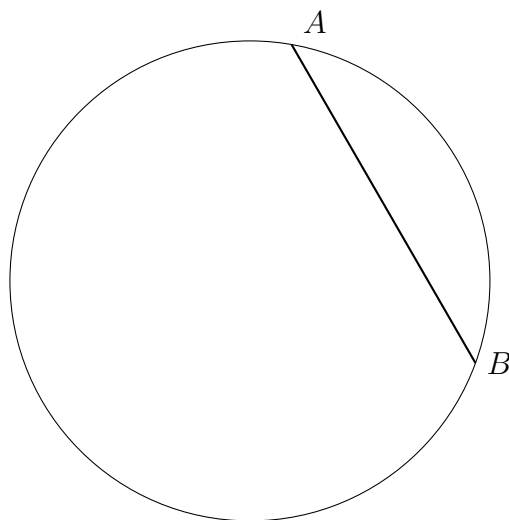


Name:

13-7 Do Now: Transformations, symmetry

Use only a compass and straightedge for these constructions. [Leave all construction marks.]

1. In the circle below, \overline{AB} is a chord. Using a compass and straightedge, construct a perpendicular bisector of \overline{AB} , and hence, a diameter of the circle.



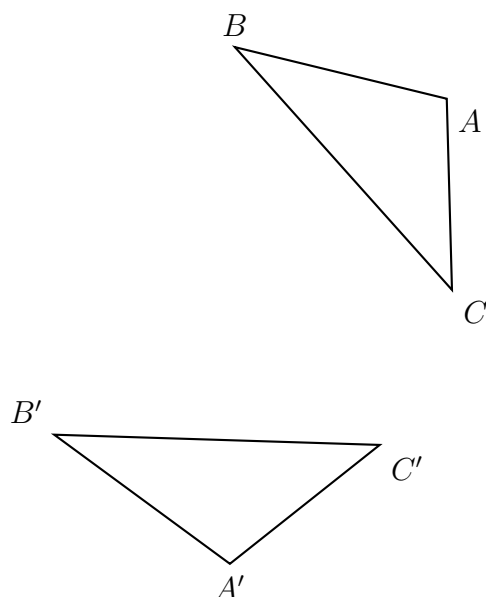
2. Given the points A , B , and C as shown, construct the parallelogram $ABCD$.

