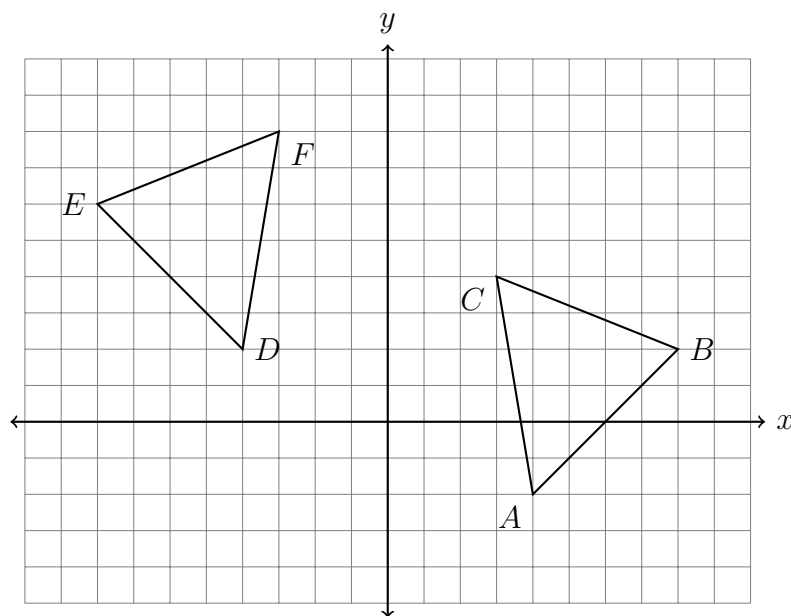


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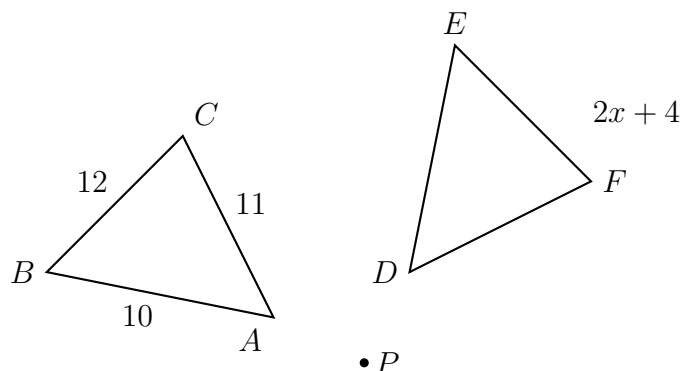
13-6 Homework: Transformations, symmetry

1. After a dilation with center $(0, 0)$, the image of \overline{RS} is $\overline{R'S'}$. If $RS = 6.5$ and $R'S' = 24$, find the scale factor of this dilation.
2. What series of transformations map $\triangle ABC$ onto $\triangle DEF$, shown below? Fully specify the transformations.



3. A translation maps $A(2, 4) \rightarrow A'(-2, 6)$. What is the image of $B(-1, 5)$ under the same translation?
4. What is the equation of a line resulting when the line $y = \frac{2}{3}x + 3$ is dilated by a factor of 2 centered at the origin?

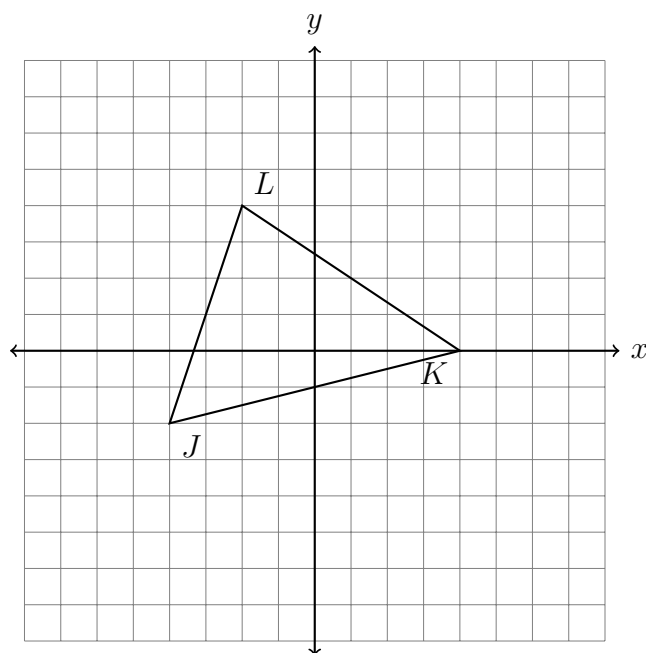
5. In the diagram below, $\triangle ABC$ with sides of 10, 12, and 11, is mapped onto $\triangle DEF$ after a clockwise rotation of 90° about point P .



