Secondary 2
lesson 10.5

Side-Splitter and Angle-Splitter

Objective:

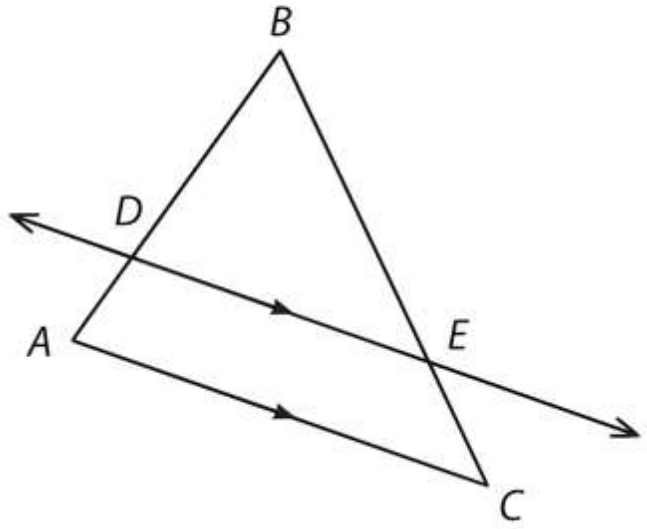
Understand and use Side-Splitter and Angle-Splitter

Triangle Proportionality Theorem (Side-Splitter)

Theorem

Triangle Proportionality Theorem

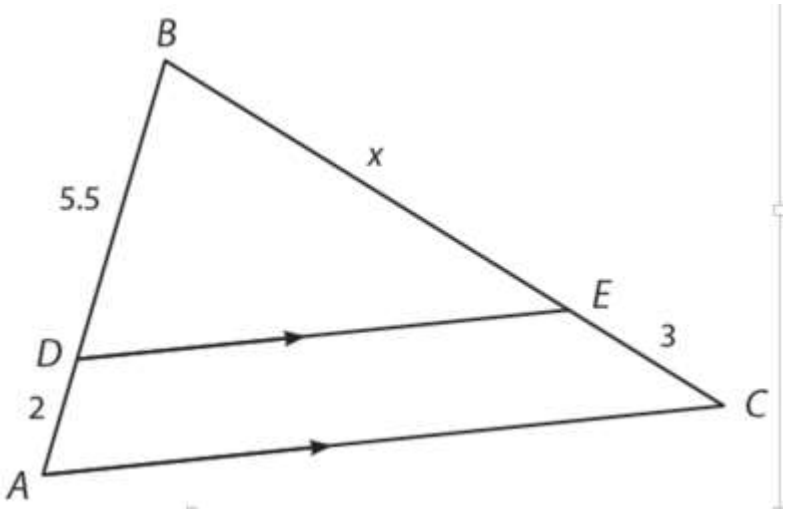
If a line parallel to one side of a triangle intersects the other two sides of the triangle, then the parallel line divides these two sides proportionally.



In the figure above, $\overline{AC} \parallel \overline{DE}$; therefore, $\frac{AD}{DB} = \frac{CE}{EB}$.

