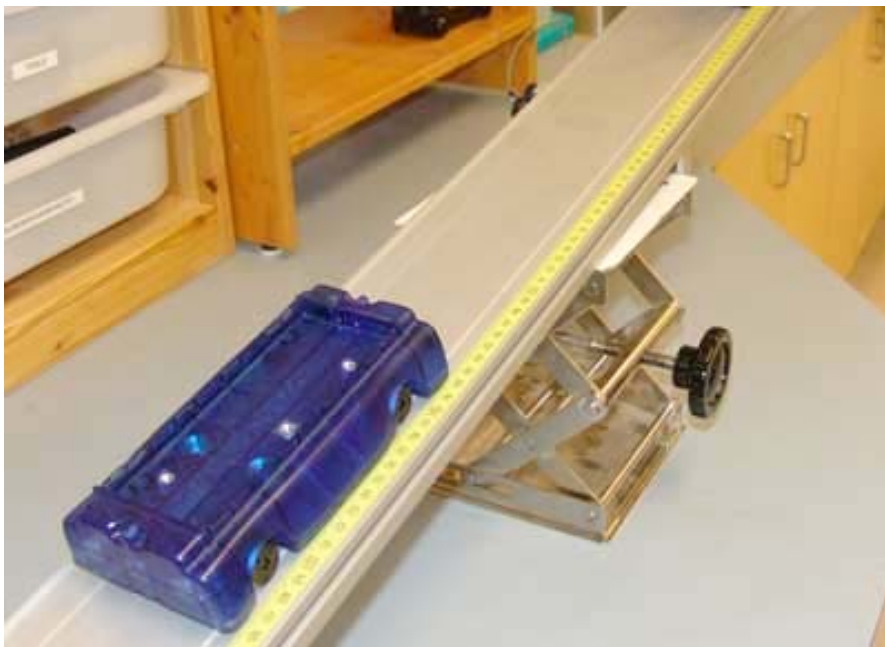


Physical and Chemical Sciences
Force and Motion

Additional FCAT Practice Questions

Directions: Select the best answer for each of the following questions

1. Your teacher asks you to measure the speed of a cart on a track.



The track for the cart has distance markings on it. What other measuring tool would be best for measuring the cart's speed?

- A. Balance
- B. Spring scale
- C. Force meter
- D. Stopwatch

2. With a team of fellow students, you decide to find out which battery-operated cart is the fastest. You measure how far each of four carts travels every second.

Time (seconds)	Cart W	Cart X	Cart Y	Cart Z
0	0	0	0	0
1	2	1	3	2.5
2	4	2	6	5
3	6	3	9	7.5
4	8	4	12	10
5	10	5	15	12.5
6	12	6	18	15
7	14	7	21	17.5
8	16	8	24	20
9	18	9	27	22.5
10	20	10	30	25

Based on the data that was collected, which of the four carts was the fastest?

- A. Cart Y
 - B. Cart X
 - C. Cart W
 - D. Cart Z
3. Everyday the people on your street are upset by a car that travels too fast down the road. You are not so sure the car is speeding. What two measurements would be required to find out whether or not the car is speeding?
- A. How long the road is, and length of the car.
 - B. How long the road is, and the time it takes the car drive down it.
 - C. The time is takes the car to go down the road, and the time it takes for the car to come to a stop.
 - D. The time it takes for the car to drive down the road, and the mass of the car.

4. You and you classmates decide to have a competition on who can design the paper airplane that stays in the air for the greatest period of time. What would be the best measuring instrument to use to determine who wins?
- A. Meter stick
 - B. Balance scale
 - C. Force meter
 - D. Stopwatch
5. You and you classmates decide to have a competition on who can throw a flying disc the farthest. What would be the best measuring instruments to use to determine who wins?
- A. Measuring tape marked in meters
 - B. Stopwatch
 - C. Balance Scale
 - D. Force meter
6. A student has a choice between two ramps to roll a heavy vehicle up a ramp into a truck.

