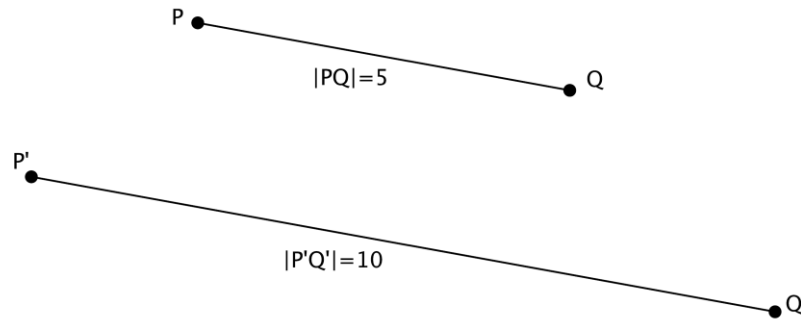


Lesson 5: First Consequences of FTS

Classwork

Exercise 1

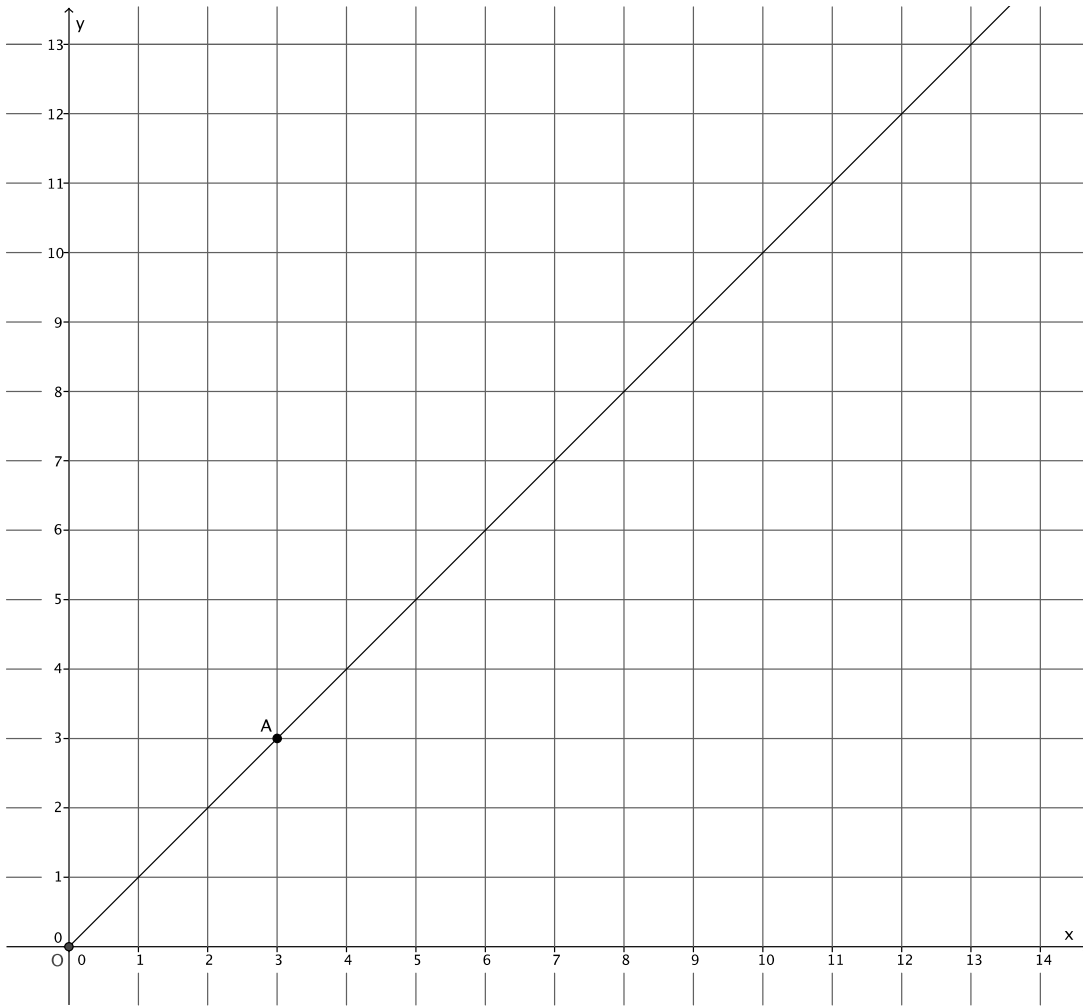
In the diagram below, points P and Q have been dilated from center O by scale factor r . $PQ \parallel P'Q'$, $|PQ| = 5$ cm, and $|P'Q'| = 10$ cm.



