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| **Solving Problems with the Pythagorean Relationship** |
| Describes how to use the Pythagorean relationship I can substitute the known side lengths into *a*2 + *b*2 = *c*2, where *a* and *b* are the lengths of the shorter sides and *c* is the length of hypotenuse, to find the unknown length in a right triangle. | Uses the Pythagorean relationship to determine an unknown side length *a*2 + *b*2 = *c*2 *a* 2 + 82 = 102 *a* 2 + 64 = 100 *a*2 = 100 – 64 *a*2 = 36 *a* = $\sqrt{36}$ *a* = 6The unknown side length is 6 cm. | Identifies a right triangle in a real-life situation A gameboard is a square with sides 40.8 cm. What is the length of the diagonal across the gameboard?Draw a diagram. *a*2 + *b*2 = *c*2  40.82 + 40.82 = *c*2 1664.64 + 1664.64 = *c*2 *c*2 = 3329.28 *c* = $\sqrt{3329.28}$ *c* ≈ 57.7The length of the gameboard diagonal is about 57.7 cm. | Uses the Pythagorean relationship to solve problems involving an unknown side length in a right triangleThe horizontal distance from a surveyor to the base of a cliff is measured to be 150 m. The distance from the surveyor to the top of the cliff is 188 m. What is the height of the cliff? *a*2 + *b*2 = *c*2  *a* 2 + 1502 = 1882 *a* 2 + 22 500 = 35 344 *a*2 = 35 344 – 22 500 *a*2 = 12 844 *a* = $\sqrt{12 844}$ *a* ≈ 113.33The height of the cliff is about 113.33 m. |

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| **Observations/Documentation** |
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