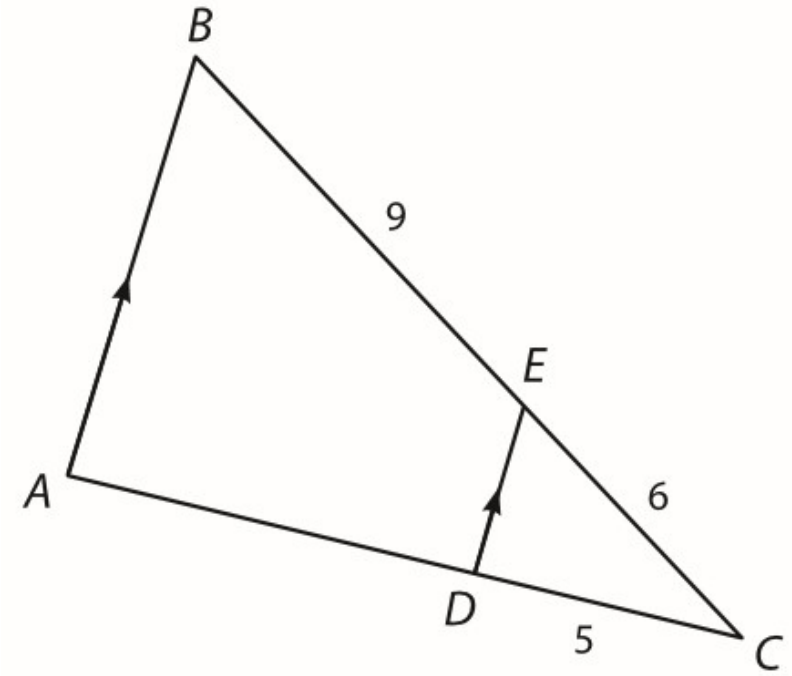
Example 1

Find the length of $\overline{BE}$.



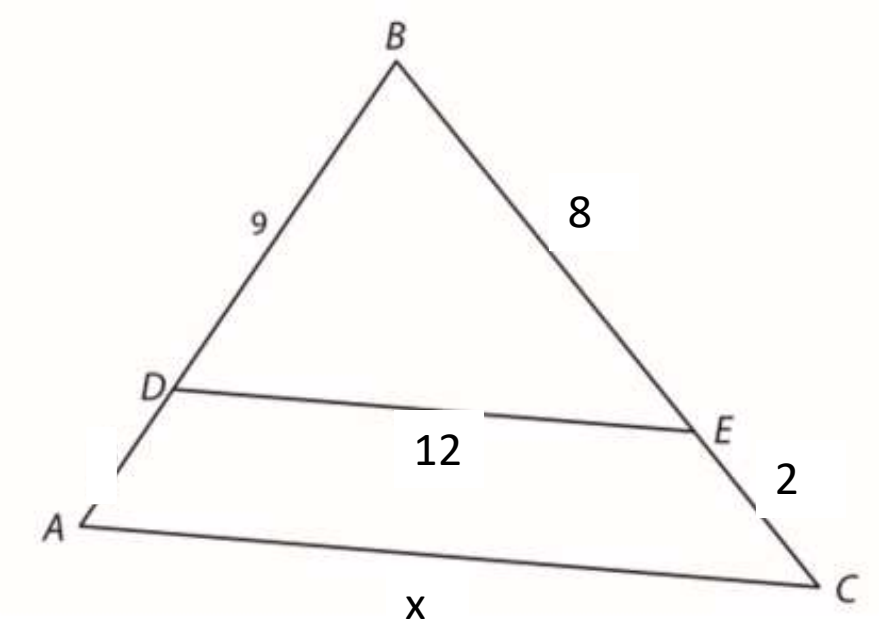
Example 2

find the length of $\overline{CA}$.



