

ANNOUNCEMENTS

1. Catapult Labs
2. Unit 6 Test
3. Unit 7 Learning Targets

7.1 Normal Forces

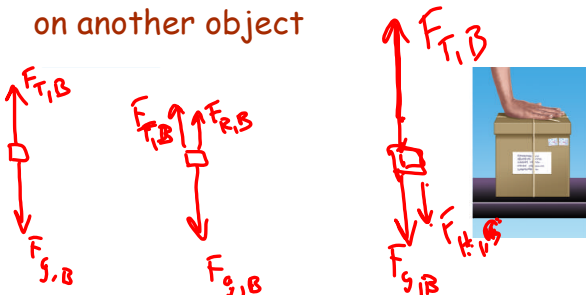
LEARNING TARGETS

7.1 I can define, analyze, and solve dynamic problems involving normal forces.

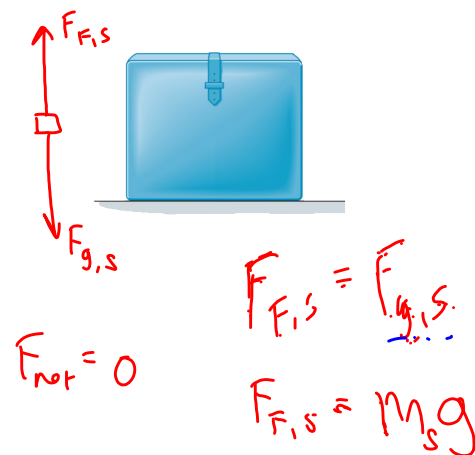


Normal Force

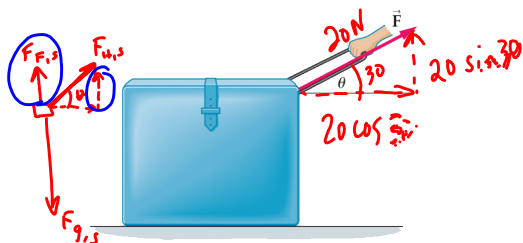
The normal force is the perpendicular contact force exerted by a surface on another object



Normal Forces



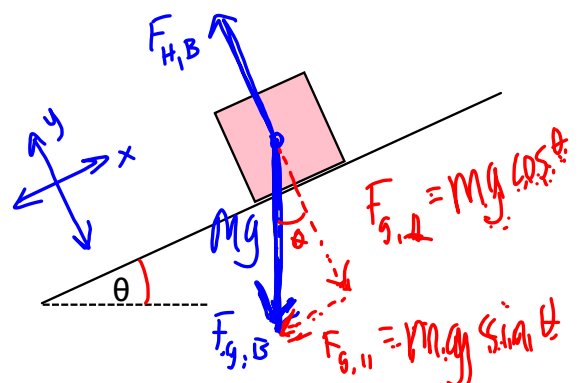
Normal Forces



$$F_{N,S} + F_{H,S} \sin \theta = F_{g,S}$$

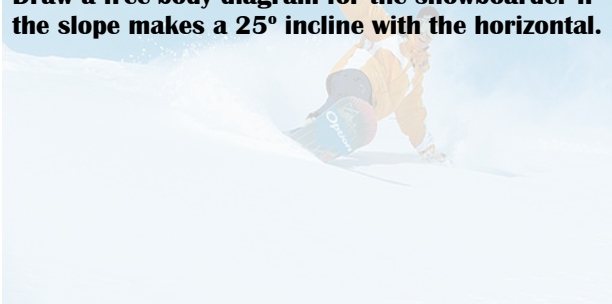
$$F_{net} = F_{H,S} \cos 30$$

Normal Forces



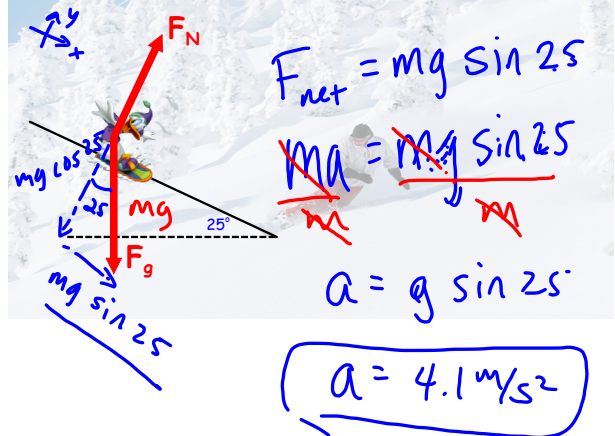
Snowboarding

An 85-kg snowboarder starts from rest and accelerates down the hill with negligible friction. Draw a free-body diagram for the snowboarder if the slope makes a 25° incline with the horizontal.



Snowboarding

What is the boarder's acceleration?



Snowboarding

How long will it take the boarder to travel 100 m down the hill?

$x_0 = 0$
 $x_f = 100 \text{ m}$
 $v_0 = 0$
 $a = 4.1 \text{ m/s}^2$

~~$x = x_0 + v_0 t + \frac{1}{2} a t^2$~~



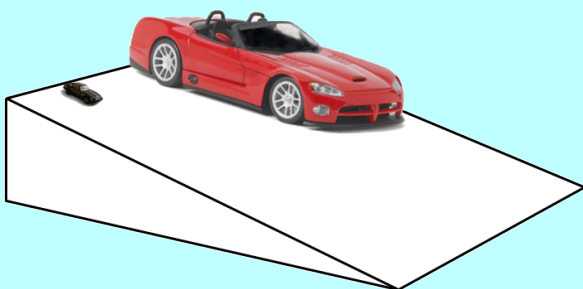
Snowboarding

How fast will the boarder be moving after traveling the 100 m?

$v_f^2 = v_0^2 + 2a(x_f - x_0)$



Toy Car vs. Real Car



PRACTICE

UNIT 7 PROBLEMS (1-3)