Lesson 6.4

Challenge Practice

1.

Statements	Reasons
1. $\angle A \cong \angle BCD$	**1.** Given
2. $\angle ADC$ is a right angle.	**2.** Given
3. $\angle BCA \cong \angle ADC$	**3.** Right Angle Congruence Theorem
4. $\triangle ABC \sim \triangle ACD$	**4.** AA Similarity Postulate

2.

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1. $\angle A \cong \angle BCD$	**1.** Given
2. $\angle ADC$ is a right angle.	**2.** Given
3. $\angle CDB$ is a right angle.	**3.** Linear Pair Postulate
4. $\angle BCA \cong \angle CDB$	**4.** Right Angle Congruence Theorem
5. $\triangle ABC \sim \triangle CBD$	**5.** AA Similarity Postulate

3.

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1. $\angle A \cong \angle BCD$	**1.** Given
2. $\angle ADC$ is a right angle.	**2.** Given
3. $\angle CDB$ is a right angle.	**3.** Linear Pair Postulate
4. $\angle ADC \cong \angle CDB$	**4.** Right Angle Congruence Theorem
5. $\triangle ACD \sim \triangle CBD$	**5.** AA Similarity Postulate

4. $$\frac{\text{Longer leg of } \triangle ACD}{\text{Shorter leg of } \triangle ACD} = \frac{\text{Longer leg of } \triangle CBD}{\text{Shorter leg of } \triangle CBD}$$

$$\frac{AD}{CD} = \frac{CD}{BD}$$

By definition CD, the altitude of $\triangle ABC$ is the geometric mean of AD and BD.

5. a. $\triangle JKN \sim \triangle PMN$; $\triangle JKN \sim \triangle LMK$; $\triangle LMK \sim \triangle PMN$ **b.** $KM = 13.33$ in.; $MN = 6.67$ in.; $LM = 8.67$ in.; $MP = 4.33$ in. **c.** 3 : 1; 3 : 2; 2 : 1 **6.** 10 in.

7.

Statements	Reasons
1. $UVWXY$ is a regular pentagon, $UW \parallel YX$ and $UV \parallel YW$.	**1.** Given
2. $\overline{WX} \cong \overline{XY}$	**2.** All side of a reg. pentagon are $\cong$.
3. $WXYZ$ is a rhombus.	**3.** Two opposite sides are parallel and two adjacent sides are congruent.
4. $\angle X \cong \angle WZY$	**4.** Opposite $\measuredangle$s in a $\square$ are congruent.
5. $\angle WZY \cong \angle VZU$	**5.** Vertical Angles Congruence Theorem
6. $\angle X \cong \angle VZU$	**6.** Substitution
7. $\angle YWZ \cong \angle ZUV$	**7.** Alternate Interior Angles Theorem
8. $\angle YWZ \cong \angle WYX$	**8.** Alternate Interior Angles Theorem
9. $\angle ZUV \cong \angle WYX$	**9.** Substitution
10. $\triangle VZU \sim \triangle WXY$	**10.** AA Similarity Postulate