

Name:

BECA / Dr. Huson / Geometry 7 Similarity

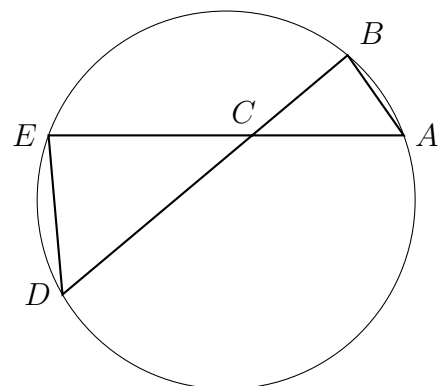
**7.12 Similarity transformations****CCSS.HSG.SRT.B.5**

1. Do Now: As shown, the chords  $\overline{AE}$  and  $\overline{BD}$  intersect at  $C$ , given  $\triangle ABC \sim \triangle DEC$ .

(a) Given  $BC = 3$ , and  $EC = 6$ . Find the scale factor  $k$ .

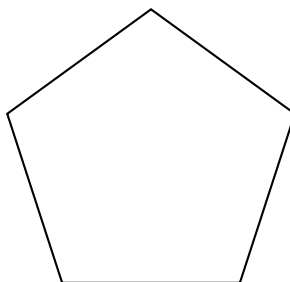
(b)  $AC = 4$ , find  $CD$ .

(c) Which angle is congruent to  $\angle E$ ?

**Definition: Symmetry**

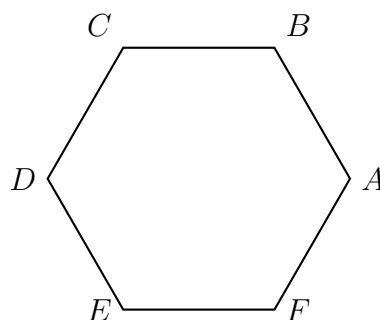
“Symmetry is a type of invariance: the property that a mathematical object remains unchanged under a set of operations or transformations. . . . a symmetry is a mapping of [an] object onto itself.” (Wikipedia, Symmetry in mathematics)

2. What is the smallest non-zero angle of rotation about its center that would map the pentagon onto itself?

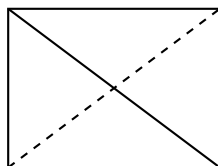


3. Circle YES or NO to indicate whether the given transformation maps the hexagon onto itself.

- (a) Yes    No    A reflection over  $\overleftrightarrow{AD}$
- (b) Yes    No    A rotation of  $60^\circ$  clockwise around the hexagon's center.
- (c) Yes    No    A reflection over a line through the midpoints of  $\overline{BC}$ ,  $\overline{EF}$ .
- (d) Yes    No    A rotation of  $120^\circ$  counterclockwise around point  $D$ .



4. The figure shows a rectangle (not a square).



Which transformations carries the rectangle onto itself? Mark each True or False.

- |   |      |       |
|---|------|-------|
| (a) A reflection over the solid diagonal  | True | False |
| (b) A reflection over the dashed diagonal                                       | True | False |
| (c) A clockwise rotation of $90^\circ$ about the intersection of the diagonals  | True | False |
| (d) A clockwise rotation of $180^\circ$ about the intersection of the diagonals | True | False |

### Early finishers

5. The line  $l$  has the equation  $y = -\frac{3}{5}x + 4$ . To each line below, circle whether  $l$  is parallel, perpendicular, or neither.

- |              |               |         |                        |
|--------------|---------------|---------|------------------------|
| (a) parallel | perpendicular | neither | $y = \frac{3}{5}x - 2$ |
| (b) parallel | perpendicular | neither | $y = \frac{5}{3}x + 9$ |
| (c) parallel | perpendicular | neither | $3x - 5y = -15$        |
| (d) parallel | perpendicular | neither | $5x - 3y = 6$          |

6. In the diagram below,  $\triangle ABC \sim \triangle DEF$ ,  $DE = 6$ ,  $AB = x$ ,  $AC = 2x$ , and  $DF = 2x + 4$ . Determine the length of  $\overline{AB}$ .

