

Physics  
 Chapters 4--5 Test: Newton's 2nd and 3rd Laws  
 Form B

MULTIPLE CHOICE. Read each question carefully and select the BEST answer. Write your answer on the answer sheet. (2 points each)

1. A push on a 1-kg brick accelerates it. Neglecting friction, to equally accelerate a 10-kg brick, one would have to push with
  - a. 10 times as much force.
  - b. just as much force.
  - c. one tenth the amount of force.
  - d. 100 times as much force.
  
2. Compared to the mass of a certain object on Earth, the mass of the same object on the moon is
  - a. zero.
  - b. six times as much.
  - c. one sixth as much.
  - d. the same.
  
3. A car traveling at 100 km/hr strikes an unfortunate bug and splatters it. The force of impact is
  - a. greater on the bug.
  - b. greater on the car.
  - c. the same for both.
  
4. An coconut and a feather fall from a tree through the air to the ground below. The amount of air-resistance force is
  - a. greater on the coconut.
  - b. greater on the feather.
  - c. the same on each.
  
5. The maximum acceleration of a car while towing a second car twice its mass, compared to its acceleration with no car in tow, is
 

a. the same.	b. one third.
c. one half.	d. one fourth.

6. A baseball player bats a ball with a force of 1000 N. The reaction force that the ball exerts against the bat is
  - a. more than 1000 N.
  - b. less than 1000 N.
  - c. 1000 N.
  - d. impossible to determine.
  
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CALCULATIONS. Solve the following problems and write your answer on the answer sheet. Remember Units! (2 points each)

8. Determine the net force that that acts on a 12-N *freely falling* object?
  
9. A car has a mass of 1000 kg and accelerates at 2 meters per second per second. What is the magnitude of the net force exerted on the car?
  
10. A bag of groceries has a mass of 15 kilograms. What is its weight in newtons?
  
11. A plastic grocery bag can withstand 300 N of force before it rips apart. How many kilograms of oranges can it safely hold?



12. The boy in the picture has a mass of 75 kg. What force does boy exert on the floor?

## Answer Key

Testname: CH4-5PRACTICE

1. a
2. d
3. c
4. a
5. b
6. c
7. b
8. 0
9. 2000 N
10. 150 N
11. 30 kg
12. 750 N