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Module 8 **Points, Lines, Angles, and Triangles**
Lesson 7 **Right Triangles**

Challenge Problems 8.7

Set 1

1. A triangle has sides measuring $\sqrt{3}$, $\sqrt{7}$, and $\sqrt{10}$. Is the triangle a right triangle?

2. A Pythagorean Triple is a list of three integers *a*, *b*, and *c* for which *a* squared plus *b* squared equals *c* squared. Show that 3, 4, 5 is a Pythagorean Triple.

3. If you multiply each number of a Pythagorean Triple by the same number, you get another Pythagorean Triple. For example, multiplying the Pythagorean Triple 3, 4, 5 by two would give the Pythagorean Triple 6, 8, 10. Use the Pythagorean Triple 5, 12, 13 to find three other Pythagorean Triples.

4. In any right isosceles triangle, the length of the hypotenuse can be found by multiplying the length of a leg by $\sqrt{2}$. Show that this method gives the same result as the Pythagorean Theorem for a right isosceles triangle with a leg length of six.

Possible Answers

Set 1

1. It is a right triangle.

$$\left(\sqrt{3}\right)^2 + \left(\sqrt{7}\right)^2 \stackrel{?}{=} \left(\sqrt{10}\right)^2$$
$$3 + 7 = 10$$
$$10 = 10$$

2. $a^2 + b^2 = c^2$

$3^2 + 4^2 = 5^2$

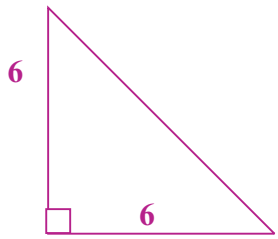
$9 + 16 = 25$

$25 = 25$

3. 5, 12, 13

× 2: 10, 24, 26
× 3: 15, 36, 39
× 10: 50, 120, 130

4.



$6 \times \sqrt{2} \approx 8.49$

$6^2 + 6^2 = c^2$
$36 + 36 = c^2$
$72 = c^2$
$8.49 \approx c$