

**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.

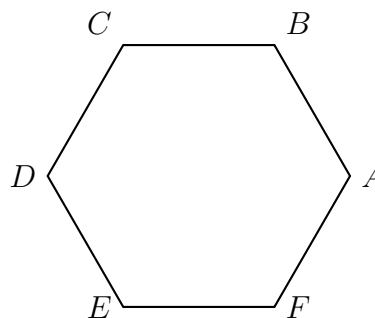
2. Circle YES or NO to indicate whether the given transformation maps the hexagon onto itself.

(a) Yes    No    A rotation of  $120^\circ$  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  $60^\circ$  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.

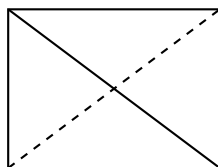
(a) parallel    perpendicular    neither     $y = \frac{3}{5}x - 2$

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

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

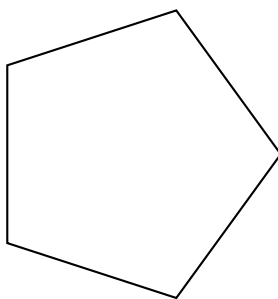
(d) parallel    perpendicular    neither     $5x - 3y = 6$

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 $90^\circ$ about the intersection of the diagonals  | True | False |
| (d) A clockwise rotation of $180^\circ$ 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  $\overline{CD}$ .

