

Lesson 6: Dilations on the Coordinate Plane

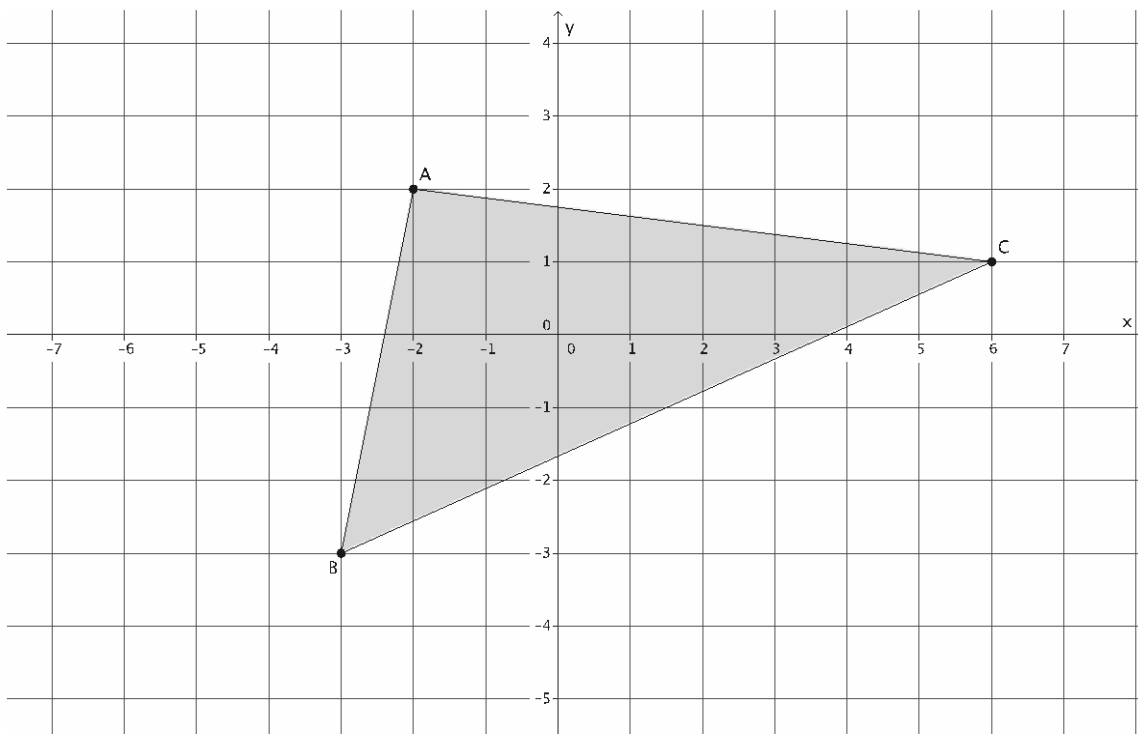
Classwork

Exercises 1–5

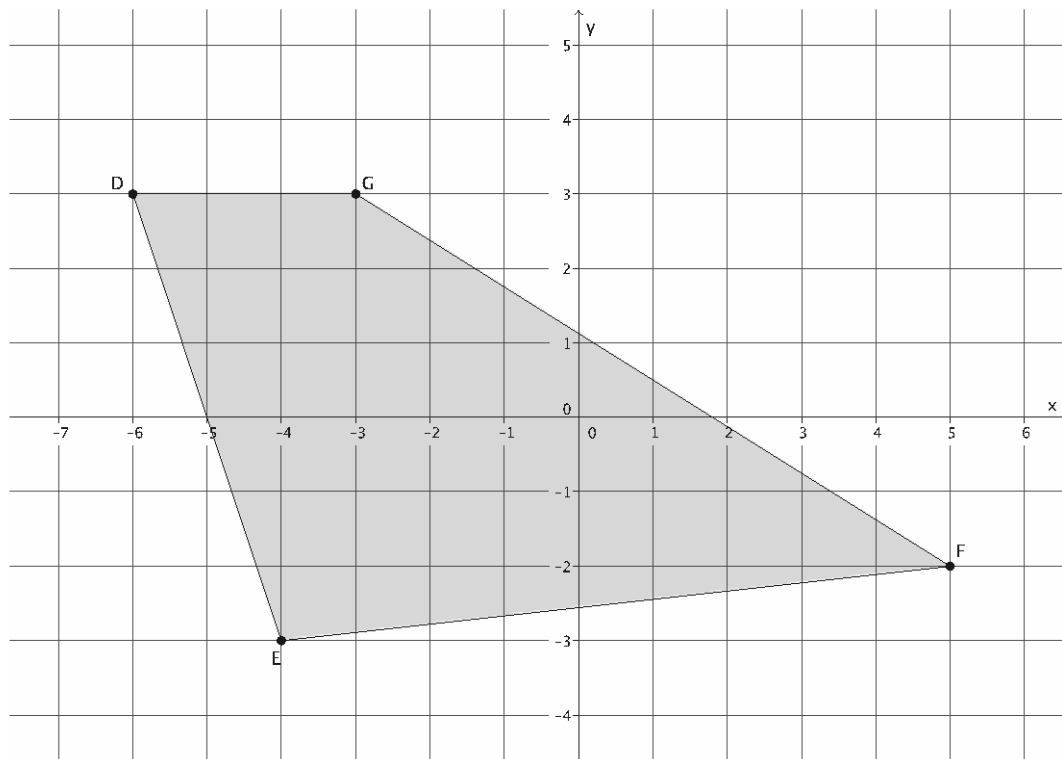
1. Point $A(7, 9)$ is dilated from the origin by scale factor $r = 6$. What are the coordinates of point A' ?
2. Point $B(-8, 5)$ is dilated from the origin by scale factor $r = \frac{1}{2}$. What are the coordinates of point B' ?
3. Point $C(6, -2)$ is dilated from the origin by scale factor $r = \frac{3}{4}$. What are the coordinates of point C' ?
