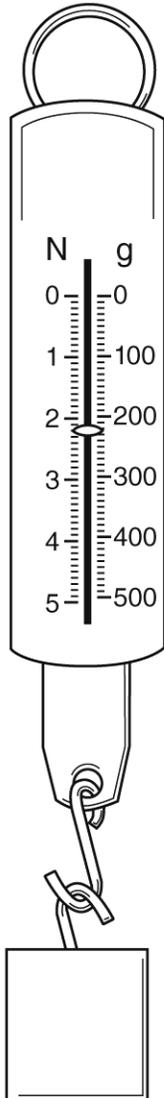


## Unit 8, Lesson 3 Review Quiz

### Multiple Choice

Identify the choice that best completes the statement or answers the question.

\_\_\_\_\_ 1. A spring scale measures force.

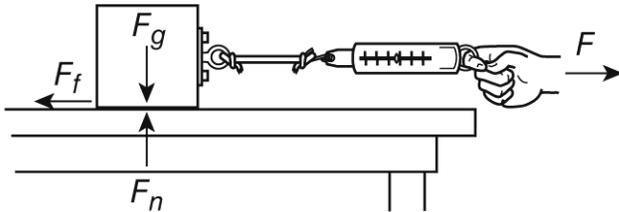


What is the force that causes the reading on the spring scale shown in the illustration?

- A friction
- B gravity
- C mass
- D weight

2. Four forces are acting on the block shown in the following illustration:

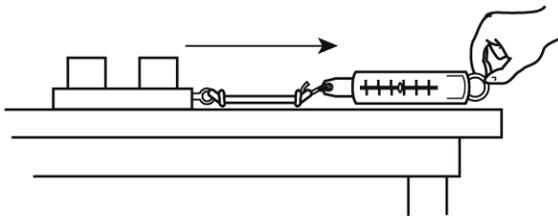
- $F$  is the applied force.
- $F_f$  is friction.
- $F_g$  is the gravitational force.
- $F_n$  is the normal force—the upward push of the table on the block.



If a force  $F$  is applied to the block and it does not move, which statement is true?

- A**  $F$  and  $F_f$  are equal.
- B**  $F$  and  $F_g$  are equal.
- C**  $F_f$  is greater than  $F$ .
- D**  $F_g$  is greater than  $F$ .

3. In science class, Drew pulled on a spring scale in the direction shown by the arrow in the illustration. The scale was attached by a string to a block that had weights on top of it. The block was on a smooth table.



How could Drew decrease the amount of force needed to cause the block to move?

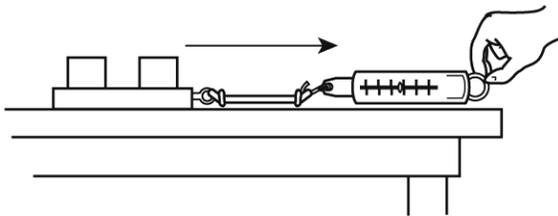
- A** Pull harder on the spring scale.
- B** Add more weights on top of the block.
- C** Place a piece of sandpaper between the block and the table.
- D** Place a piece of waxed paper between the block and the table.

- \_\_\_\_\_ 4. A rock is balanced on the side of a long, sloping hill. Although the rock is very heavy, a gentle push causes it to start moving down the slope. How can a small force cause a large mass to move?
- A To make an object move, the direction of the force is important, but not the amount of force.
  - B The push on the rock increased the amount of friction, so the rock started to move.
  - C The small push balanced the forces that were keeping the rock in place and caused it to move.
  - D The forces on the rock were balanced, and a small additional force caused them to be unbalanced.
- \_\_\_\_\_ 5. Waring measured the force needed to lift a metal weight. He used a spring scale and recorded a force of 6 N. Vanique lifted the same weight using a different spring scale and recorded a force of 2 N. Which statement is a **reasonable** explanation for the difference in their measurements?
- A The two results are very similar, so both measurements could be correct.
  - B When different people do the same experiment, they usually get different results.
  - C One of the spring scales was not working correctly, so its reading of force was incorrect.
  - D The students measured force in different parts of the room, so the force of gravity was different.
- \_\_\_\_\_ 6. A group of students measured the amount of force needed to move a bucket across a dry plastic tabletop. Then they poured some water on the table and repeated the experiment on the wet surface. The students found that less force was needed to make the bucket start moving on the wet surface than the dry surface. What caused the difference in the results?
- A change in the amount of gravitational force on the bucket
  - B change in the mass of the bucket used in the experiment
  - C change in the friction between the bucket and the surface
  - D change in the friction between the bucket and the scale used to measure force

- \_\_\_\_\_ 7. When Lennon held a spring scale with a weight hanging on its hook, she observed that the force on the scale was 3 N. Why was the force greater than 0 N even though the weight was not moving?
- A The force was balancing the force of gravity.
  - B The weight was not moving, but the forces on it were constantly changing.
  - C The spring scale was broken, so it showed 3 N even though the real force was zero.
  - D The spring scale read 3 N because that was the amount of unbalanced force on the weight.
- \_\_\_\_\_ 8. On two different days, two students measured the force required to hold a pair of scissors using a spring scale. How should the results of the two measurements compare?
- A The results should be the same because the mass of the scissors and the force of gravity are the same.
  - B The results should be the same because friction does not change between the two experiments.
  - C The results should be different because two people never perform an experiment exactly the same way.
  - D The results should be different because changes in conditions between different days will cause the results to change.

### Short Answer

1. The illustration shows an investigation in which the mass is pulled in the direction of the arrow.



- If the object does not move even though the spring scale shows a positive reading, what two forces are balanced in the investigation?
2. You use a spring scale to measure the force needed to lift an object from a surface. You record a reading of 20 N. Your lab partner then repeats the investigation. Predict the results of your lab partner's investigation and explain why you make that prediction.

## Unit 8, Lesson 3 Review Quiz Answer Section

### MULTIPLE CHOICE

1. B
2. A
3. D
4. D
5. C
6. C
7. A
8. A

### SHORT ANSWER

1. Sample answer:  
The force of the pull is balanced by the force of friction between the object and the surface.

Students' answers should include:

- identification of both forces: the pull on the mass, and friction

2. Sample answer:  
I predict that my lab partner will read a force of 20 N because the investigation measures the amount of force needed to overcome the force of gravity, which should be the same for a particular object every time it is measured in the same location.

Students' answers should include:

- a prediction of a reading of 20 N
- an explanation that the lab partners' investigations measure the same thing, so the results should be identical if the same equipment and procedure was used