Similarity Worksheet 2 - Answers

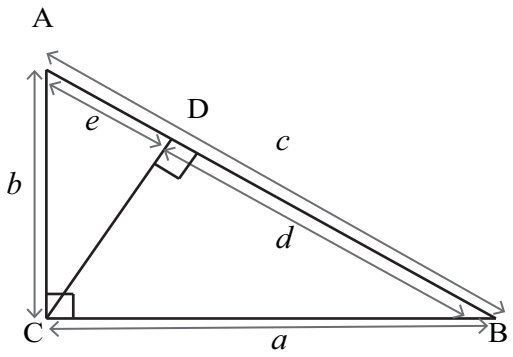

Figure 1

Refer to Figure 1 to answer questions 1 - 6 to prove the Pythagorean Theorem.

1. Is $c = d + e$? How do you know?
   Segment addition postulate

2. What can you claim using Angle-Angle postulate ?
   $\triangle ABC \sim \triangle CBD$.

3. Is $a^2 = cd$? How do you know?
   $\frac{a}{c} = \frac{d}{a} \implies a^2 = cd$ by multiplication property of equality.

4. Is $a^2 + b^2 = cd + ce$? How do you know?
   $\frac{c}{b} = \frac{b}{e} \implies b^2 = ce$. Therefore $a^2 + b^2 = cd + ce$ by addition property of equality.

5. Reduce the equatlity from question 4, using Distributive property of multiplication over addition.
   $a^2 + b^2 = c(d + e)$

6. Why is $a^2 + b^2 = c^2$ true?
   Since $c = d + e$, $a^2 + b^2 = c(d + e) = c(c) = c^2$.

7. A line parallel to a triangle's side splits one side into lengths of 9 and 3. The other side is split into lengths of 12 and x. What is the value of x?
   4

8. A line parallel to a triangle's side splits $\overline{AB}$ into lengths of 12 and 5. The other side, $\overline{AC}$, is split into lengths of x and 10. What is the length of $\overline{AC}$?
   $\overline{AC} = 34$

9. The hypotenuse of a right triangle has length 13 units, and one leg has length 12 units. How long is the other leg?
   5 units

10. $\triangle MNO$ is an isosceles right triangle with one leg having length 2. How long is the hypotenuse?
    $2\sqrt{2}$ units
