Lesson Title 8.4 Proportionality Theorems NOTES **HGEO** **Date** _____

OBJECTIVE 1: Triangle Proportionality Theorem

If a line is parallel to a side of a triangle and intersects the other two sides, then it divides those sides proportionally.

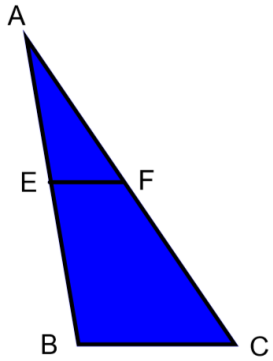
OBJECTIVE 2: Triangle Angle Bisector Theorem

An angle bisector of a triangle divides the opposite side into two segments whose lengths are proportional to the lengths of the other two sides.

OBJECTIVE 3: Two-Transversal Proportionality

If three of more parallel lines intersect two transversals, they cut off the transversals proportionally.

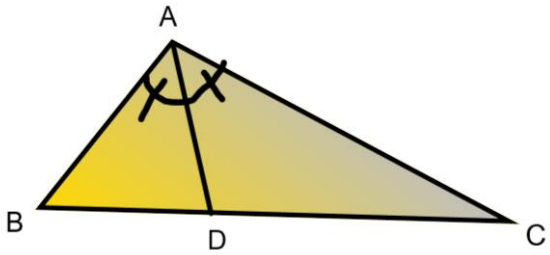
TASK 1: Finish the proportion for the diagram below using the theorem above.



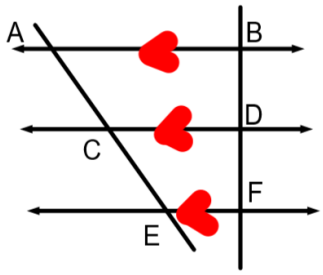
$\frac{AE}{EB} = \_\_\_\_$

TASK 2: Finish the proportion for the diagram below using the theorem above.

$\frac{BD}{DC} = \_\_\_\_$

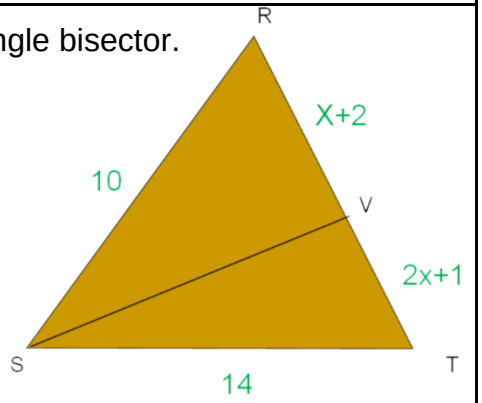


TASK 3: Finish the proportion for the diagram below using the theorem above.



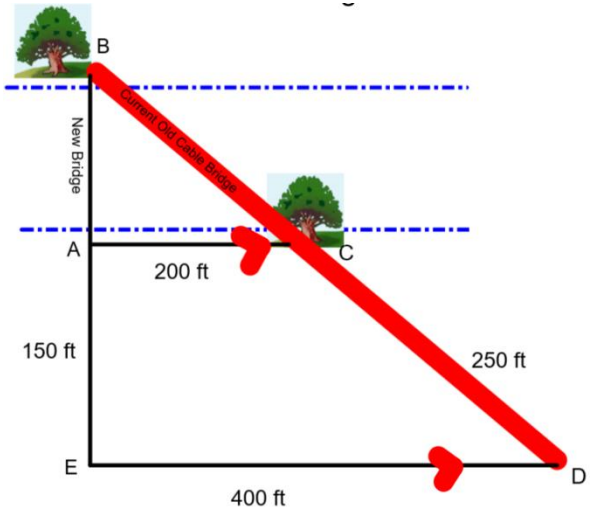
$\frac{AC}{CE} = \_\_\_\_$

b) Solve for x if $\overline{SV}$ is an angle bisector.

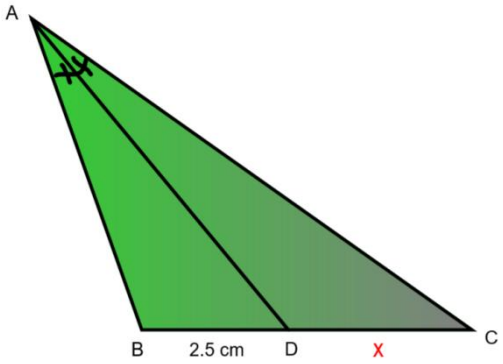


TASK 4: Decide which theorem needs to be applied to solve the word problems below.

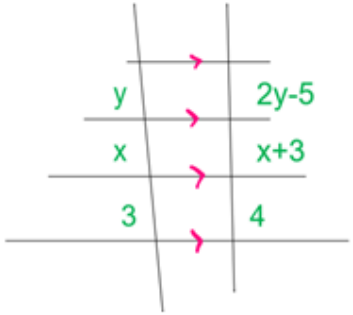
a) Justin uses triangles to find the distance across the Wisconsin River. He makes the diagram to the right. Which triangles appear to be similar? What must Justin know about these triangles to conclude they are similar? What is the distance of the new bridge?



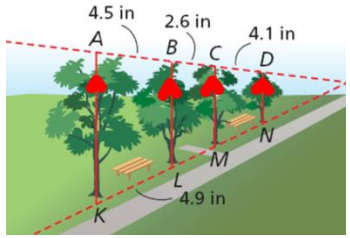
c) If $\overline{AC}$ is twice as long as $\overline{AB}$, what is DC?



e) Solve for x and y.



d) Suppose that an artist decided to make a larger sketch of the trees. In the figure, if AB = 4.5 in., BC = 2.6 in., CD = 4.1 in., and KL = 4.9 in., find LM and MN to the nearest tenth of an inch.



Still need help with: