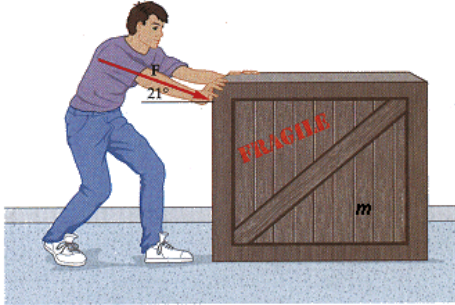


Applied Force 1

Solve the following problems

1. (Walker, p. 166, #7) To move a large crate across a rough floor, you push down on it at an angle of 21° , as shown in Figure below. Find if the force you push with is 120N to start the crate moving, given that the mass of the crate is $m = 30$ kg and there is no friction, what is the acceleration?



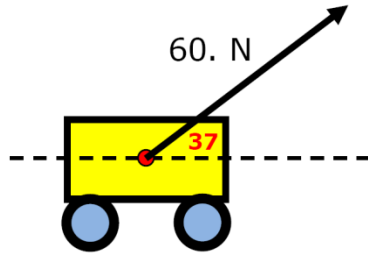
$$a = 3.73 \text{ m/s}^2$$

2. A box of mass 20kg is pulled along at an angle of 25° on a frictionless surface with 100N. What is the acceleration of the box?



$$a = 4.53 \text{ m/s}^2$$

3. A wagon is pulled along at 37° with a force of 60N. If the wagon has an acceleration of 0.85 m/s^2 , what is the weight of the wagon?



$$F_w = 552.5 \text{ N}$$

4. A dog pulls a wagon along flat ground. The angle the harness makes with the wagon is 15° . If the wagon is 50kg and the dog is 45 kg, what is the force the dog is pulling at to accelerate the wagon at 0.75m/s^2 in the forward direction?



$$F = 72.41 \text{ N}$$

5. A boy pulls a wagon with a force of 120N at an angle of 35° . If the wagon is 15kg and there are 4 books in the wagon of equal mass, what is the mass of each of the books if the wagon accelerates at 2m/s^2 .



$$m = 8.54 \text{ kg}$$

6. A rabbit pushes a wheelbarrow at an angle of 28° with a force of 25N. If the wheelbarrow and its contents have a mass of 10kg. What is the acceleration of wheelbarrow horizontally?

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$$\mathbf{a=2.21\ m/s^2}$$