

## PRACTICE

## Activity 7: Terminal Speed

Name \_\_\_\_\_

Date \_\_\_\_\_

Class \_\_\_\_\_

**(Questions 1–2)** In the activity, you analyzed and explained how a sky diver reaches terminal speed. As the sky diver approaches the ground, she will need to open her parachute! What do you think happens to the speed of the parachutist when her parachute inflates in the air?



Immediately after the sky diver's parachute catches the air and inflates, she and the parachute will slow down. They will reach another slower terminal speed, allowing the parachutist to make a gentle landing on the ground.

1. Analyze and explain why a parachutist slows down immediately after her parachute inflates. In your analysis, include the *interacting objects and their interaction type*, and *labeled force arrow(s)* on the diagram showing the force(s) being exerted on the parachutist. You don't need to draw energy diagrams.

**Analysis:**

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**Explanation:**

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2. Does the mass of the parachutist *increase*, *decrease*, or *stay the same* after the parachute inflates? Explain your answer.

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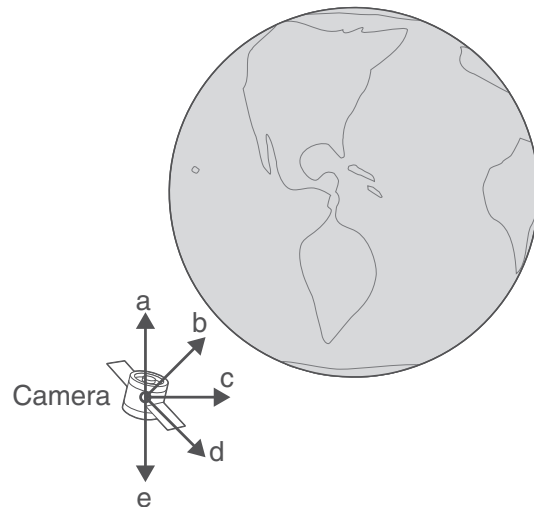
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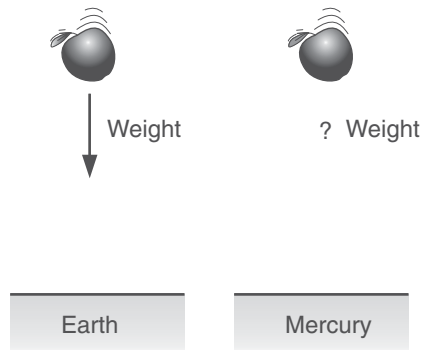
### Multiple Choice

3. Which of these variables affects the strength of a gravitational interaction?
- a) how fast the Earth rotates
  - b) the atmospheric (air) pressure
  - c) the distance between the objects
  - d) the volume of the objects
  - e) the strength of the Earth's magnetic field
4. Which of these statements is *not true*?
- a) There is a gravitational interaction between all objects in the universe.
  - b) Gravitational interactions can happen between objects that are not touching.
  - c) Gravitational interactions are very difficult to observe unless one of the objects is very massive, like a planet.
  - d) The weight of an object is the force exerted by a planet on the object.
  - e) Increasing the mass of an object has no effect on its weight.
5. A rocket drops off a camera to take a picture of the Earth. Which force arrow (a), (b), (c), (d), or (e) best represents the direction of the force exerted by the Earth on the camera? \_\_\_\_\_



**(Questions 6–7)** Mercury has a weaker gravitational pull than Earth (about  $\frac{4}{10}$  as much).

6. The *mass* of an apple
- a) will be the same on both planets.
  - b) will be less on Mercury than on Earth.
  - c) will be greater on Mercury than on Earth.
  - d) cannot be compared because Mercury has a very thin atmosphere around it compared to Earth.



7. The *weight* of an apple
- a) will be the same on both planets.
  - b) will be less on Mercury than on Earth.
  - c) will be greater on Mercury than on Earth.
  - d) cannot be determined because Mercury has a very thin atmosphere around it compared to Earth.

8. In Activity 6, you read about the rings around Saturn consisting of pieces of ice. Another view of Saturn is shown below. At the position shown, which force arrow (a), (b), (c), (d), or (e) best shows the direction of the force exerted *by Saturn on the piece of ice*? \_\_\_\_\_

