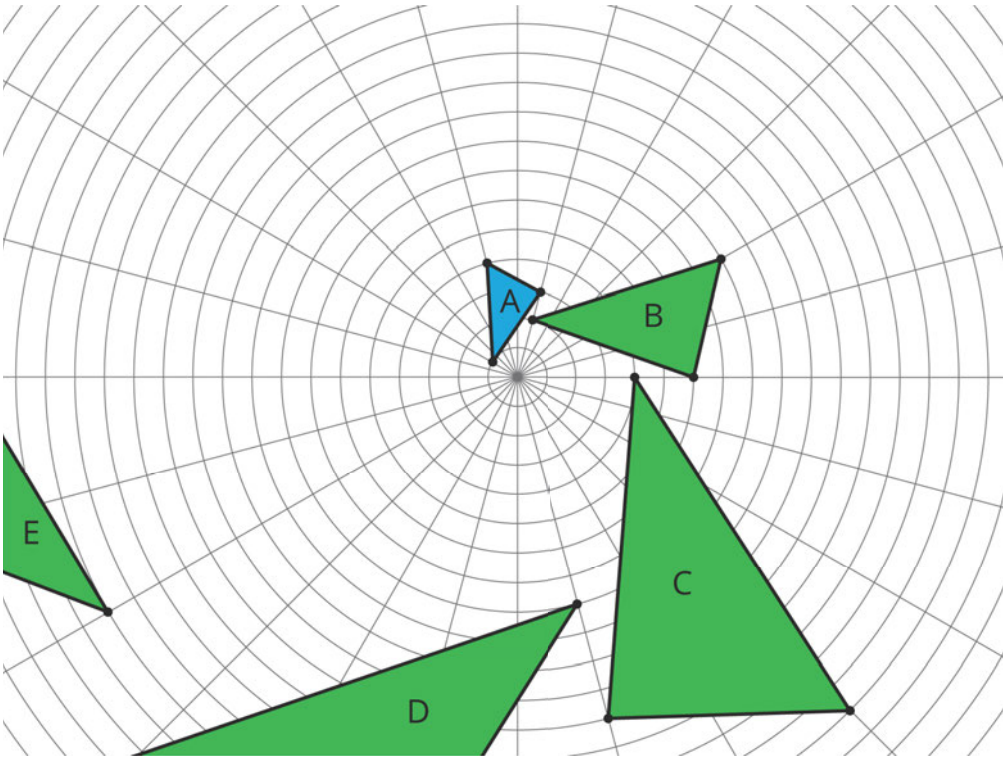
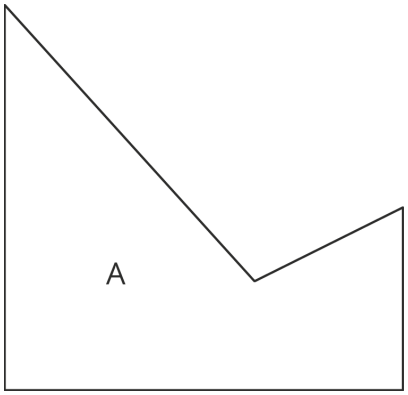
Are you ready for more?

The same sequence of transformations takes Triangle A to Triangle B, takes Triangle B to Triangle C, and so on. Describe a sequence of transformations with this property.



6.3: Similarity Transformations (Part 2)

Sketch figures similar to Figure A that use only the transformations listed to show similarity.



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1. A translation and a reflection. Label your sketch Figure B. Pause here so that your teacher can check your work.