If $EF = 2x + 4$, what is the value of x ?

6. The vertices of $\triangle JKL$ have the coordinates $J(-4, -2)$, $K(4, 0)$, and $L(-2, 4)$, as shown.

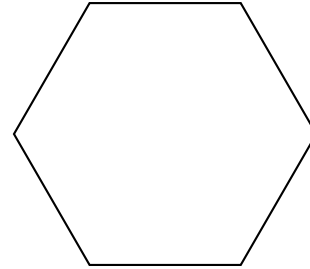
Apply a dilation to $\triangle JKL \rightarrow \triangle J'K'L'$, centered on $(2, 2)$ with a scale factor $k = 1.5$. Draw the image $\triangle J'K'L'$ on the set of axes below, labeling the vertices.



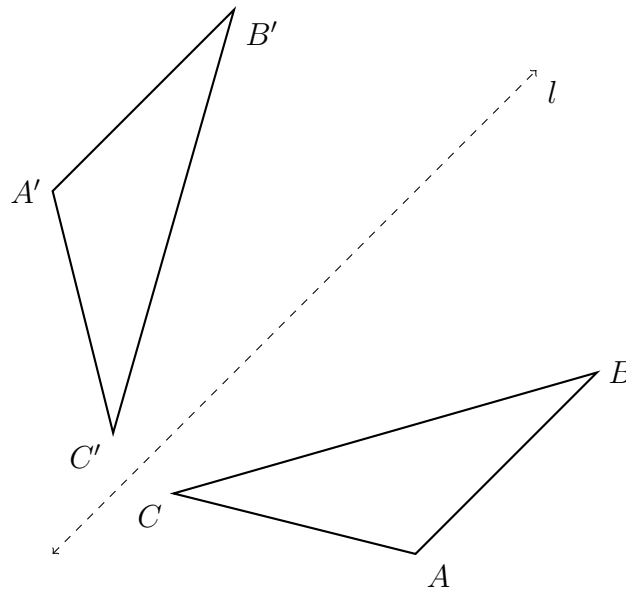
Name:

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

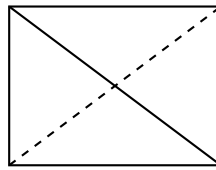
- (a) Yes No A rotation of 120° counterclockwise around point D .
 (b) Yes No A reflection over \overleftrightarrow{AE}
 (c) Yes No A reflection over a line through the midpoints of \overline{BC} and \overline{EF} .
 (d) Yes No A rotation of 60° clockwise around the hexagon's center.



8. The $\triangle ABC$ is reflected across l to yield $\triangle A'B'C'$. $AB = 3x + 4$, $A'B' = 5x - 10$, and $BC = 4x + 12$. Find the length $B'C'$.