4. Point $D(0, 11)$ is dilated from the origin by scale factor $r = 4$. What are the coordinates of point D' ?
5. Point $E(-2, -5)$ is dilated from the origin by scale factor $r = \frac{3}{2}$. What are the coordinates of point E' ?

Exercises 6–8

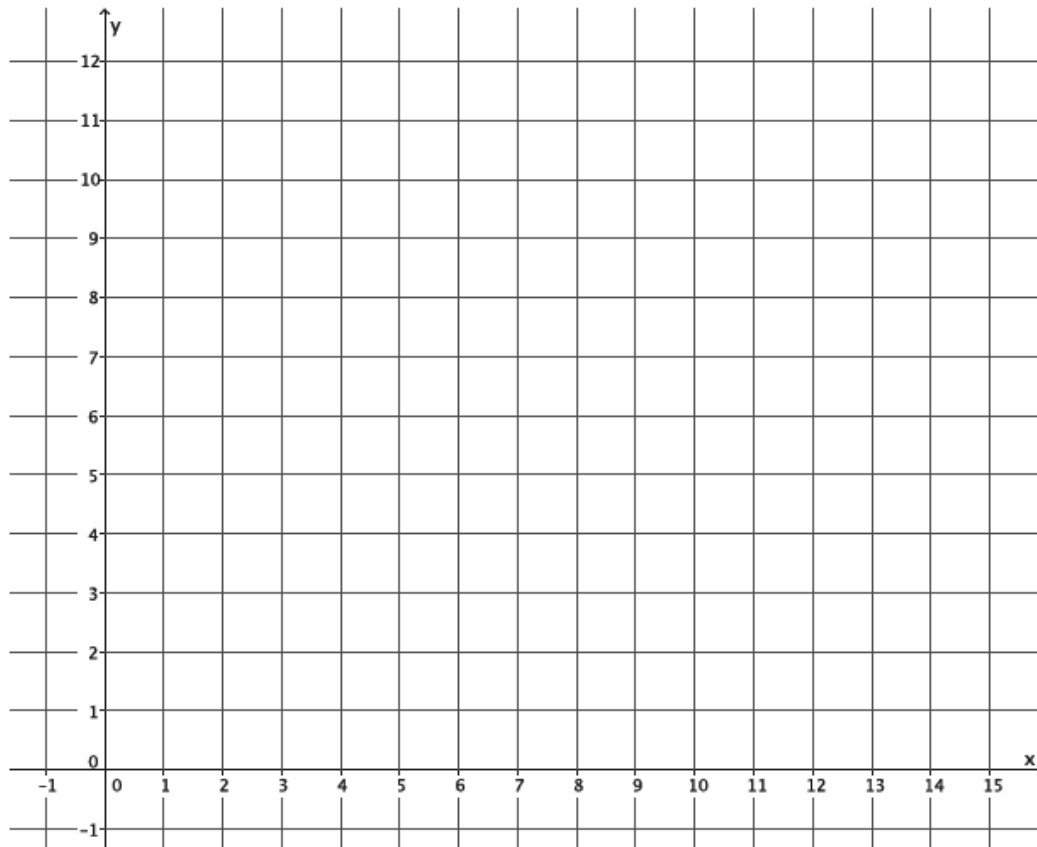
6. The coordinates of triangle ABC are shown on the coordinate plane below. The triangle is dilated from the origin by scale factor $r = 12$. Identify the coordinates of the dilated triangle $A'B'C'$.



