

Name: _____
 Date: _____
 Class: _____

1. What does speed measure?

- A. How fast an object is going
- B. How far an object has traveled
- C. The rate at which an object slows down
- D. The rate at which an object speeds up

2. Which of the following can be used to measure an object's speed?

- A. Joules
- B. Newtons
- C. Miles per hour
- D. Kilometers per second per second

3. What does acceleration measure?

- A. How fast an object is going
- B. The fastest speed that an object can reach
- C. The force with which an object travels
- D. The rate at which speed or direction changes

4. What is the difference between positive and negative acceleration?

- A. Positive acceleration applies to fast objects; negative acceleration applies to slow objects
- B. Positive acceleration occurs when objects speed up; negative acceleration occurs when objects slow down
- C. Positive acceleration applies to objects traveling on earth; negative acceleration applies to objects traveling in space
- D. Positive acceleration is expressed in meters per second; negative acceleration is expressed in kilometers per hour

5. Which of these is an example of acceleration?

- A. A car coasts along at 40 km/hr
- B. A car is parked on the side of the road
- C. A speeding car brakes to a stop
- D. A car speeds along at 100 km/hr

6. Which of these statements is true?

- A. Acceleration in the direction of motion slows you down
- B. Acceleration in the direction of motion speeds you up
- C. Acceleration against the direction of motion has no effect on your speed
- D. Acceleration against the direction of motion speeds you up

7. If you're sitting still in a chair reading this, what is your acceleration?

- A. 0 m/s/s
- B. 1 m/s/s
- C. 2 m/s/s
- D. 3 m/s/s

8. When would acceleration increase most?

- A. Rolling along a flat plane
- B. Rolling down a steep hill
- C. Braking to a stop
- D. Rolling up a gently sloping hill

9. How does braking stop a bike?



- A. It makes the wheels turn backwards a few times
- B. It pumps up the tires slightly so they cannot roll forward
- C. It causes a quick negative acceleration against the bike's forward motion
- D. It causes a quick positive acceleration against the bike's backward motion

10. You're in a moving car. Which of the following changes would always mean there's been some acceleration?

- A. A change in temperature
- B. A change in time
- C. A change in location
- D. A change in speed

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1. If distance = rate x time, which of the following must also be true?

- A. Rate = distance x time
- B. Time = distance/rate
- C. Distance = rate/time
- D. Time = rate/distance

2. If a train travels at a speed of 100 km/hr, how far will it travel in half an hour?

- A. 100 km
- B. 50 km
- C. 25 km
- D. 10 km

3. If a jogger runs a 10-kilometer race in 60 minutes, what is her average speed?

- A. 10 km/hr
- B. 5 km/hr
- C. 6 km/hr
- D. 1.66 km/hr

4. If a car travels at 40 km/hr for 4 hours, how much distance has it covered?

- A. 160 km
- B. 140 km
- C. 120 km
- D. 100 km

5. An aircraft carrier travels a distance of 1,000 km in 3 days. What is its average rate of speed?

- A. 1,000 km/hr
- B. 3,000 km/hr
- C. 333.3 km/hr
- D. 13.9 km/hr

6. A train leaves New York traveling at a speed of 90 km/hr. How much distance will it cover in five hours?

- A. 45 km
- B. 450 km
- C. 180 km
- D. 18 km

7. If a train travels 1,600 km in 16 hours, how fast is it moving?

- A. 60 km/hr
- B. 100 km/hr
- C. 120 km/hr
- D. 90 km/hr

8. If a person ran 32 kilometers at a rate of 8 kilometers/hr, how long did he run?

- A. 6 hours
- B. 8 hours
- C. 4 hours
- D. 12 hours

9. A crosstown bus travels 8 kilometers in 45 minutes. What is its average rate of speed?

- A. 4 km/hr
- B. 6.67 km/hr
- C. 8 km/hr
- D. 10.67 km/hr

10. Which of the following steps is important in solving distance, rate, and time problems?

- A. Working quickly
- B. Doing whole problems in your head
- C. Drawing diagrams
- D. Memorizing the average speeds of different trains

Logo **Forces**

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1. What is true about all forces?

