

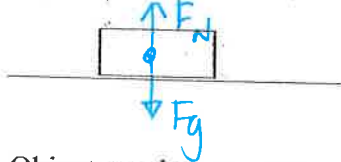
KEY

Force diagram worksheet

A. Draw force diagrams for the following.

B. Calculate the unknown values.

1a. Object is at rest

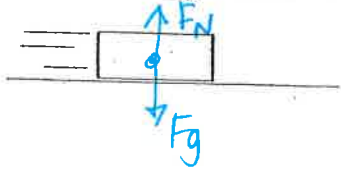


1b. The block has mass of 5 kg.

a. Find the block's weight.  $F_g = 5\text{kg} \cdot 9.8 = 49\text{N}$

b. Find the block's normal force.  $F_N = 49\text{N}$

2a. Object moving at a constant velocity.

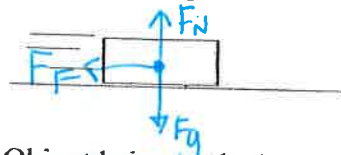


2b. The block has mass of 3 kg.

a. Find the force of earth on the block  $F_g = 3\text{kg} \cdot 9.8 = 29.4\text{N}$

b. Find the block's normal force.  $F_N = 29.4\text{N}$

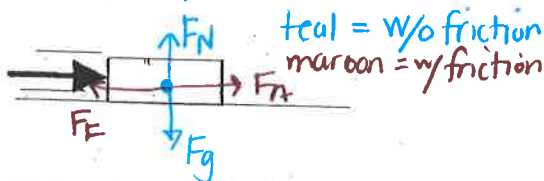
3a. Object slowing down due to friction.



3b. Is the block moving at constant velocity or is it accelerating?

net force  $\neq 0$

4a. Object being pushed at a constant velocity. w/ or w/o friction

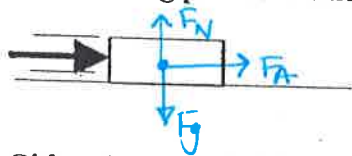


4b. The 20 kg block is being pushed with 50 N of force.

a. Find the Frictional force.  $F_A = F_F = 50\text{N}$

b. Find the weight of the block.  $F_g = 20\text{kg} \cdot 9.8 = 196\text{N}$

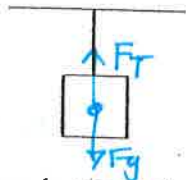
5a. Object being pushed without friction.



5b. Once the object is moving, how much force is needed to keep it moving?

0 N

6a. Object is suspended from the ceiling by a string.



6b. The block weighs 68.6 N.  $68.6 = m \cdot 9.8$

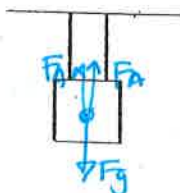
a. What is the block's mass? 7 kg

b. What is the normal force on the block?  $F_N = 0$  b/c not on a hard surface

c. What is the tension in the string?

$$F_T = F_g = 68.6\text{N}$$

7a. Object is suspended from the ceiling by 2 strings.



7b. The block has a mass of 6 kg.

a. What is the block's weight?  $F_g = 6 \cdot 9.8 = 58.8\text{N}$

b. How much tension is in each string?

$$58.8 \div 2 = 29.4\text{N each}$$