2. A reflection and a dilation with scale factor greater than 1. Label your sketch Figure C.

3. A rotation and a reflection. Label your sketch Figure D.

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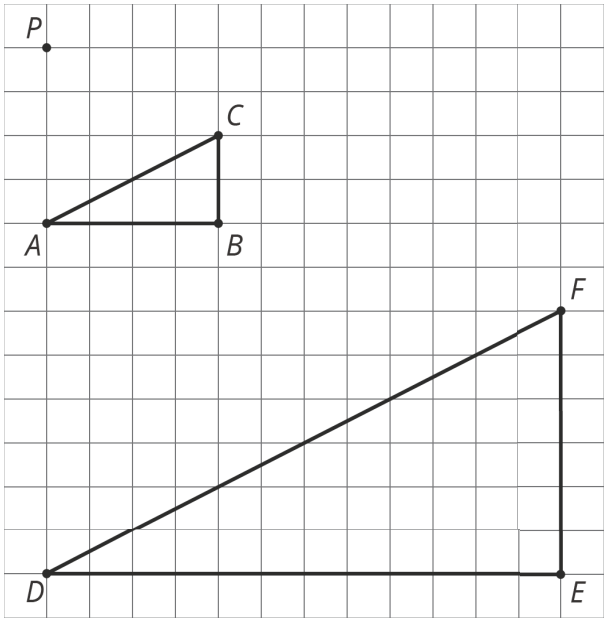
4. A dilation with scale factor less than 1 and a translation. Label your sketch Figure E.

6.4: Methods for Translations and Dilations

Your teacher will give you a set of five cards and your partner a different set of five cards. Using only the cards you were given, find at least one way to show that triangle ABC and triangle DEF are similar. Compare your method with your partner's method. What is the same about your methods? What is different?



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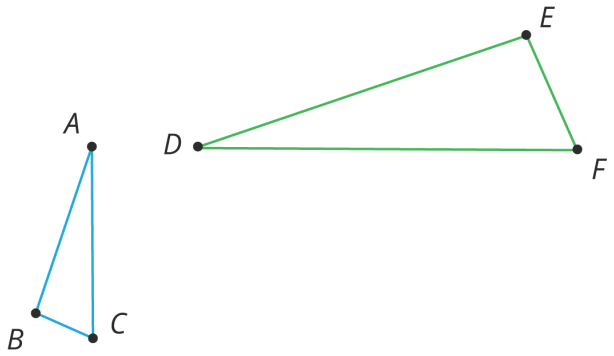
Lesson 6 Summary

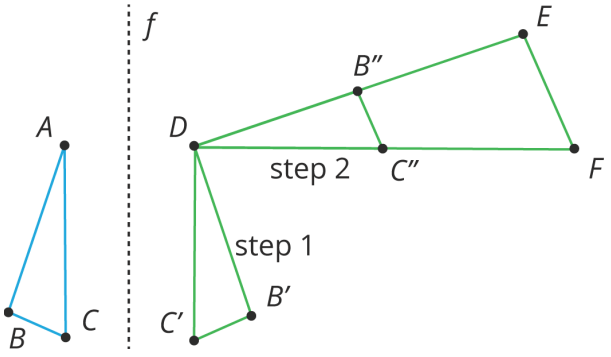
Let's show that triangle ABC is similar to triangle DEF:



Two figures are **similar** if one figure can be transformed into the other by a sequence of translations, rotations, reflections, and dilations. There are many correct sequences of transformations, but we only need to describe one to show that two figures are similar.

One way to get from ABC to DEF follows these steps:

- step 1: reflect across line f
- step 2: rotate 90° counterclockwise around D
- step 3: dilate with center D and scale factor 2



Another way would be to dilate triangle ABC by a scale factor of 2 with center of dilation A, then translate A to D, then reflect over a vertical line through D, and finally rotate it so it matches up with triangle DEF. What steps would you choose to show the two triangles are similar?