B
•

• C

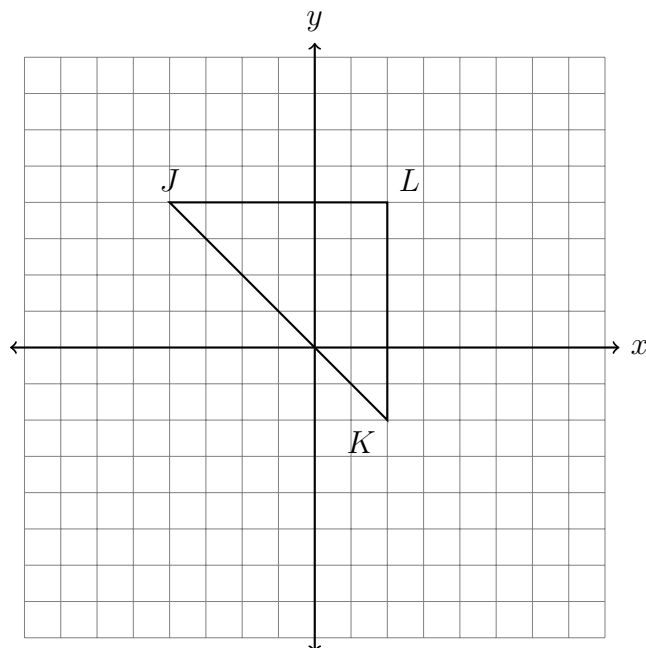
A
•

3. Construct the line of reflection used when $\triangle ABC$ is reflected onto $\triangle A'B'C'$.



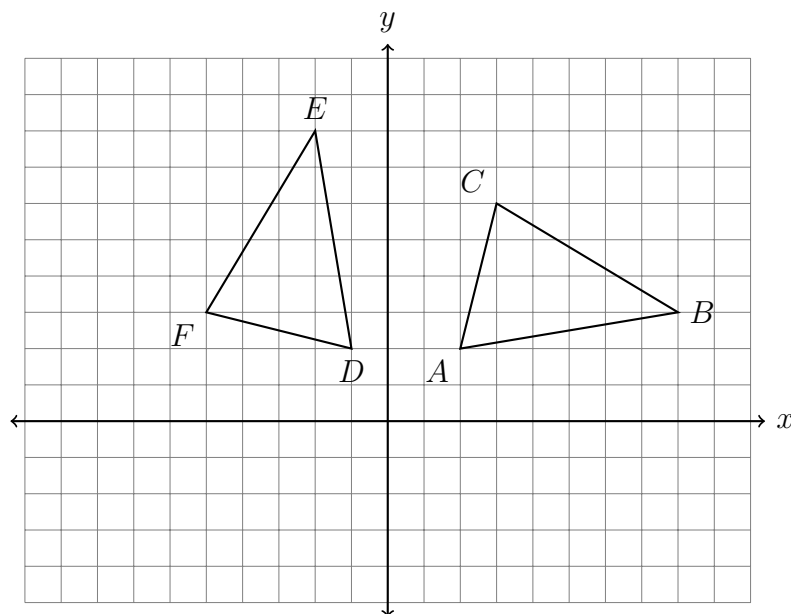
4. The vertices of $\triangle JKL$ have the coordinates $J(-4, 4)$, $K(2, -2)$, and $L(2, 4)$, as shown.

Apply a dilation to $\triangle JKL \rightarrow \triangle J'K'L'$, centered on $(2, 1)$ with a scale factor $k = \frac{4}{3}$. Draw the image $\triangle J'K'L'$ on the set of axes below, labeling the vertices.



Name:

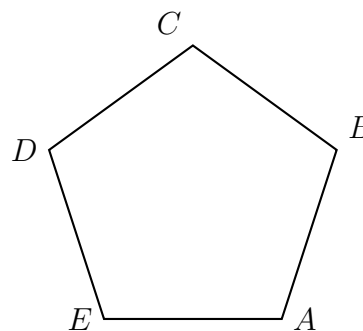
5. What transformation(s) map $\triangle ABC$ onto $\triangle DEF$, shown below? Fully specify the transformations.



6. A translation maps $A(5, -1) \rightarrow A'(5, 7)$. What is the image of $B(-1, 7)$ under the same translation?

7. Circle YES or NO to indicate whether the given transformation maps the pentagon onto itself.

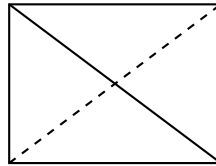
- (a) Yes No A rotation of 60° clockwise around the pentagon's center.
 (b) Yes No A reflection over \overleftrightarrow{AD}
 (c) Yes No A reflection over a line through the midpoint of \overline{AE} and C .
 (d) Yes No A rotation of 144° counterclockwise around the pentagon's center.



8. What is the equation of a line resulting when the line $y = \frac{1}{3}x - 3$ is dilated by a factor of 3 centered at the origin?

9. Directed line segment DE has endpoints $D(-4, -2)$ and $E(1, 8)$. Point F divides \overline{DE} such that $DF:FE$ is 2:3. What are the coordinates of F ?

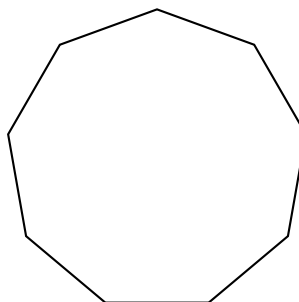
10. The figure shows a rectangle (not a square).