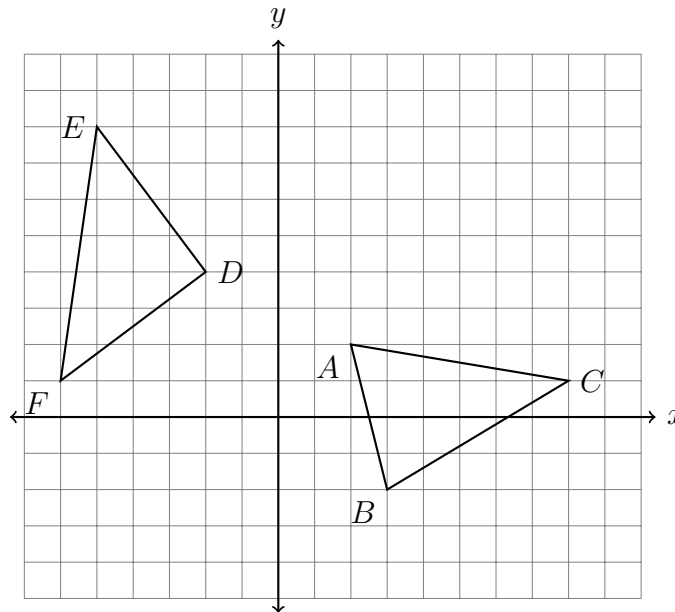
9. The figure shows a rectangle (not a square).



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 |

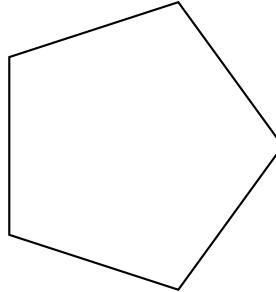
10. The grid shows $\triangle ABC$ and $\triangle DEF$.



Let $\triangle A'B'C'$ be the image of $\triangle ABC$ after a rotation about point A . Determine and state the location of B' if the location of point C' is $(3, 8)$. Explain your answer, supported by stating the transformation applied.

Name:

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



12. What is the center and radius of the circle $(x + 1)^2 + (y - 1)^2 = 16$?

13. Write down the equation of a circle with center $(3, 5)$ and radius 8.

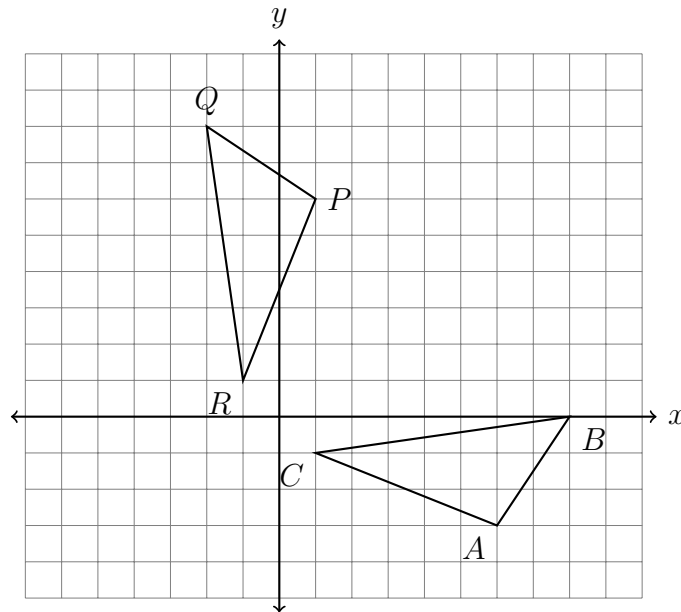
14. Expand the binomials and collect the fixed terms of the circle $(x + 2)^2 + (y + 1)^2 = 9$

15. Which of these circles are larger, or are they the same size?

(a) $(x - 5)^2 + (y + 11)^2 = 4$

(b) $x^2 + 4x + y^2 + 2y = 4$

16. Determine and state the transformation or sequence of transformations applied to $\triangle ABC$, mapping it onto $\triangle PQR$, as shown.



17. Given parallelogram $ABCD$ with $m\angle A = 65^\circ$, $AB = 8$, and $BC = 12$. Find the value of each angle measure or side length.

(a) $m\angle B =$

(b) $m\angle C =$

(c) $m\angle D =$

(d) $CD =$

(e) $AD =$

18. Circle Always, Sometimes, Never, as applies.

- | | | | |
|------------|-----------|-------|--|
| (a) Always | Sometimes | Never | Opposite sides of a parallelogram are congruent. |
| (b) Always | Sometimes | Never | Diagonals of a parallelogram are perpendicular. |
| (c) Always | Sometimes | Never | All four sides of a trapezoid are congruent. |
| (d) Always | Sometimes | Never | All four angles of a rhombus are congruent. |