7-2: Understand the Converse of the Pythagorean Theorem

1. Sample answer: If the lengths of the three sides of a triangle satisfy the equation $a^2 + b^2 = c^2$, then the triangle is a right triangle.

2. No; Sample answer: Abe used $leg^2 + hypotenuse^2 = leg^2$ instead of $leg^2 + leg^2 = hypotenuse^2$ when solving. Since 9 + 16 = 25, Abe can make a right triangle.

3. Sample answer: The longest side length will always be substituted for *c*. The other two lengths can be either *a* or *b*. It does not matter which is which because of the Communication Property of Addition.

4. Yes; Sample answer: $6^2 + 8^2 = 10^2$.

5. No;
   Sample answer: $(\sqrt{26})^2 + (\sqrt{28})^2 \neq 8^2$

6. No; Sample answer:
   $15.5^2 + 14^2 \neq 20.8^2$

7. 3; 4; 6
   9; 16; 36
   25 ≠ 36
   No

8. 12; 16; 20
   144; 256; 400
   400 = 400
   Yes

9. Yes; Sample answer:
   $5^2 + 15^2 = (\sqrt{250})^2$.

10. Yes; Sample answer:
    $5^2 + 3.75^2 = 6.25^2$.

11. Yes; Sample answer: The side lengths satisfy $a^2 + b^2 = c^2$, so 159 + 282 = 441.

12. Triangles 1 and 3

13. Student 1 and Student 2; Sample answer: They used the equation a + b = c instead of $a^2 + b^2 = c^2$.

14. No; Sample answer: Since $13^2 + 14^2 \neq (\sqrt{340})^2$, △KLM is not a right triangle. So $\overline{KM}$ is not perpendicular to $\overline{JL}$ and is not the height of △JKL.

15. a. Triangles 2 and 3
    b. Sample answer: For Triangle 1, if the lengths of the legs are $\sqrt{229}$ units and $\sqrt{225}$ units, then the length of the hypotenuse would be $\sqrt{454}$ units.

16. △XYZ
    $9^2 + (\sqrt{63})^2 = (\sqrt{144})^2$

17. B