- Determine the scale factor r .
- Locate the center O of dilation. Measure the segments to verify that $|OP'| = r|OP|$ and $|OQ'| = r|OQ|$. Show your work below.

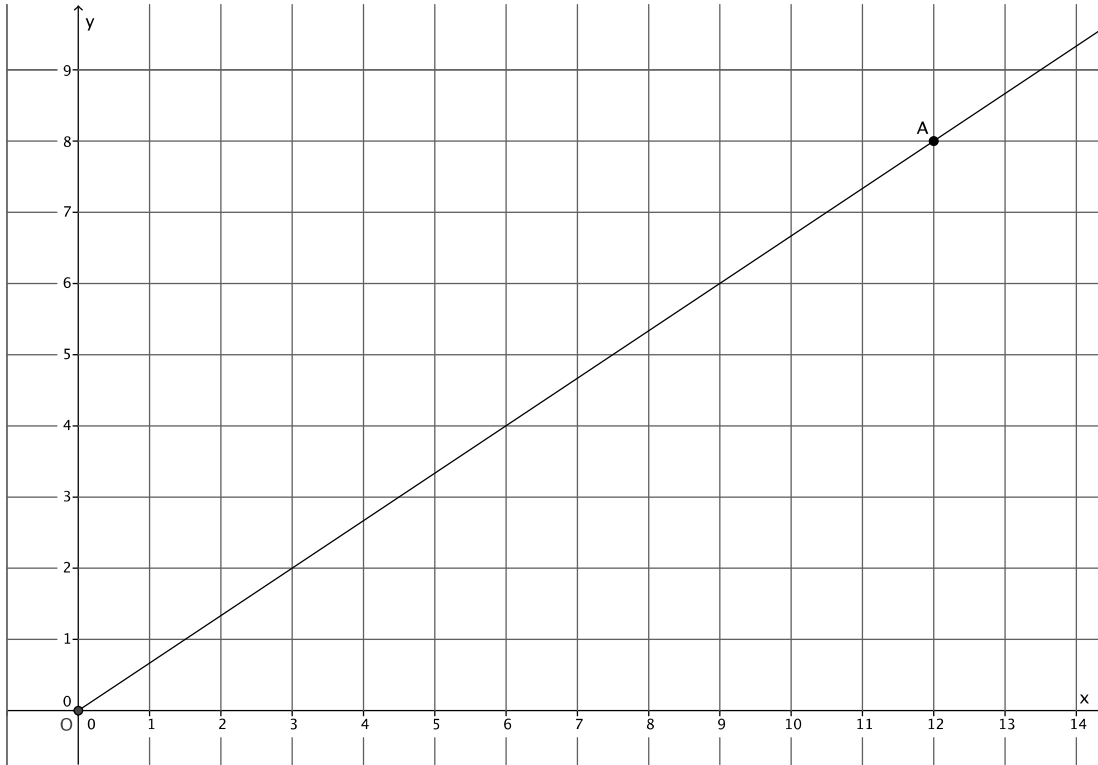
Exercise 2

In the diagram below, you are given center O and ray \overrightarrow{OA} . Point A is dilated by a scale factor $r = 4$. Use what you know about FTS to find the location of point A' .



Exercise 3

In the diagram below, you are given center O and ray \overrightarrow{OA} . Point A is dilated by a scale factor $r = \frac{5}{12}$. Use what you know about FTS to find the location of point A' .



Lesson Summary

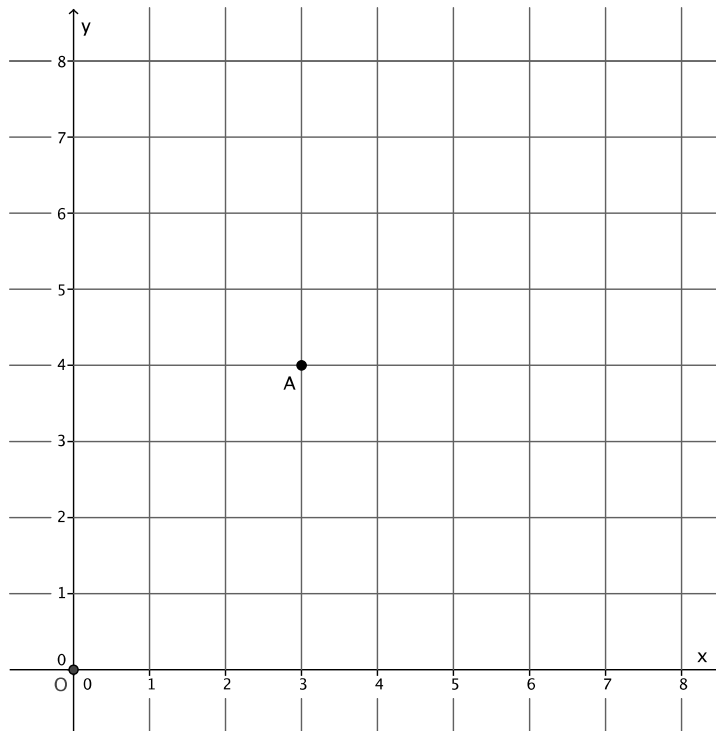
Converse of the Fundamental Theorem of Similarity:

