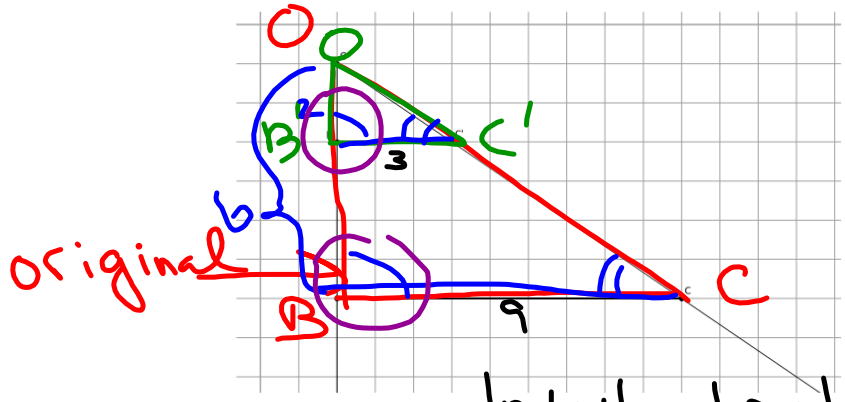
2. Caleb sketched the following diagram on graph paper. He dilated points B and C from center O.



a. What is the scale factor r? Show your work.

$r = \frac{1}{3}$

$|B'C'| = r|BC|$

$3 = r \cdot 9$

$\frac{9}{9} \quad \frac{9}{9}$

$\frac{1}{3} = r$

$|OB'| = r|OB|$

$\frac{2}{6} = \frac{r \cdot 6}{6}$

$\frac{1}{3} = r$

b. Verify the scale factor with a different set of segments.

c. Which segments are parallel? How do you know?

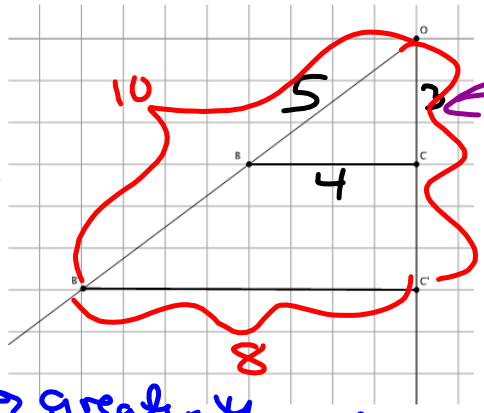
$BC \parallel B'C'$, b/c FTS

d. Which angles are equal in measure? How do you know?

$\angle OBC \cong \angle OB'C'$,
$\angle OCB \cong \angle OCB'$,

corresponding angles are congruent!

3. Points B and C were dilated from center O.



$|OC'| = r|OC|$

$\frac{6}{3} = \frac{r \cdot 3}{3}$

$r = 2$

original

$|B'C'| = r|BC|$

$\frac{8}{4} = \frac{r \cdot 4}{4}$

$r = 2$

a. What is the scale factor r? Show your work.

→ Greater than 1

$r = 2$

b. If the length of $|OB| = 5$, what is the length of $|OB'|$?

$|OB| = 10$

c. How does the perimeter of triangle OBC compare to the perimeter of triangle $OB'C'$?

$3+4+5 = 12$ $6+8+10 = 24$

It's doubled!

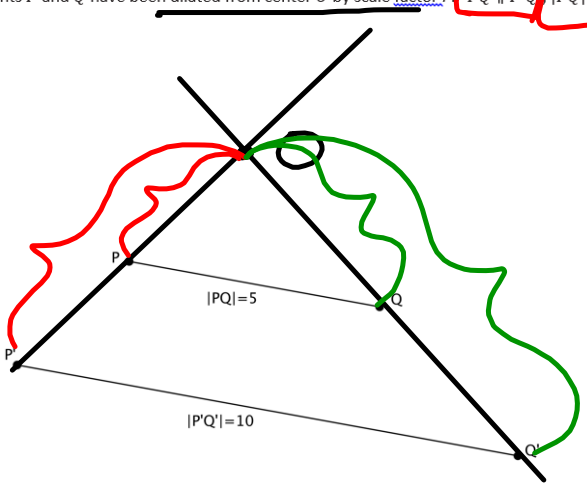
d. Did the perimeter of triangle $OB'C' = r \times$ (perimeter of triangle OBC)? Explain.

$24 = 2 \times 12$

Yes!

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.



a. Determine the scale factor r.

$|P'Q'| = r|PQ|$ → new = r · old

$10 = r \cdot 5$

$r = 2$

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

$|OP'| = r|OP|$

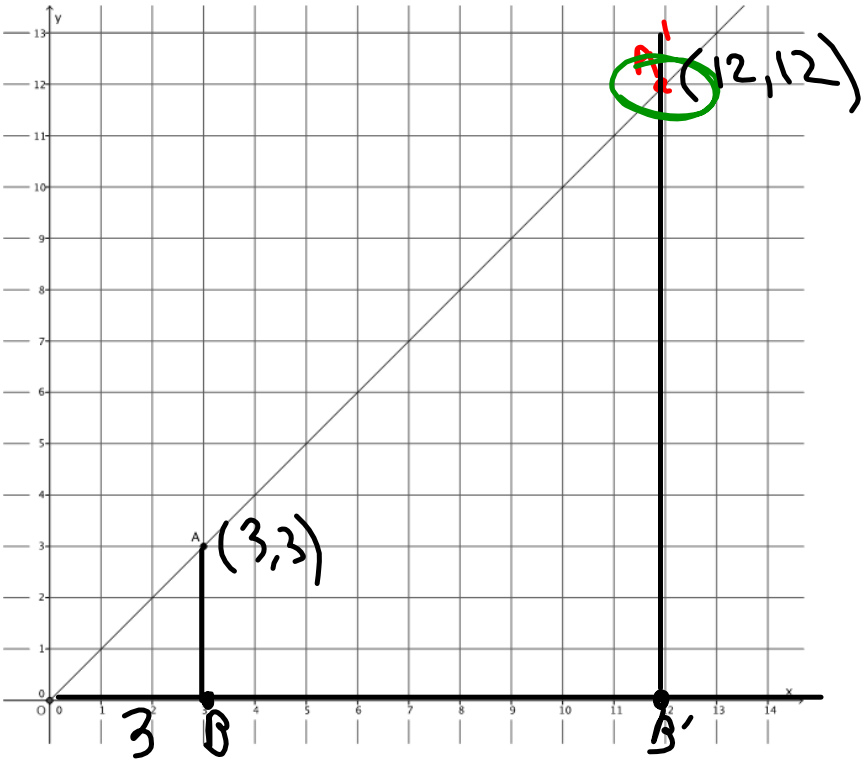
$6 = 2 \cdot 3$ ✓

$|OQ'| = r|OQ|$ $r = 2$

$8 = 2 \cdot 4$ ✓

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'.