

Name: _____

Phys 12

Worksheet 3.2 Inclines (part 1)

1) A 7.6 kg object is at rest on an inclined plane. If the plane makes an angle with the horizontal of 33° what is the normal force acting on the object?
(62 N)

2) A 7.6 kg object is pulled up an inclined plane. If the plane makes an angle with the horizontal of 33° and the coefficient of friction is 0.20, what is the force of friction?

(12 N)

3) A 16.2 kg object slides down an inclined plane at a constant velocity. If the plane makes an angle of 25° , what is the normal force acting on the object?
(140 N)

4) A 445 N box is sliding down a frictionless 25° inclined plane. Find the parallel component of the weight that causes the box to slide
(190N)

5) A 325 N box is sliding down a frictionless 30.0° inclined plane. What is its acceleration?
(4.90 m/s^2)

6) A 435 N box is sliding down a 40.0° inclined plane. If the acceleration of the box is 0.250 m/s^2 , what is the force of friction acting on the box?
(269 N)

7) A student pulls a 125 N object up a 25° incline. If the coefficient of friction is 0.180, what force must the student pull with to move the object at a constant velocity? Assume the applied force is parallel to the ramp (why would that matter?)
(73 N)

8) Fluffy the cat slides freely down the long porcelain cat slide into the Beverly Hills pet pool. If the incline is 18° and $\mu = 0.10$ determine the time it takes Fluffy to reach the bottom of the 10 m slide.

(HINT: find a first, don't worry about the cat's mass, it cancels out) (3.1 s)

9) A trucker loses his brakes and hits the bottom of a runoff road (put there to protect against such a situation) at 150 km/h. The runoff road is inclined at 50° and friction against the truck is approximately equal to a sliding coefficient of 0.20. If the runoff road is 100 m long, is it long enough? (just barely, by 1.1 m)