7.5 Homework: Symmetry transformations

1. After a dilation with center $(0, 0)$, the image of $\overline{MN}$ is $\overline{M'N'}$. If $MN = 7.2$ and $M'N' = 36$, find the scale factor of this dilation.

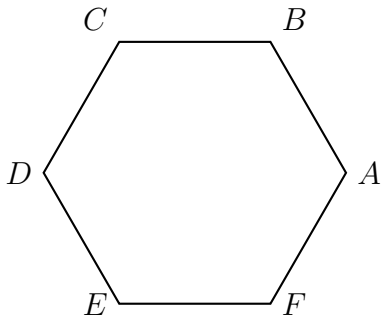
2. Circle YES or NO to indicate whether the given transformation maps the hexagon onto itself.

   (a) Yes No A rotation of 120° counterclockwise around point D.

   (b) Yes No A reflection over $\overleftrightarrow{AE}$

   (c) Yes No A reflection over a line through the midpoints of $\overline{BC}$ and $\overline{EF}$.

   (d) Yes No A rotation of 60° clockwise around the hexagon's center.



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

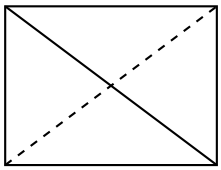
   (a) parallel perpendicular neither $y = \frac{3}{5}x - 2$

   (b) parallel perpendicular neither $y = \frac{5}{3}x + 9$

   (c) parallel perpendicular neither $3x - 5y = -15$

   (d) parallel perpendicular neither $5x - 3y = 6$

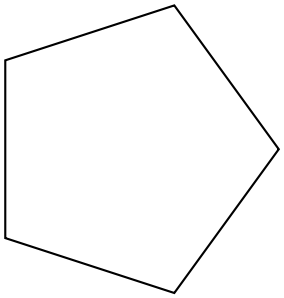
4. The figure shows a rectangle (not a square).



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° about the intersection of the diagonals	True	False
(d)	A clockwise rotation of 180° about the intersection of the diagonals	True	False

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



6. In the diagram below, the chords $\overline{AE}$ and $\overline{BD}$ intersect at C, with $\triangle ABC \sim \triangle DEC$, $BC = 3$, $AC = 4$, and $AE = 11$. Determine the length of $\overline{CD}$.