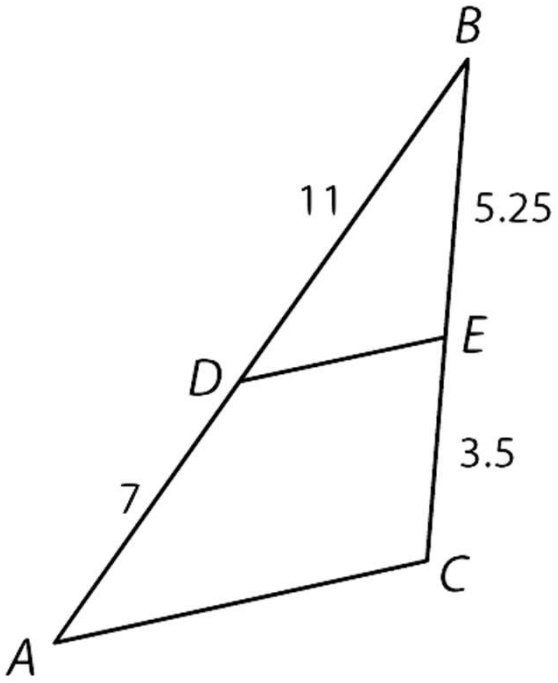
Example 3

Solve for x



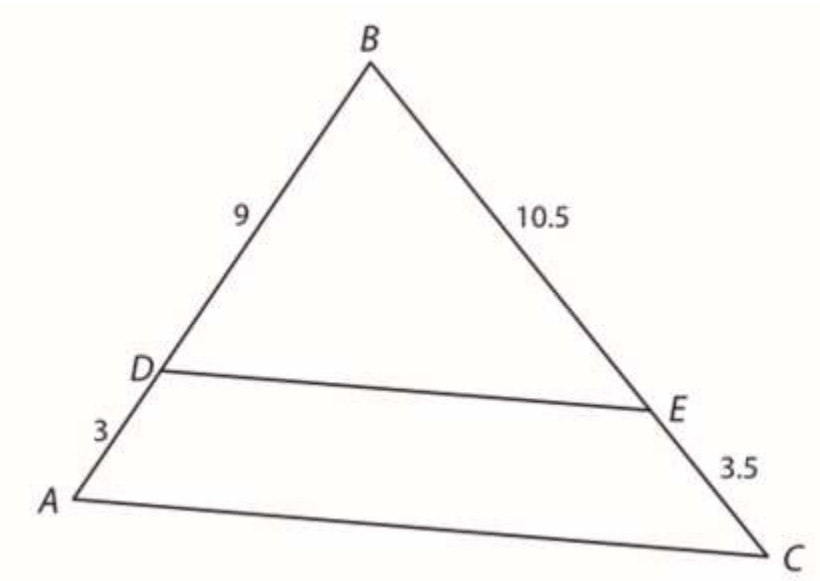
Example 4

Prove that $\overline{DE} \parallel \overline{AC}$.



Example 5

Is $\overline{DE} \parallel \overline{AC}$?

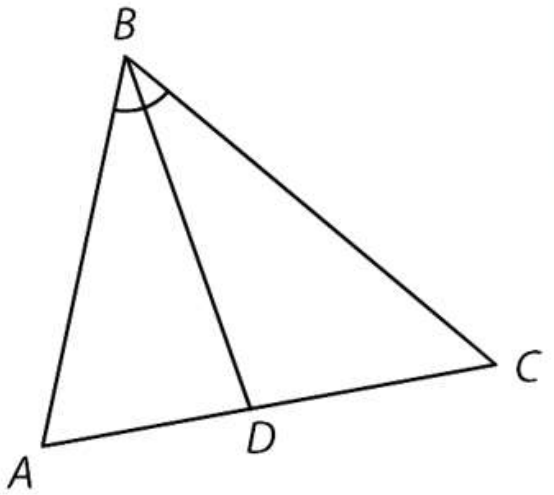


Triangle Angle Bisector Theorem (Angle-Splitter)

Theorem

Triangle Angle Bisector Theorem

If one angle of a triangle is bisected, or cut in half, then the angle bisector of the triangle divides the opposite side of the triangle into two segments that are proportional to the other two sides of the triangle.

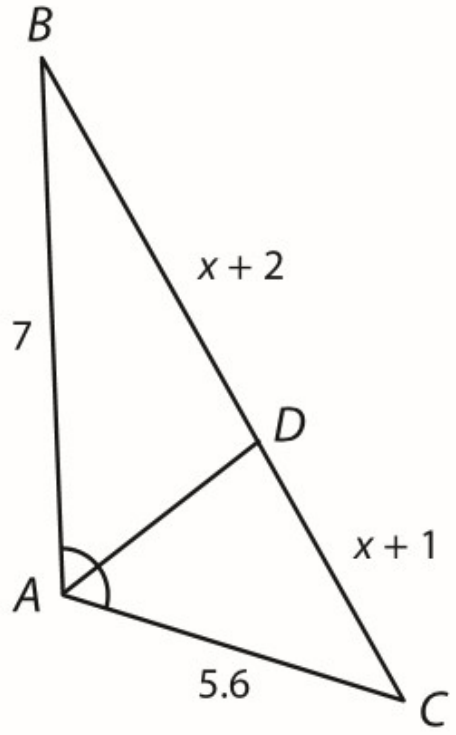


$\angle ABD \cong \angle DBC$ therefore $\frac{AD}{DC} = \frac{BA}{BC}$

Example 6

- Let's just look at how we would set this up.

Find the lengths of $\overline{BD}$ and $\overline{DC}$.



Assignment:

10.5 worksheet

and

MathXL 10.5

Remember to show all your steps!