7. Figure $DEFG$ is shown on the coordinate plane below. The figure is dilated from the origin by scale factor $r = \frac{2}{3}$. Identify the coordinates of the dilated figure $D'E'F'G'$, and then draw and label figure $D'E'F'G'$ on the coordinate plane.



8. The triangle ABC has coordinates $A(3, 2)$, $B(12, 3)$, and $C(9, 12)$. Draw and label triangle ABC on the coordinate plane. The triangle is dilated from the origin by scale factor $r = \frac{1}{3}$. Identify the coordinates of the dilated triangle $A'B'C'$, and then draw and label triangle $A'B'C'$ on the coordinate plane.



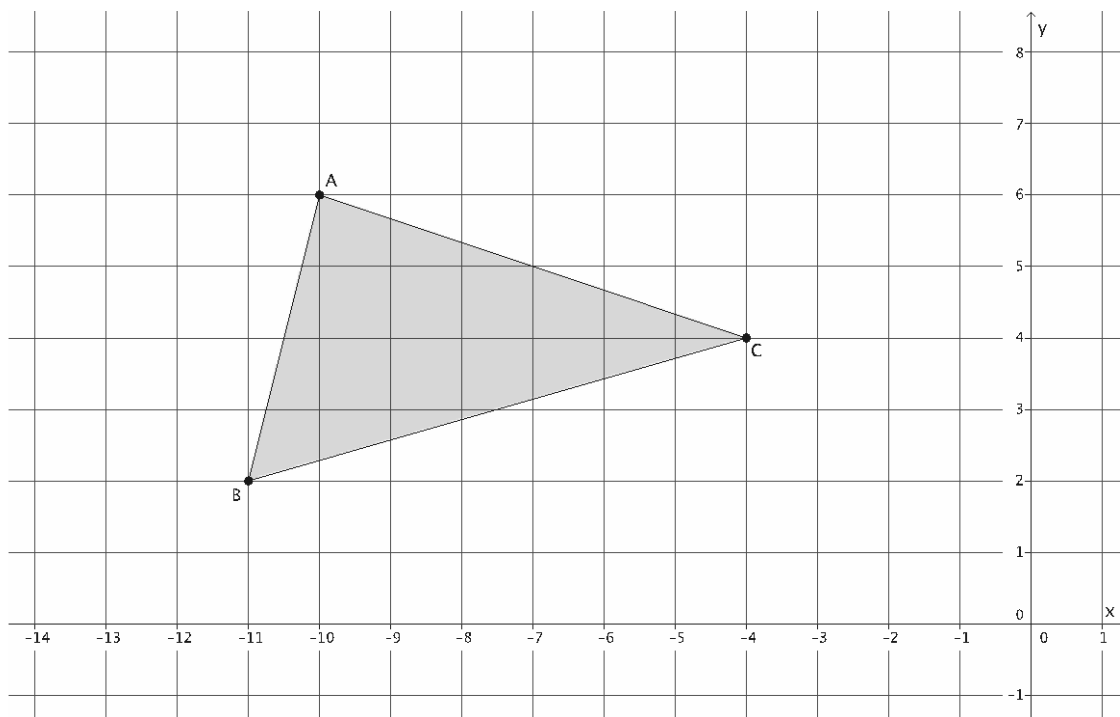
