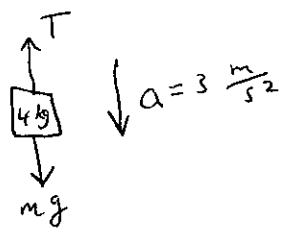
Phys101 – Sec # 40 **Quiz # 4 (Chapter 5)**

Name: Key **ID #** _____

1) A 4-kg object is lowered with a downward acceleration of 3 m/s^2 by means of a rope.

a. What is the force of the rope on the block (magnitude and direction)?



$F_{net,y} = ma_y$

$T - mg = -ma$

$T = m(g-a)$

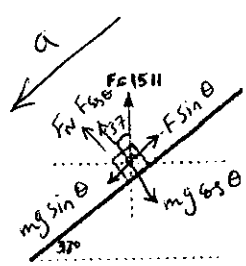
$= 4(9.8-3)$

$= 4(6.8) = 27.2$ N (upward)

b. What is the force of the block on the rope (magnitude and direction)?

27.2 N (downward)

2) A 4-kg block slides on a frictionless 37° incline plane. A vertical force of 15 N is applied to the block. What is the acceleration of the block?



$F_{net,x} = ma$

$mg\sin 37 - F\sin 37 = ma$

$a = \dfrac{mg\sin 37 - F\sin 37}{m}$

$= \dfrac{4(9.8)\sin 37 - 15\sin 37}{4}$

$= 3.6 \ \dfrac{m}{s^2}$.