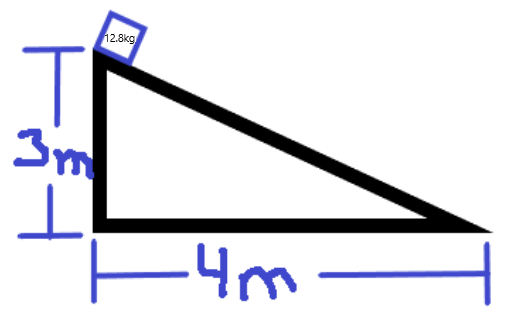
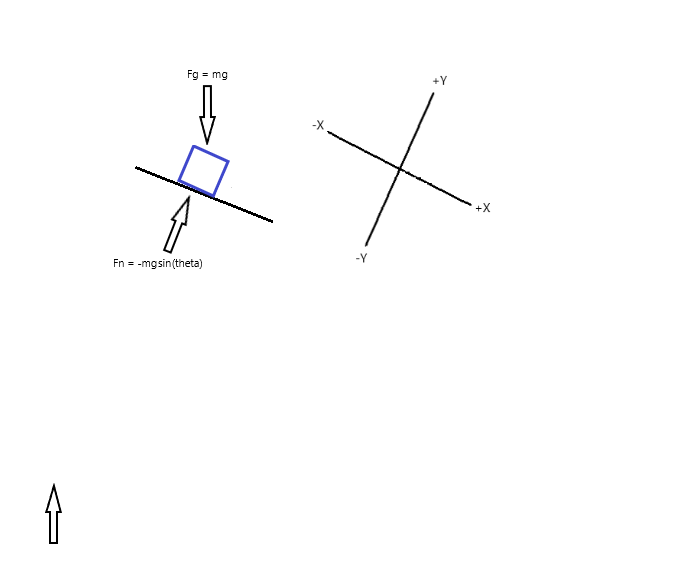
Nicholas Wootton

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Github - https://github.com/Dudemanday/GBC-S3

**1.**

**a)**

****

**b)**

Mass: 12.8kg

Ramp: rise of 3m, run of 4m

Ramp angle to the horizontal: tan(3/4) = 36.869⁰

**Net Force:**

**Acceleration:**

= g = -9.8m/s

Ay would be going towards the ground so Ay = -m/s

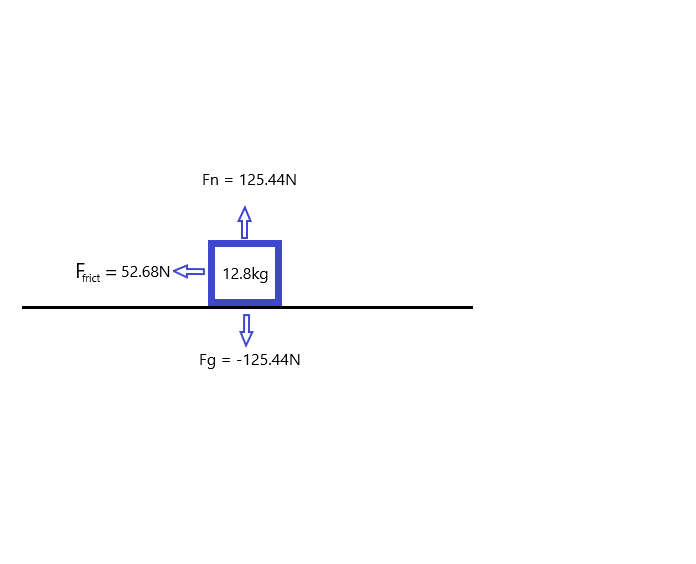
**c)**

**Net Force:**

0.42 \* 12.8 \* 9.8

**Acceleration:**

Ax would be friction slowly down the projectile so Ax = -/s on the x-axis



**d)**

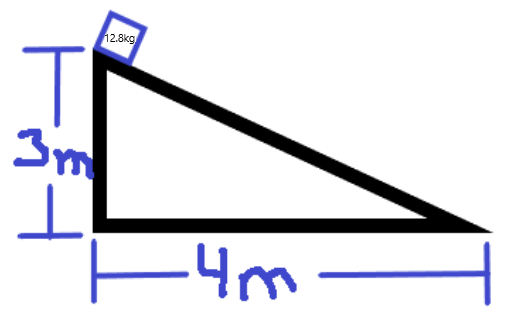
Finding final velocity when the loot box leaves the ramp

Finding the time it takes to hit the end of the ramps

Finding the distance the loot box travels after leaving the ramp

= 6.1344m/s

m



**e)**

A loot box sits still at the top of a ramp, with the ramp being 3m high and 4m long. The ramp has zero friction. The loot box slides down the ramp and leaves the bottom of the ramp with a velocity of 8.854m/s on the x-axis. After leaving the ramp, the loot box then slides along a flat surface with a friction co-efficient of 0.42 (steel on steel). The loot box slides for 2.148s before coming to a stop 9.493m past the end of the ramp.