Lesson Summary

Dilation has a multiplicative effect on the coordinates of a point in the plane. Given a point (x, y) in the plane, a dilation from the origin with scale factor r moves the point (x, y) to (rx, ry) .

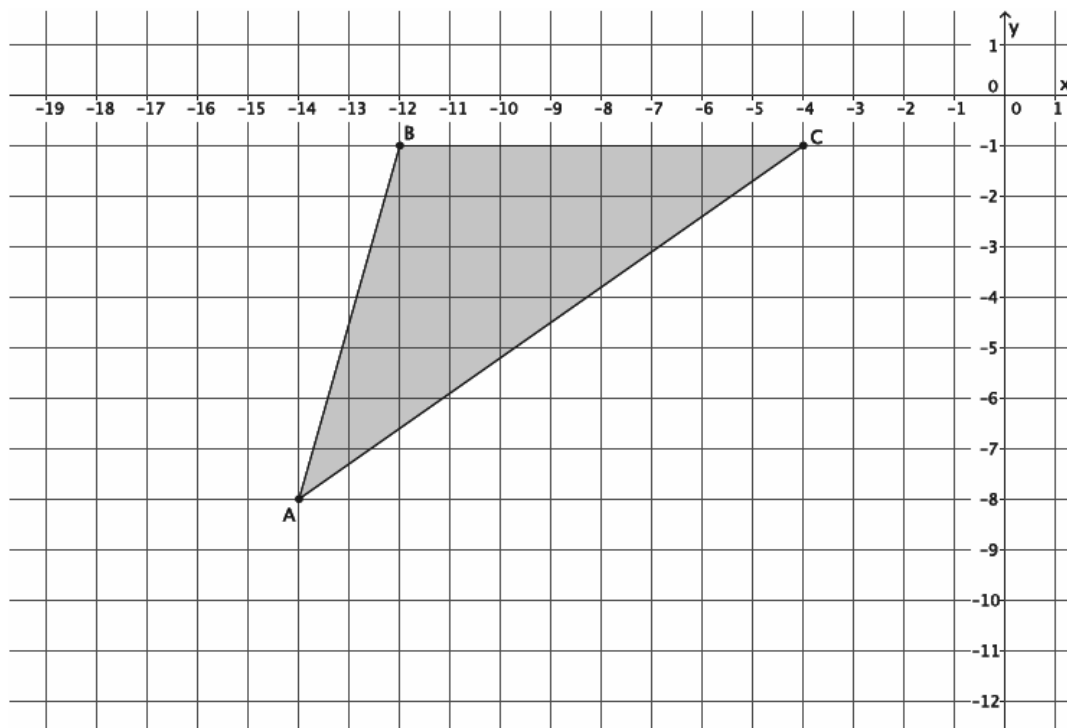
For example, if a point $(3, -5)$ in the plane is dilated from the origin by a scale factor of $r = 4$, then the coordinates of the dilated point are $(4 \cdot 3, 4 \cdot (-5)) = (12, -20)$.

Problem Set

1. Triangle ABC is shown on the coordinate plane below. The triangle is dilated from the origin by scale factor $r = 4$. Identify the coordinates of the dilated triangle $A'B'C'$.

