Chapter 7: Similarity

SECTION 4: APPLYING PROPERTIES OF SIMILAR TRIANGLES

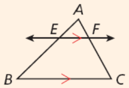
Megan Frantz Okemos High School Math Instructor

I Can

- ❑ Use properties of similar triangles to find segments lengths
- ❑ Apply proportionality and triangle angle bisector theorems

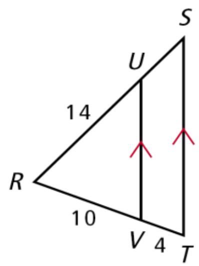
Triangle Proportionality

Theorem 7-4-1 Triangle Proportionality Theorem

THEOREM	HYPOTHESIS	CONCLUSION
If a line parallel to a side of a triangle intersects the other two sides, then it divides those sides proportionally.	 $\overline{EF} \parallel \overline{BC}$	$\frac{AE}{EB} = \frac{AF}{FC}$

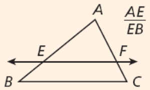
Example

Find *US*.



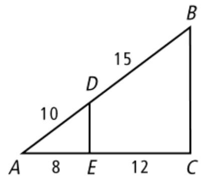
Triangle Proportionality

Theorem 7-4-2 Converse of the Triangle Proportionality Theorem

THEOREM	HYPOTHESIS	CONCLUSION
If a line divides two sides of a triangle proportionally, then it is parallel to the third side.	 $\frac{AE}{EB} = \frac{AF}{FC}$	$\overleftrightarrow{EF} \parallel \overline{BC}$

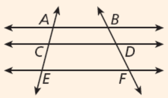
Example

Verify that $\overline{DE} \parallel \overline{BC}$.



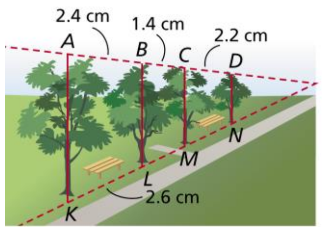
Transversals & Proportionality

Corollary 7-4-3 Two-Transversal Proportionality

THEOREM	HYPOTHESIS	CONCLUSION
If three or more parallel lines intersect two transversals, then they divide the transversals proportionally.		$\frac{AC}{CE} = \frac{BD}{DF}$

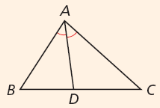
Example

Use the diagram to find *LM* and *MN* to the nearest tenth.



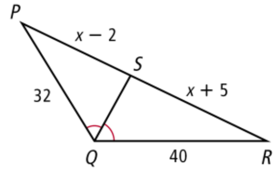
Triangle Proportionality

Theorem 7-4-4 **Triangle Angle Bisector Theorem**

THEOREM	HYPOTHESIS	CONCLUSION
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. (△ ∠ Bisector Thm.)		$\frac{BD}{DC} = \frac{AB}{AC}$

Example

Find *PS* and *SR*.



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