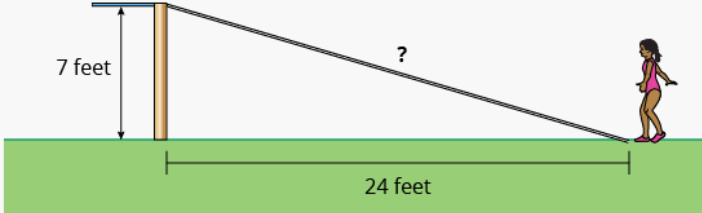# NWEA Assessment Item Illustrating 8.G.B.7

Domain: Geometry
8.G.B: Understand and apply the Pythagorean Theorem.
Calculator Availability: Yes

Use the information to answer the question.

A tightrope walker walks along a tightrope that is on an incline. The tightrope is attached to a pole at a height of 7 feet, and the tightrope extends to a point on the ground that is 24 feet away from the bottom of the pole.

7 feet

?

24 feet

What is the distance the tightrope walker travels along the rope? Enter the answer in the box.

☐ feet

Alignment: 8.G.B.7: Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.

This item offers two valuable takeaways. First, it is important for assessments to include problems that that require fairly basic applications of the Pythagorean Theorem, especially since it is a topic that is further explored in high school. Second, although the right triangle is not symbolized in the graphic, students are able to determine that the figure is a right triangle through the text. This signals that not all Pythagorean Theorem problems will present themselves with an obvious indication of a right triangle. Students must be able to apply their knowledge flexibly to a variety of problems.

Coherence: Although students began working with right triangles as early as in grade 4,[4.G.A.2] and with the concept of exponents as early as in grade 5,[5.NBT.A.2] it is not until grade 8 when students are introduced to the Pythagorean Theorem,[8.G.B.7] both in applied problems involving right triangles and in finding the distance between two points in the coordinate plane.[8.G.B.8] In high school, students will "use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems."[HSG-SRT.C.8]

Rigor: This item attends to conceptual understanding, procedural skill, and application. Once students recognize that the triangle is a right triangle, they must recall the Pythagorean Theorem. Using the Pythagorean Theorem is a grade-level procedure. While this item includes an application of mathematics in a real-world scenario to give meaning to the numbers, the context itself requires little interpretation.

Answer Key:

Use the information to answer the question.

A tightrope walker walks along a tightrope that is on an incline. The tightrope is attached to a pole at a height of 7 feet, and the tightrope extends to a point on the ground that is 24 feet away from the bottom of the pole.

7 feet

?

24 feet
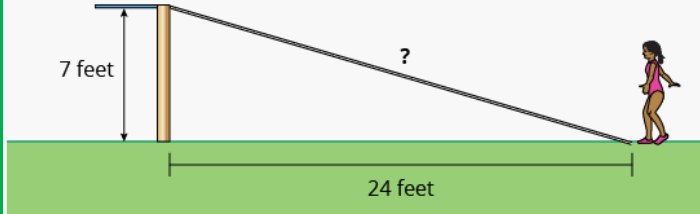
What is the distance the tightrope walker travels along the rope? Enter the answer in the box.

| 25 | feet |

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