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| **Applying the Pythagorean Theorem to Solve Problems** |
| Describes how to use the Pythagorean theorem 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 Pythagorean triples to solve a problemSince 102 – 82 = 36 is a perfect square, the side lengths are a Pythagorean triple.The missing side length is 6 cm.  | Uses the Pythagorean theorem to determine an unknown side length *a*2 + *b*2 = *c*2  *a* 2 + 702 = 902 *a* 2 + 4900 = 8100 *a*2 = 8100 – 4900 *a*2 = 3200 *a* = $\sqrt{3200}$ *a* ≈ 56.6The length of the missing side is about 56.6 cm. | Uses the Pythagorean theorem to solve problems involving an unknown side length in a right triangleA surveyor measures the base of a vertical cliff to be 150 m away and the top of the cliff to be 188 m away. How high is the cliff?Draw a diagram. *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. |
| **Observations/Documentation** |
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