The concept of inertia is attributed to

A. Galileo.
B. Newton.
C. Both.
D. Neither.
If gravity between the Sun and Earth suddenly vanished, Earth would move in

A. a curved path.
B. a straight-line path.
C. an outward spiral path.
D. an inward spiral path.
Seat belts and air bags in a car are mostly linked to the effects of Newton’s

A. first law.
B. second law.
C. third law.
D. law of gravity.
The net force on any object in equilibrium is

A. zero.
B. 10 meters per second squared.
C. equal to its weight.
D. None of the above.
When standing in the aisle of a smoothly riding bus, you drop a coin from above your head. The falling coin will land

A. at your feet.
B. slightly in front of your feet.
C. slightly in back of your feet.
D. at a location not listed above.
Consider a cart with a ball resting in its middle. When you quickly jerk the cart forward, the

A. front of the cart hits the ball.
B. back of the cart hits the ball.
C. ball remains in the middle as the cart moves forward.
D. above can all occur depending on how quickly the cart is pulled.
When a 10-kg block is simultaneously pushed eastward with 20 N and westward with 15 N, the net force on the block is

A. 35 N west.
B. 35 N east.
C. 5 N west.
D. 5 N east.
When a 10-kg block is simultaneously pushed eastward with 20 N and westward with 15 N, the acceleration of the block is

A. 0.5 m/s² east.
B. 0.5 m/s² west.
C. 0.5 m/s² east–west.
D. None of the above.
The connection between mass, acceleration, and force is embodied in Newton’s

A. first law.
B. second law.
C. third law.
D. law of gravity.
A cart is pushed and undergoes a certain acceleration. Consider how the acceleration would compare if it were pushed with twice the net force while its mass increased by four. Then its acceleration would be

A. one quarter.
B. the same.
C. twice.
D. None of the above.
A 100-kg vehicle accelerates at 1 m/s² when the net force on it is

A. 1 N.
B. 10 N.
C. 100 N.
D. 1000 N.
A car pulling a trailer accelerates when the gas pedal is pushed to the floor. If the trailer becomes disconnected, the acceleration of the car will

A. decrease.
B. increase.
C. remain the same.
D. None of the above.
When you toss a rock straight upward, which is no longer present at the top of its path?

A. Mass.
B. Speed.
C. Acceleration.
D. All of the above.
A falling object that reaches terminal velocity continues to have

A. speed.
B. a nonzero net force.
C. acceleration.
D. All of the above.
A heavy parachutist has a greater terminal speed compared with a light parachutist with the same size chute, because the heavier person

A. has to fall faster for air resistance to match his weight.
B. is more greatly attracted by gravity to the ground below.
C. has a greater air resistance.
D. has none of the above.
When a 10-kg falling object encounters 10 N of air resistance, its acceleration is

A. less than $g$.
B. $g$.
C. more than $g$.
D. unknown—there is not enough information.
A soccer ball is kicked to a 30-m/s speed. While being kicked, the amount of force of the player’s foot on the ball is

A. less than the amount of force on the foot.
B. the same as the amount of force on the foot.
C. more than the amount of force on the foot.
D. None of the above.
A karate chop delivers a blow of 3500 N to a board that breaks. The force that acts on the hand during this event is

A. less than 3500 N.
B. 3500 N.
C. greater than 3500 N.
D. None of the above.
Earth pulls on the Moon. Similarly, the Moon pulls on Earth, evidence that

A. Earth and Moon are pulling on each other.
B. Earth’s and Moon’s pulls comprise an action–reaction pair of forces.
C. Both of the above occur.
D. None of the above occur.
The amount of air resistance on a 0.8-N flying squirrel for terminal speed is

A. less than 0.8 N.
B. 0.8 N.
C. more than 0.8 N.
D. Depends on the orientation of its body.
As a flying squirrel falls faster and faster through the air,

A. air resistance increases.
B. net force decreases.
C. acceleration decreases.
D. All of the above.
A tennis ball and a bowling ball are simultaneously released from rest at the top of your school building. The ball to reach the ground first will be the

A. tennis ball.
B. bowling ball.
C. Both will hit at the same time.
D. Any of the above, depending on wind conditions.
How hard a boxer’s punch lands depends on the

A. mass of what’s being hit.
B. physical condition of the boxer.
C. boxer’s attitude.
D. None of the above.
The force that directly propels a motor scooter along a highway is that provided by the

A. engine.
B. fuel.
C. tires.
D. road.
When you jump vertically upward, strictly speaking, you cause Earth to

A. move downward.
B. also move upward with you.
C. remain stationary.
D. move sideways a bit.
The force that propels a rocket is provided by

A. gravity.
B. its exhaust gases.
C. Newton’s laws of motion.
D. the atmosphere against which the rocket pushes.
Anthony is late for class and is soon reprimanded. Causes lead to consequences. We can show, however, that this is not an example of Newton’s third law because

A. action and supposed reaction are not simultaneous.
B. the laws of physics apply to inanimate situations, not real-life ones.
C. Both of the above are true.
D. Neither of the above is true.
Arnold Strongman and little Nellie Newton have a tug-of-war. The greatest force on the rope is provided by

A. Arnold, of course.
B. Nellie, surprisingly.
C. Both the same, interestingly enough.
D. None of the above.
A grasshopper has a head-on collision with a speeding Mack truck. The greatest force acts on the

A. bug.
B. truck.
C. Same amount on each.
D. Not enough information to say.
The laws of physics that were employed to get humans to the Moon are

A. Newton’s laws of motion.
B. special relativity.
C. general relativity.
D. All of the above.