- a. They are unbalanced
- b. They involve more than one object
- c. They cause objects to move
- d. They cancel each other out

2. What does the measurement unit N stand for?

- a. Net force
- b. Newton
- c. Neutrino
- d. Net weight

3. Which two components must a vector quantity have?

- a. Magnitude and velocity
- b. Acceleration and direction
- c. Force and speed
- d. Direction and magnitude

4. If the net force on an object is zero, what can you conclude?

- a. The object is not accelerating
- b. The object is not touching anything
- c. The object is not moving
- d. The object is slowing down

5. Which one of these arrows best corresponds to the force of drag?



- a.
- b.
- c.
- d.

6. What can you infer about an object moving at a constant velocity?

- a. No forces are acting on it
- b. Gravity is exerting the strongest force on it
- c. The forces acting on it are in balance
- d. It is stationary

7. Acceleration occurs when an object is subjected to a(n):

- a. Force
- b. Balanced force
- c. Unbalanced force
- d. Contact force

8. What is true of non-contact forces?

- a. They are always stronger than contact forces
- b. They always drive two objects farther apart
- c. They become weaker with distance
- d. They can not make two objects touch

9. If you drop an egg off of the Empire State Building, which of the following things will happen first?

- a. Drag will increase
- b. The egg will appear to hover
- c. Gravity and drag will fall into balance
- d. The net force will be zero

10. Which of the following statements is always true?

- a. An object at rest has no forces acting on it
- b. Unbalanced forces lead to a change in speed or direction
- c. Gravity always leads to an unbalanced force
- d. The net force on a moving object can never be zero

Brain POP Gravity

1. What is gravity?

- A. A type of current
- B. A type of force
- C. A type of wave
- D. A type of energy

2. According to Sir Isaac Newton, gravity depends on two factors. What are they?



- A. Mass and distance
- B. Volume and density
- C. Size and shape
- D. Mass and volume

3. The moon's gravity is one-sixth of Earth's gravity. If you weigh 100 Newtons on Earth, how much do you weigh on the moon?

- A. 1 newton
- B. 6 newtons
- C. 16.667 newtons
- D. 60 newtons

4. How does the sun's gravity compare to the earth's gravity?

- A. The sun's gravity is stronger
- B. The earth's gravity is stronger
- C. Their gravitational pull is the same
- D. Scientists aren't able to measure the sun's gravity

5. Why is the earth's gravity stronger than the moon's gravity?

- A. The earth is more massive than the moon
- B. The moon is so far away from earth
- C. The moon has no mass
- D. The earth has a larger volume than the moon

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6. According to Newton's laws, what might happen to the earth if its orbit moved farther away from the sun?

- A. The sun's gravitational pull on the earth would increase
- B. The earth's gravitational pull on the moon would increase
- C. The sun's gravitational pull on the earth would stay the same
- D. The sun's gravitational pull on the earth would decrease

7. What theory did Albert Einstein introduce to challenge Newton's ideas?



- A. The theory of superlativity
- B. The theory of gravitation
- C. The theory of relativity
- D. The theory of specificity

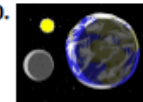
8. According to Einstein, gravity:

- A. Makes objects fall upward
- B. Doesn't exist when masses are very large
- C. Makes objects bend in space
- D. Bends space and time

9. Which of these would have the strongest gravitational pull?

- A. A large, dense star
- B. A medium-sized planet
- C. A small moon
- D. A comet

10. What effect does the moon's gravity have on the earth?



- A. It keeps the earth in orbit around the sun
- B. It causes the tides
- C. It causes space and time to bend around the earth
- D. It has no effect on the earth