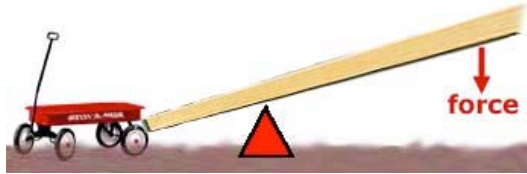


Which of the following best describes the difference between the two ramps for this task?

- A. It doesn't matter which ramp is chosen; the two will require the same amount of force and distance.
- B. Ramp B will require less force, but the motorcycle will have to be moved a greater distance than if ramp A were used.
- C. Ramp A will require less force, but the motorcycle will have to be moved a greater distance than if ramp B were used.
- D. Ramps A and B will require the same amount of force, but the motorcycle will have to be moved a greater distance on ramp A.

7. A coconut has a very hard husk that can be hard to cut through. A man stranded on an island with no knife tries and fails to open a coconut by throwing it against a large rock. He then takes a small, sharp rock and cuts through the coconut with ease. What is the explanation for this?
- A. The sharp rock acts as a wheel and axle to increase the force on the coconut.
 - B. The sharp rock acts as a lever to increase the force on the coconut.
 - C. The sharp rock acts as a wedge and increases the force applied to a small part of the coconut.
 - D. The sharp rock acts as a gear to increase the force on the coconut.
8. You buy an old chair at a flea market and decide to remove the paint. Which simple machine would be best for scraping the paint from the old chair?
- A. Wheel and axle
 - B. Lever
 - C. Wedge
 - D. Screw
9. Which of the following is an example of a wheel and axle?
- A. Doorknob
 - B. Cheese grater
 - C. Spiral staircase
 - D. Crowbar

10. Your little brother is playing with his wagon when he gets it stuck in the mud. You decide to use a fulcrum and long board to make a lever to try to lift the wagon out of the mud.



Which of the following is true regarding the position of the fulcrum?

- A. It would make more sense to place the fulcrum where the effort force is.
 - B. Putting the fulcrum further away from the wagon will give you a greater force advantage to get the wagon out easier.
 - C. It does not matter where the fulcrum is, there force advantage will be the same wherever it is placed.
 - D. Putting the fulcrum closer to the wagon will give you a greater force advantage to get the wagon out easier.
11. When the space shuttle re-enters the atmosphere from space, it begins to hit air particles causing the shuttle to heat up due to friction.



How will the friction affect the motion of the space shuttle?

- A. The friction will cause the shuttle to speed up
- B. The friction will cause the shuttle to slow down
- C. The friction will not cause any change to the speed of the shuttle
- D. The friction will make the shuttle move back out of the atmosphere toward space.

12. A car travelling on the highway is forced to quickly steer off the road to avoid a collision. If the car drives into deep gravel, how will its motion be affected?
- A. Friction will cause the car to speed up
 - B. Friction will cause the car to slow down
 - C. Friction will affect the car, but the speed will stay the same
 - D. Friction will make the car move backwards
13. An old trick is to set several dishes on a tablecloth, then pull the tablecloth out from under the dishes very quickly. IF done correctly, the dishes will remain on the table. What causes the dishes to remain on the table when the tablecloth is pulled?
- A. Gravity
 - B. Friction
 - C. Inertia
 - D. Air particles
14. In 1977, two Voyager spacecraft were launched with the primary mission of exploring Jupiter and Saturn.



Today, the spacecraft are far outside our solar system but continue to send back data. The spacecraft move very fast (about 17 km/s), and require no force to keep moving. Why is no force needed to maintain their speed?

- A. There is very little friction in space
- B. There is very little gravity in space
- C. Space wind pushes the spacecraft along
- D. Friction creates the force necessary to keep moving

15. A student sands a piece of wood as part of a school project.



If the student pushes downward with greater force against the sandpaper, how will the force of friction be affected?

- A. In this situation, there is no force of friction
- B. The force of friction will decrease
- C. The force of friction will stay the same
- D. The force of friction will increase

Answers

1. D
2. A
3. B
4. D
5. A
6. C
7. C
8. C
9. A
10. D
11. B
12. B
13. C
14. A
15. D