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

- | | | |
|---|------|-------|
| (a) A reflection one of the longer sides | 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 |

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

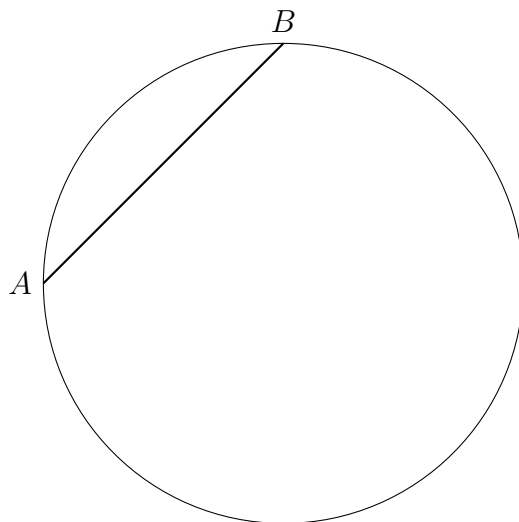


Name:

13.7 Exit Note Quiz: Transformations, symmetry

Use only a compass and straightedge for these classical constructions, showing all construction marks.

1. In the circle below, \overline{AB} is a chord. Using a compass and straightedge, construct a perpendicular bisector of \overline{AB} , and hence, a diameter of the circle.



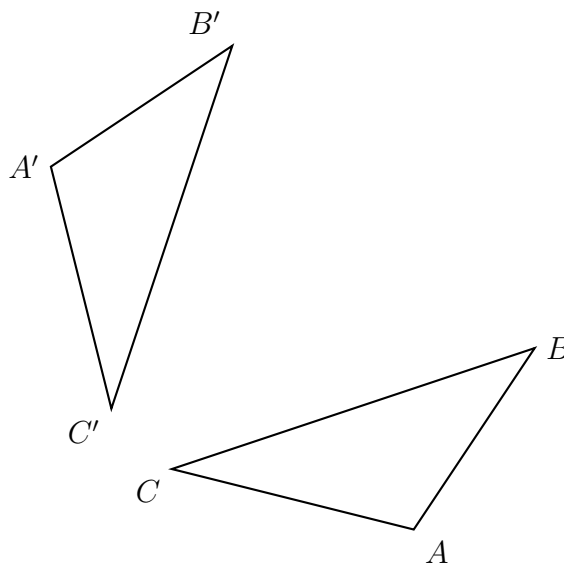
2. Given the points A , B , and C as shown, construct the parallelogram $ABCD$.

