Answer on Question #80899, Physics / Mechanics | Relativity

Question:

A boy removes a nail from a vertical wall by pulling on a string attached to the nail in a direction 30° to the wall. If the tension in the string is 10N, calculate the magnitude of the force which is not effective in removing the nail and the effective force used in pulling out the nail

Solution:

Vertical component of the force T is not effective, its value is $f_v = T\cos 30 = 10 \cdot 0.5 \cdot \sqrt{3} = 8.7$ (N). Horizontal component of the force T is effective, its value is $f_H = T\sin 30 = 10 \cdot 0.5 = 5$ (N).

The answer:

Vertical component of the force T is not effective, its value is 8.7 N.

Horizontal component of the force T is effective, its value is 5 N.