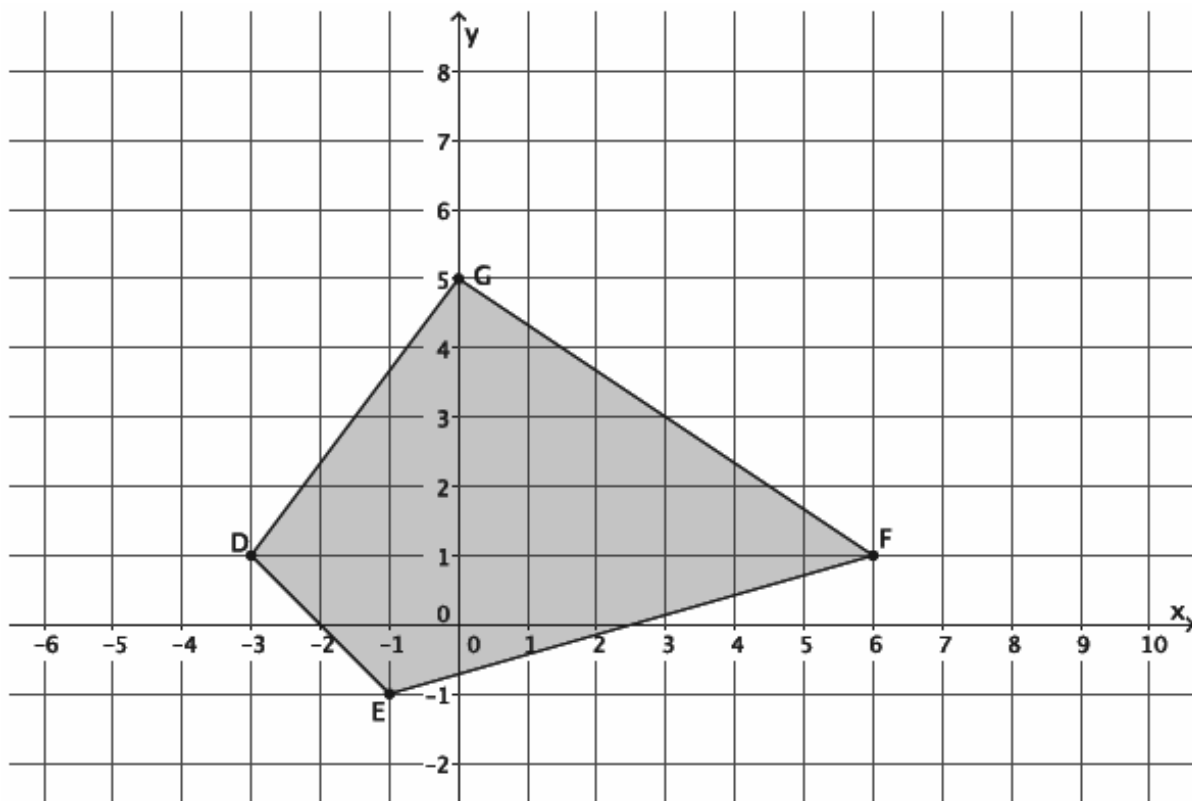


2. Triangle ABC is shown on the coordinate plane below. The triangle is dilated from the origin by scale factor $r = \frac{5}{4}$. Identify the coordinates of the dilated triangle $A'B'C'$.



3. The triangle ABC has coordinates $A(6, 1)$, $B(12, 4)$, and $C(-6, 2)$. The triangle is dilated from the origin by a scale factor $r = \frac{1}{2}$. Identify the coordinates of the dilated triangle $A'B'C'$.

4. Figure $DEFG$ is shown on the coordinate plane below. The figure is dilated from the origin by scale factor $r = \frac{3}{2}$. Identify the coordinates of the dilated figure $D'E'F'G'$, and then draw and label figure $D'E'F'G'$ on the coordinate plane.



5. Figure $DEFG$ has coordinates $D(1, 1)$, $E(7, 3)$, $F(5, -4)$, and $G(-1, -4)$. The figure is dilated from the origin by scale factor $r = 7$. Identify the coordinates of the dilated figure $D'E'F'G'$.