A •

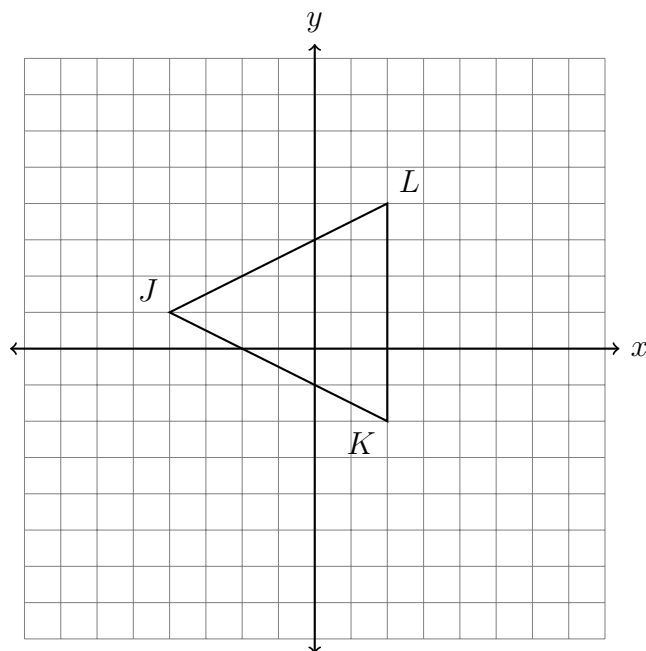
• C

•
 B

3. Construct the line of reflection used when $\triangle ABC$ is reflected onto $\triangle A'B'C'$.

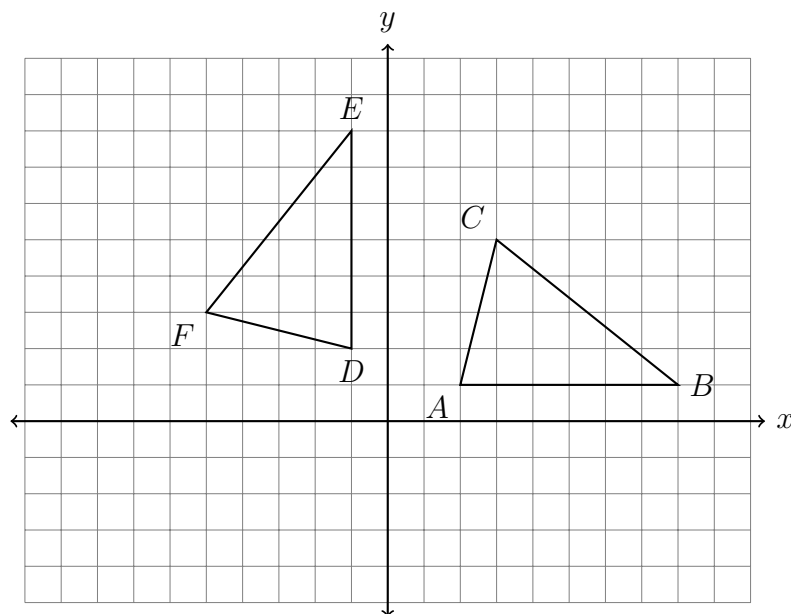


4. The vertices of $\triangle JKL$ have the coordinates $J(-4, 1)$, $K(2, -2)$, and $L(2, 4)$, as shown. Apply a dilation to $\triangle JKL \rightarrow \triangle J'K'L'$, centered on $(-2, 2)$ with a scale factor $k = 1.5$. Draw the image $\triangle J'K'L'$ on the set of axes below, labeling the vertices.



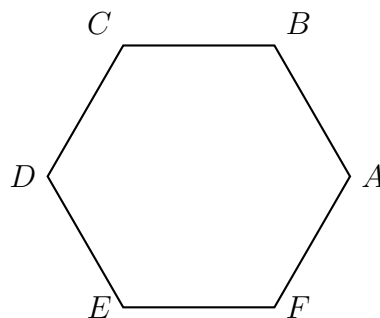
Name:

5. What transformation(s) map $\triangle ABC$ onto $\triangle DEF$, shown below? Fully specify the transformations.



6. A translation maps $A(6, -2) \rightarrow A'(-2, 6)$. What is the image of $B(-2, 6)$ under the same translation?
7. Circle YES or NO to indicate whether the given transformation maps the hexagon onto itself.

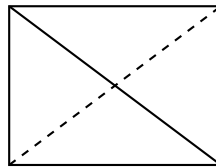
- (a) Yes No A rotation of 120° counterclockwise around point D .
- (b) Yes No A reflection over \overleftrightarrow{AE}
- (c) Yes No A reflection over a line through the midpoints of \overline{BC} and \overline{EF} .
- (d) Yes No A rotation of 60° clockwise around the hexagon's center.



8. What is the equation of a line resulting when the line $y = -2x + 4$ is dilated by a factor of $\frac{3}{2}$ centered at the origin?

9. Directed line segment DE has endpoints $D(-2, -1)$ and $E(4, 8)$. Point F divides \overline{DE} such that $DF:FE$ is 1:2. What are the coordinates of F ?

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



Which transformations carry 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 360° about the intersection of the diagonals | True | False |
| (d) A clockwise rotation of 180° about the intersection of the diagonals | True | False |
11. What is the smallest non-zero angle of rotation about its center that would map the pentagon onto itself?