Lesson 6 Glossary Terms

- similar

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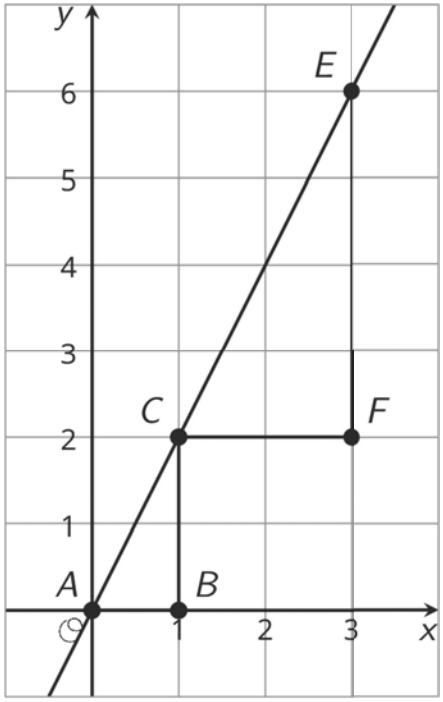
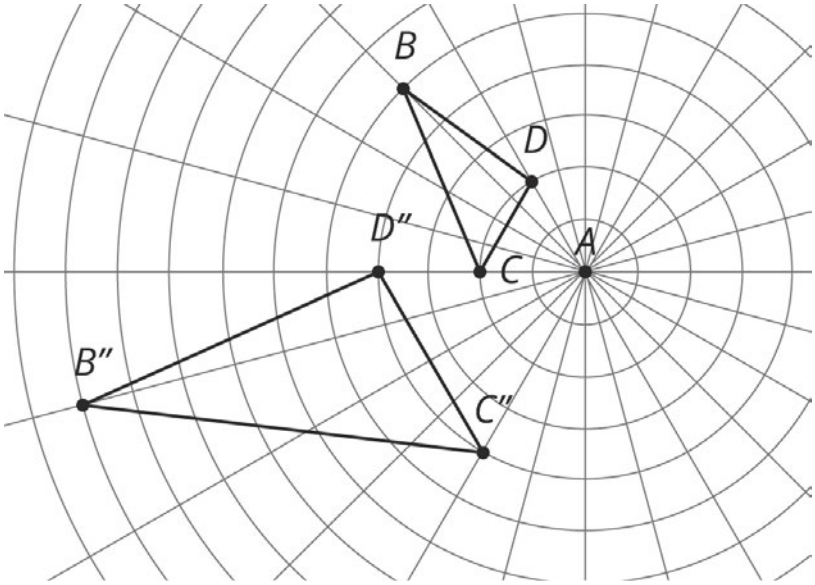
Unit 2, Lesson 6: Similarity

1. Each diagram has a pair of figures, one larger than the other. For each pair, show that the two figures are similar by identifying a sequence of translations, rotations, reflections, and dilations that takes the smaller figure to the larger one.





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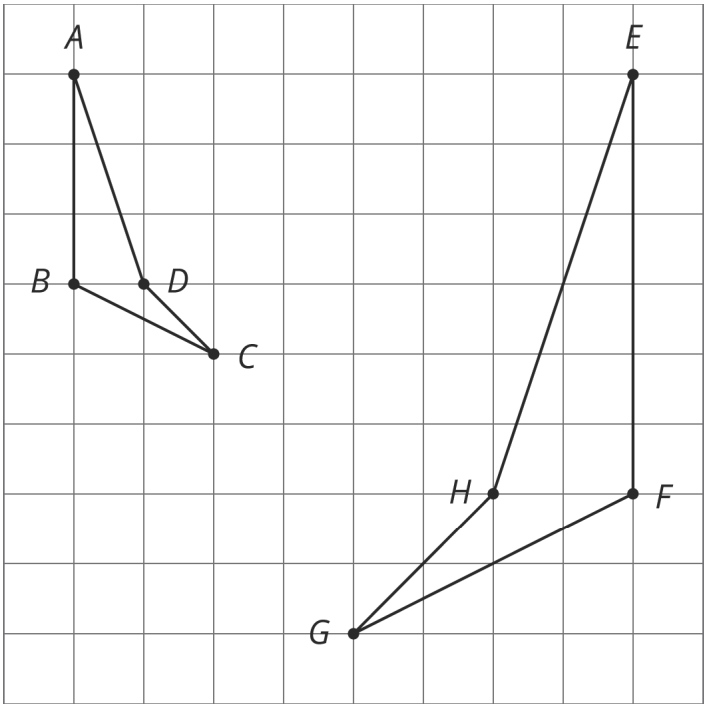
2. Here are two similar polygons.

Measure the side lengths and angles of each polygon. What do you notice?



3. Each figure shows a pair of similar triangles, one contained in the other. For each pair, describe a point and a scale factor to use for a dilation moving the larger triangle to the smaller one. Use a measurement tool to find the scale factor.