If lines PQ and $P'Q'$ are parallel, and $|P'Q'| = r|PQ|$, then from a center O , $P' = \text{Dilation}(P)$, $Q' = \text{Dilation}(Q)$, $|OP'| = r|OP|$, and $|OQ'| = r|OQ|$.

To find the coordinates of a dilated point, we must use what we know about FTS, dilation, and scale factor.

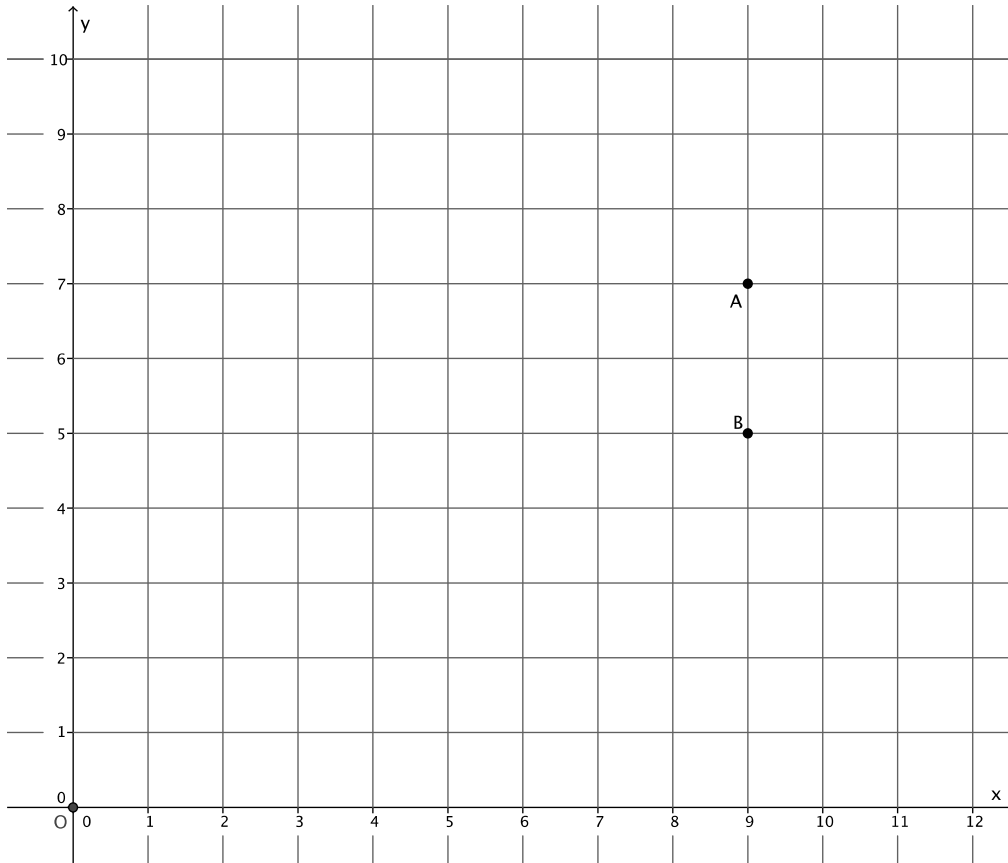
Problem Set

1. Dilate point A , located at $(3, 4)$ from center O , by a scale factor $r = \frac{5}{3}$.



What is the precise location of point A' ?

2. Dilate point A , located at $(9, 7)$ from center O , by a scale factor $r = \frac{4}{9}$. Then dilate point B , located at $(9, 5)$ from center O , by a scale factor of $r = \frac{4}{9}$. What are the coordinates of A' and B' ? Explain.



3. Explain how you used the Fundamental Theorem of Similarity in Problems 1 and 2.