

Name: _____ # _____

Geometry: Period _____

Ms. Pierre


Date: _____

Similar Triangles (Part 2)

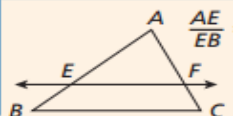
Today's Objective

SWBAT apply the properties of similar polygons to solve problems as well as prove certain triangles are similar by using AA, SSS, and SAS.

Theorem 8-4-1 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.		$\frac{AE}{EB} = \frac{AF}{FC}$

Theorem 8-4-2 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.		$\overline{EF} \parallel \overline{BC}$

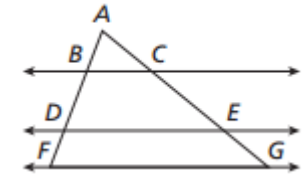
Example 1

In the figure $\overline{BC} \parallel \overline{DE} \parallel \overline{FG}$. Complete each proportion.

$$\frac{AB}{BD} = \frac{AC}{\square} \quad \frac{\square}{DF} = \frac{AE}{EG}$$

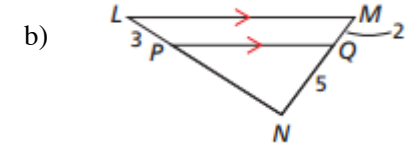
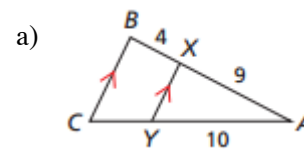
$$\frac{DF}{\square} = \frac{EG}{CE} \quad \frac{AF}{AB} = \frac{\square}{AC}$$

$$\frac{BD}{CE} = \frac{\square}{EG} \quad \frac{AB}{AC} = \frac{BF}{\square}$$

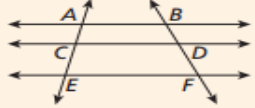


Example 2

Find the missing segment

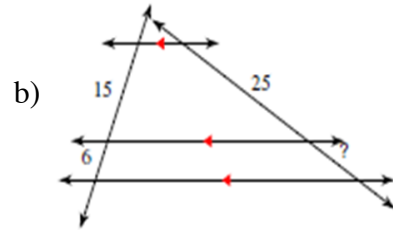
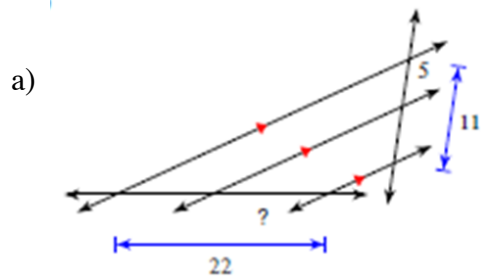


Corollary 8-4-3 Two-Transversal Proportionality

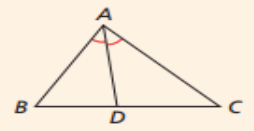
COROLLARY	HYPOTHESIS	CONCLUSION
If three or more parallel lines intersect two transversals, then they divide the transversals proportionally.		$\frac{AC}{CE} = \frac{BD}{DF}$

Example 3

Find the missing sides.

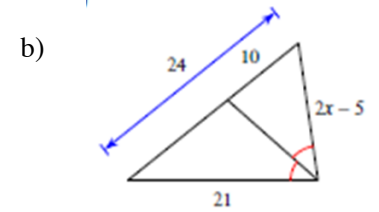
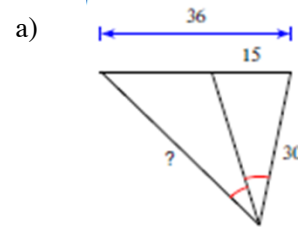


Theorem 8-4-4 Triangle Angle Bisector Theorem

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. ($\triangle \angle$ Bisector Thm.)		$\frac{BD}{DC} = \frac{AB}{AC}$

Example 4

Find the missing sides.



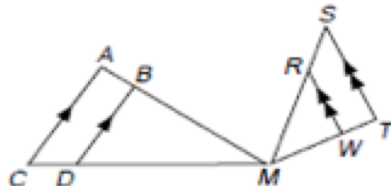


Guided Practice

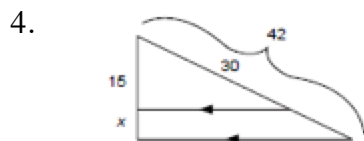
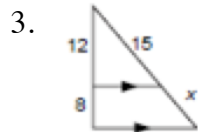
Complete each proportion.

$$1. \frac{MB}{BA} = \frac{MD}{\square}$$

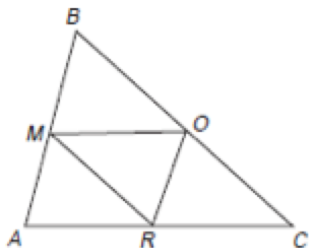
$$2. \frac{MR}{RS} = \frac{MW}{\square}$$



Find the value of x .



M, O and R are the midpoints of the sides of $\triangle ABC$. Complete each statement.



