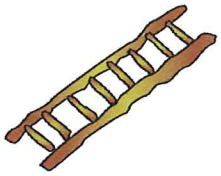
Ladder Length



(From people.stfx.ca)

A ladder is leaning against a vertical wall. The top of the ladder is 7 m from the ground. When the bottom of the same ladder is moved 1 m further away from the wall, the top of the ladder rests against the bottom of the wall.

How long is the ladder?

From https://people.stfx.ca/rtmacdon/mathproblems/grade11.html

SOLUTION

A ladder is leaning against a vertical wall. The top of the ladder is 7 m from the ground. When the bottom of the same ladder is moved 1 m further away from the wall, the top of the ladder rests against the bottom of the wall.

How long is the ladder?

$y = x + 1$

$y^2 = x^2 + 7^2$

$y^2 = (x+1)^2$

$(x+1)^2 = x^2 + 49$

$x^2 + 2x + 1 = x^2 + 49$

$2x = 48$

$x = 24\text{ m}$

$y = x + 1$

therefore

$y = 25\text{m}$

The ladder is 25m long.

From https://people.stfx.ca/rtmacdon/mathproblems/grade11.html