(DN) When things are **proportional** they have equal ratios. Copy the equation and use a calculator (or simplify) to verify that the values are **proportional** as the equation suggests.

$$\frac{10}{15} = \frac{2}{3} = \frac{18}{27}$$

Name _____**Per**_____

LO: I can show how the parallel method and ratio method lead to one another and to the side splitter theorem. I can use and explain the side splitter theorem.
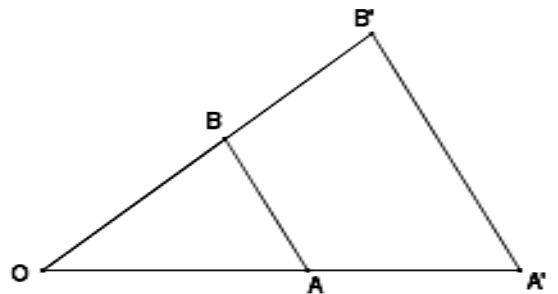

☐ (1) **Side Splitter Theorem**

ruler and setsquare

☐ (a) Read the statement of the side splitter and use the diagram to make sense of it. Complete the steps below to help you.

**Restatement of the triangle side splitter theorem:**

In △ $OA'B'$, $\overline{AB}$ splits the sides proportionally (i.e., $\dfrac{OA'}{OA} = \dfrac{OB'}{OB}$)
if and only if $\overline{A'B'} \parallel \overline{AB}$.

☐ (b) Trace the "side splitter" in the diagram above with a highlighter. (Hint, which segment "splits" or divides sides of a triangle into smaller segments?)

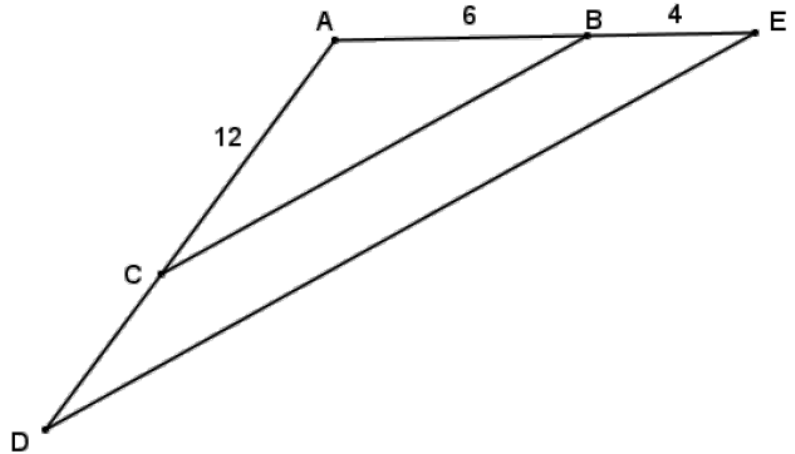☐ (c) The side splitter (segment _____) is parallel to segment _____.

☐ (d) Because a side splitter results in a scale drawing, we can write several proportions:
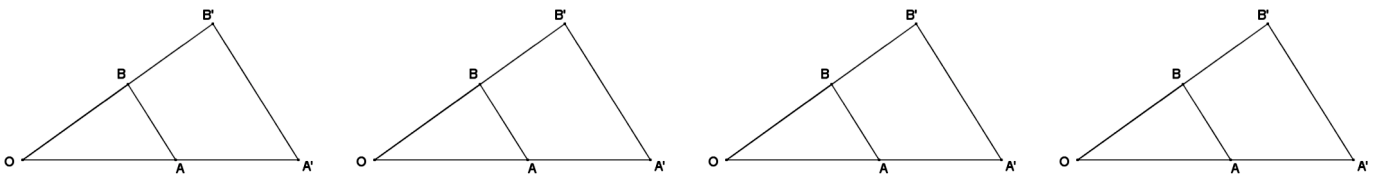
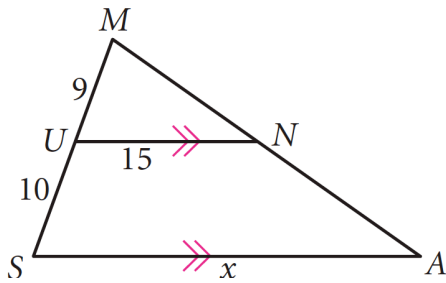☐ **(2)** **Side Splitter Theorem: using it to answer questions and solve problems**

calculator   Given the diagram, $AC = 12$, $AB = 6$, $BE = 4$, $\angle ACB = x°$, and $\angle D = x°$, find CD.