5. $\overline{OR} \parallel$ _____

6. If $MO = 15$, then $AC =$ _____

7. If $m\angle BMO = 75$, then $m\angle BAC =$ _____

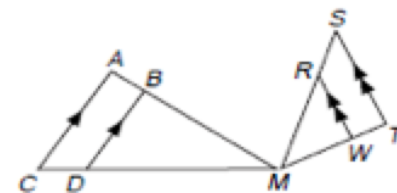
8. If $BM = 28$, then $AM =$ _____

Independent Practice

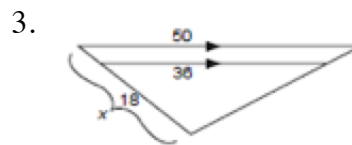
Complete each proportion.

$$1. \frac{BD}{AC} = \frac{MD}{\square}$$

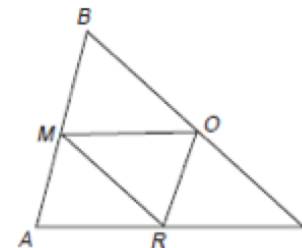
$$2. \frac{MB}{MA} = \frac{\square}{MC}$$



Find the value of x .



M, O and R are the midpoints of the sides of $\triangle ABC$. Complete each statement.



5. $\overline{BC} \parallel$ _____

6. If $BC = 62$, then $MR =$ _____

7. If $m\angle BCA = 52$, then $m\angle BOM =$ _____

8. If $AB = 50$, then $OR =$ _____

Homework

$$1. \frac{TZ}{XZ} = \frac{\square}{YA}$$

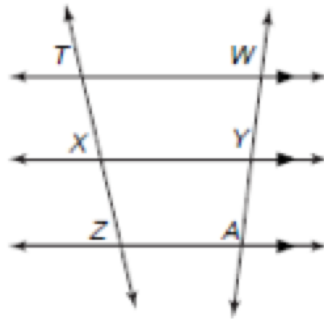
$$2. \frac{WY}{WA} = \frac{TX}{\square}$$

$$3. \frac{YA}{WY} = \frac{XZ}{\square}$$

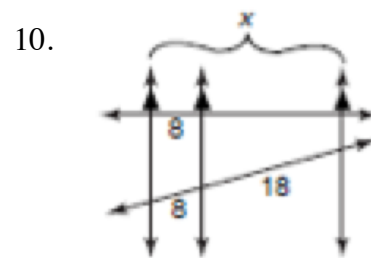
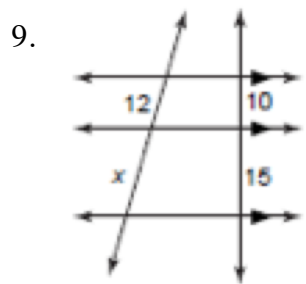
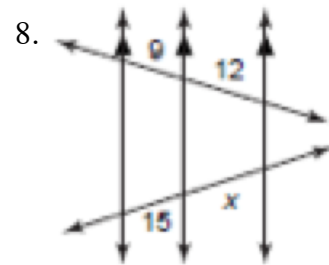
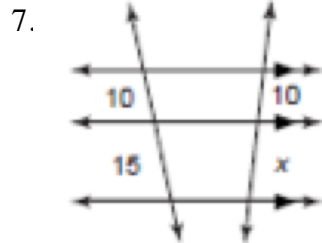
$$4. \frac{WA}{\square} = \frac{TZ}{TX}$$

$$5. \frac{AY}{\square} = \frac{XZ}{TX}$$

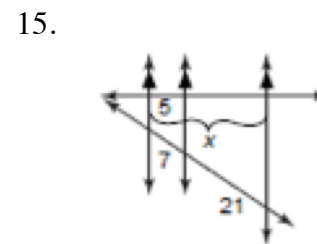
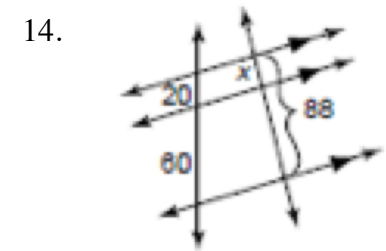
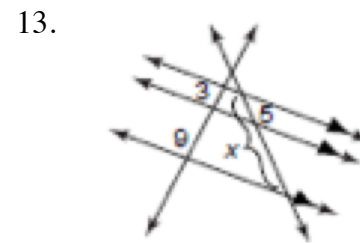
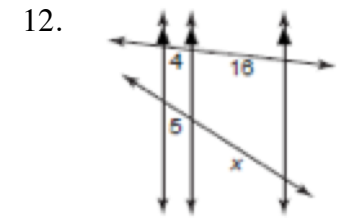
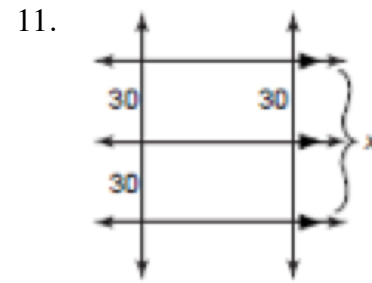
$$6. \frac{TZ}{\square} = \frac{WA}{WY}$$



Find the value of x .



Homework



16. In the figure $\overline{YA} \parallel \overline{OE} \parallel \overline{BR}$.
If $YO = 4$, $ER = 16$, and $AR = 24$,
find OB and AE .

