A skier is gliding along at 3.0 m/s on horizontal frictionless snow. She suddenly starts down a 10° incline. Her speed at the bottom is 15 m/s.

What is the length of the incline?

How long does it take to reach the bottom?

**Representations (graphs, motion maps, sketches with variables labeled)**

**Variables and Equations**

**Solution (show all reasoning and/or math)**

**Reasonability check**

A car travelling at 30 m/s runs out of gas while travelling up a 20° slope. How far up the hill will it coast before starting to roll back downhill? How long will it take to return to the starting point?

**Representations (graphs, motion maps, sketches with variables labeled)**

**Variables and Equations**

**Solution (show all reasoning and/or math)**

**Reasonability check**

You are doing work on a wet roof after a bad rain storm, and it’s pretty slick - slick enough to be frictionless in places. The roof is pitched at a 30° angle. If you slide 10 m before reaching the edge, what will your speed be as you fall off of the roof?

**Representations (graphs, motion maps, sketches with variables labeled)**

**Variables and Equations**

**Solution (show all reasoning and/or math)**

**Reasonability check**

In a movie, you watch a secret agent ski jump off of a 30° snowy slope, at a speed of 60 km/hr. To survive and land on the snow 100 m below, he must clear a 60 m wide gorge. Will the secret agent make it?

**Representations (graphs, motion maps, sketches with variables labeled)**

**Variables and Equations**

**Solution (show all reasoning and/or math)**

**Reasonability check**