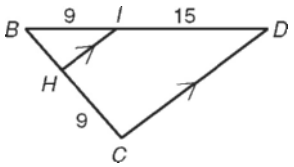
Name _____ Date _____ Class _____

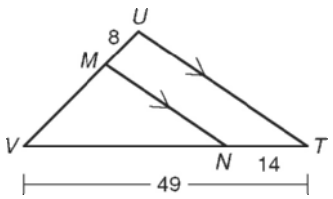
LESSON 7-4

Practice B

Applying Properties of Similar Triangles

Find each length.

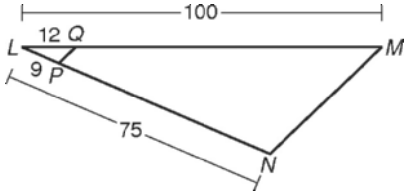




1. *BH* _____

2. *MV* _____

Verify that the given segments are parallel.



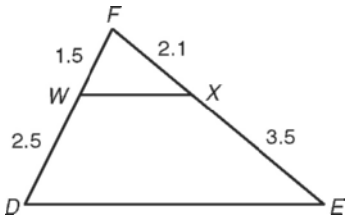
3. $\overline{PQ}$ and $\overline{NM}$

_____

_____

_____

4. $\overline{WX}$ and $\overline{DE}$

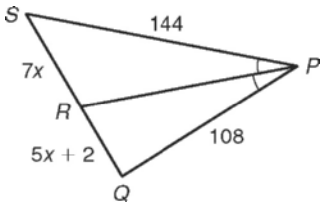


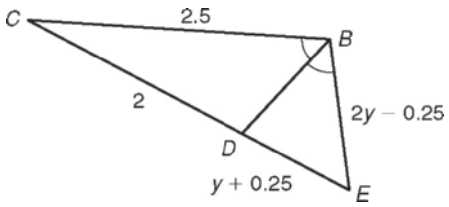
_____

_____

_____

Find each length.





5. *SR* and *RQ* _____

6. *BE* and *DE* _____

7. In $\triangle ABC$, $\overline{BD}$ bisects $\angle ABC$ and $\overline{AD} \cong \overline{CD}$. Tell what kind of $\triangle ABC$ must be. _____

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Practice B

1. 5.4 2. 20
3. $PN = 66$ and $QM = 88$. $\frac{LP}{PN} = \frac{9}{66} = \frac{3}{22}$ and $\frac{LQ}{QM} = \frac{12}{88} = \frac{3}{22}$. Because $\frac{LP}{PN} = \frac{LQ}{QM}, \overline{PQ} \parallel \overline{NM}$ by the Conv. of the △ Proportionality Thm.
4. $\frac{FW}{WD} = \frac{1.5}{2.5} = \frac{3}{5}$ and $\frac{FX}{XE} = \frac{2.1}{3.5} = \frac{3}{5}$. Because $\frac{FW}{WD} = \frac{FX}{XE}, \overline{WX} \parallel \overline{DE}$ by the Conv. of the △ Proportionality Thm.
5. $SR = 56$; $RQ = 42$
6. $BE = 1.25$; $DE = 1$ 7. isosceles

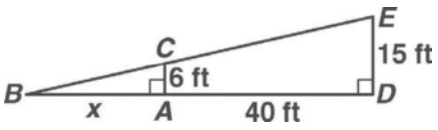
Practice C

1. Possible answer: It is given that $\overline{EF} \parallel \overline{BC}$. $\angle B$ corresponds to $\angle AEF$ and $\angle C$ corresponds to $\angle AFE$ on the transversals, so $\angle B \cong \angle AEF$ and $\angle C \cong \angle AFE$. Thus, $\triangle ABC \sim \triangle AEF$ by the AA Similarity Postulate. By the definition of similar polygons, $\frac{AB}{AE} = \frac{AC}{AF}$. But by the Segment Addition Postulate, $AB = AE + EB$ and $AC = AF + FC$. Substitution leads to $\frac{AE + EB}{AE} = \frac{AF + FC}{AF}$. This can be simplified to $1 + \frac{EB}{AE} = 1 + \frac{FC}{AF}$. The Subtraction Property of Equality shows that $\frac{EB}{AE} = \frac{FC}{AF}$, which can be rewritten as $\frac{AE}{EB} = \frac{AF}{FC}$.
2. $AX = 20$ miles; $AY = 15$ miles
3. $KN = 3.6$; $LM = 16.5$
4. $0 < \frac{ZP}{PY}$ 5. $0 < \frac{ZP}{ZX} < 1$

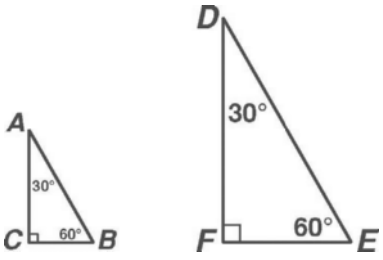
Reteach

1. 14 2. 30.4
3. $\frac{TW}{WV} = \frac{UX}{XV} = \frac{2}{5}$, so $\overline{TU} \parallel \overline{WX}$ by the Conv. of the △ Proportionality Thm.
4. $EF = 4$; $FG = 6$
5. $RV = 45$; $TV = 18$
6. $NP = 16$; $LP = 20$ 7. $JK = 18$; $LK = 12$

Challenge

1. 

overlapping right triangles
2. similar triangles
3. 1. $\triangle ABC$ and $\triangle DBE$ are overlapping right triangles; Given. 2. $\angle B \sim \angle B$; Reflexive Property of Congruence. 3. $\angle CAB \cong \angle EDB$; All right angles are congruent (Right Angle Congruence Theorem). 4. $\triangle ABC \sim \triangle DBE$; AA Similarity (Angle-Angle Similarity Postulate).
4. $\frac{15}{x + 40} = \frac{6}{x}$ 5. 26.7 ft
6. 4 cm 7. $4\sqrt{3}$ cm
8. 16 cm 9. $8\sqrt{3}$ cm



Problem Solving

1. No; $\frac{EH}{HG} \neq \frac{EJ}{JF}$ 2. 0.24 km
3. 16 4. 79.8 ft
5. C 6. H
7. D

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