☐ **(3)** **Side Splitter Theorem: using it to answer questions and solve problems**
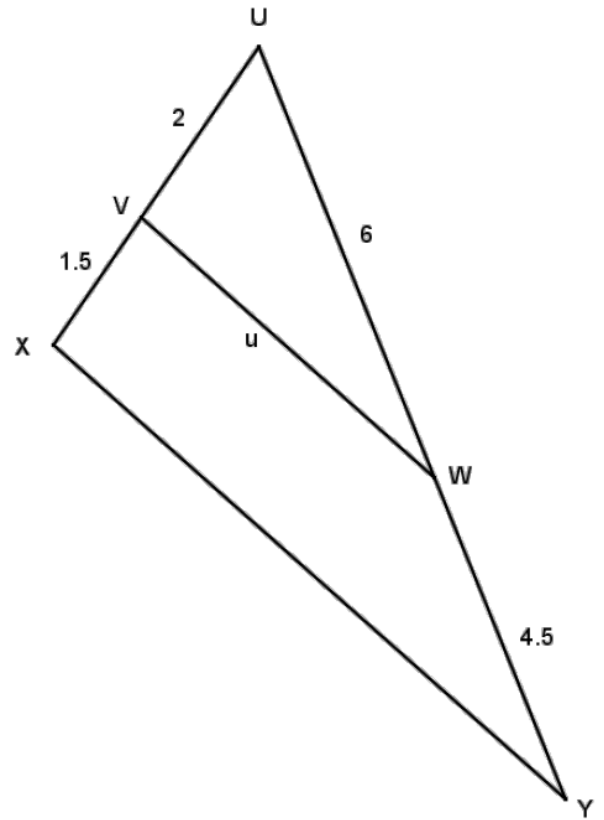calculator

Find x. ⓗ

☐ **(4)** **Scale drawings using the parallel method**

What conclusions can be drawn from the diagram shown to the right? Explain.
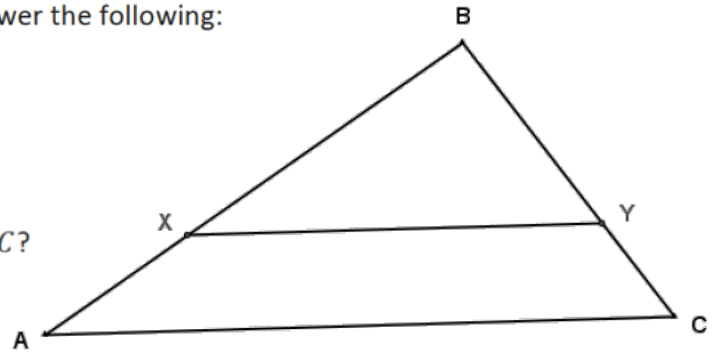
U

2

V

6

1.5

X

u

W

4.5

Y

☐ **(5)** **Exit Ticket**

In the diagram, $\overline{XY} \parallel \overline{AC}$. Use the diagram to answer the following:

1. If $BX = 4$, $BA = 5$, and $BY = 6$, what is BC?
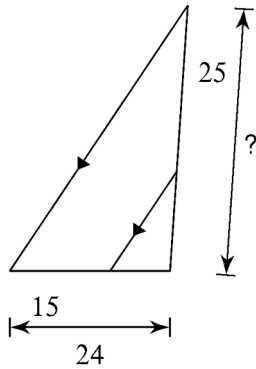
2. If $BX = 9$, $BA = 15$, and $BY = 15$, what is YC?
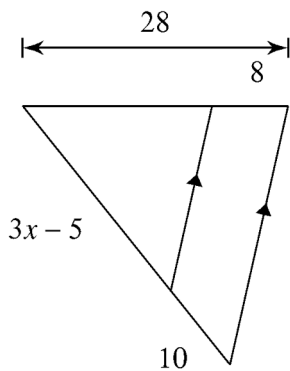
B

X

Y

A

C

Not drawn to scale

☐ **(6)** **Homework:**

compass, straightedge

☐ (1) Find the measure of the segment with the question mark.

25

?

15

24

☐ (2) Find the value of x.

28

8

$3x - 5$

10

☐ (3) Construct a 30° angle. Try on your own first, then see the hint at the bottom of the page.

(Hint: construct an equilateral triangle and bisect an angle.)

The parallel method Fractional scale factors

□ (4)

With a ruler and setsquare, use the parallel method to create a scale drawing of quadrilateral $ABCD$ about center O with scale factor $r = \frac{3}{4}$. Verify that the resulting figure is in fact a scale drawing by showing that corresponding side lengths are in constant proportion and that the corresponding angles are equal in measurement.

$O^{\bullet}$
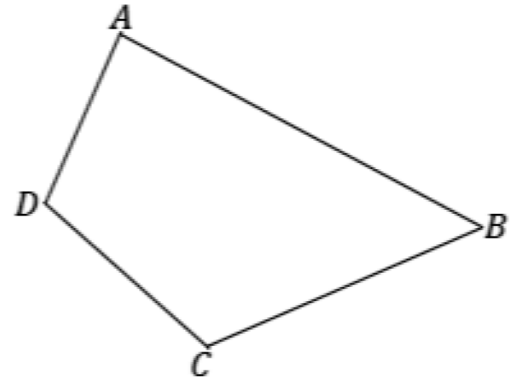
☐ (6)   **Homework:**

ruler and
setsquare   ☐ (5)

With a ruler and setsquare, use the parallel method to create a scale drawing of pentagon $PQRST$ about center O with scale factor $\frac{5}{2}$. Verify that the resulting figure is in fact a scale drawing by showing that corresponding side lengths are in constant proportion and that corresponding angles are equal in measurement.