

Grade 5 Force and Motion

Multiple Choice

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

_____ 1. Which of the following is an example of movement caused by a non-contact force?

a.	A foot kicking a soccer ball
b.	Paperclips being pulled toward a magnet
c.	Shoes rubbing against the floor
d.	Wind pushing against a kite

_____ 2. Which describes a non-contact force?

a.	A foot kicking a soccer ball
b.	Baseball being hit by a bat
c.	Friction between car tires and the road
d.	A train traveling on magnetic tracks

_____ 3. Which describes a contact force?

a.	A magnet pulling a paper clip towards it
b.	Air pushing a sailboat
c.	An electrical field
d.	Gravity pulling down a baseball

_____ 4. A student shoots a basketball. Which non-contact force drags the ball down as it arches towards the basket?

a.	Friction between the ball and the air
b.	The ball hitting the rim before bouncing in
c.	Gravity pulling the ball towards Earth
d.	The student pushing the ball into the air

_____ 5. A boy is pulling his little sister in a wagon. If his older brother comes along and they pull on the wagon together, how will this increase in force affect the motion of the wagon?

a.	It will accelerate
b.	It will change direction
c.	It will continue unchanged
d.	It will remain at rest

_____ 6. A row boat is floating on the water with two passengers. The weight of the boat is pushing on the water and the water is exerting an upward force on the boat. What will happen if another passenger gets on the boat?

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| a. | It would go lower in the water |
| b. | It would move to the left |
| c. | It would rise higher in the water |
| d. | It would sink to the bottom of the water |

_____ 7. Two classes are playing tug-of-war. If the center of the rope is not moving, what must be true?

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| a. | Both classes are pulling equally. |
| b. | Both classes have equal mass. |
| c. | The ground is slippery. |
| d. | One class is pulling harder than the other. |

_____ 8. A train is moving along a track. If the forces acting on the train are balanced, how will its motion be affected?

- | | |
|----|---------------------|
| a. | Change direction |
| b. | Continue, unchanged |
| c. | Speed up |
| d. | Stop |

_____ 9. A class is testing a model sailboat powered by a fan. If the students increase the speed of the fan blowing on the sail, what will happen to the movement of the boat?

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|----|------------------------------------|
| a. | It will stop. |
| b. | It will speed up. |
| c. | It will change direction. |
| d. | It will travel a shorter distance. |

_____ 10. A girl riding her bike on flat ground comes to a hill. Why does she have to peddle harder as she makes her way up the incline?

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|----|----------------------------|
| a. | She changed direction |
| b. | She stopped moving |
| c. | The gravity is increased |
| d. | Wind resistance is greater |

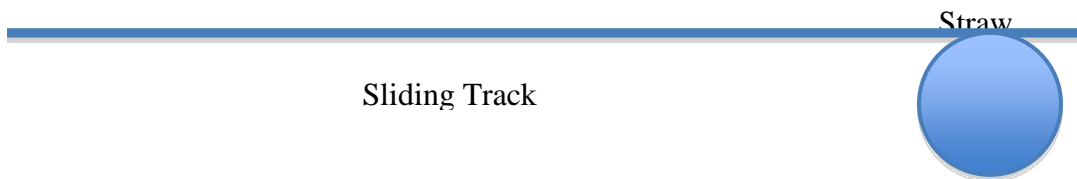
___ 11. A car is driving by a house at 15 miles per hour. Where would a person be if the passengers in the car appear to not be moving?

a.	In the car
b.	In the house
c.	On the sidewalk
d.	On a bike in front of the car

___ 12. Which tools would you use together to measure speed?

a.	Balance and measuring tape
b.	Clock and a scale
c.	Meter stick and stopwatch
d.	Ruler and graduated cylinder

A student is testing how adding mass will affect the motion of an air rocket. The diagram below represents this air rocket, made of a straw and a balloon. The straw is threaded through a string track. A toy passenger is attached to the bottom of the balloon.



___ 13. How will adding the toy passenger to the air rocket above affect its motion?

a.	It will be the same
b.	It will move faster
c.	It will move slower
d.	It will reverse direction

___ 14. The chart below describes the horizontal distance different kicked balls traveled in 5 seconds.

Type of Ball	Distance (in meters)
Nerf(sponge)	2
Hacky Sack	5
Kickball	12
Soccer Ball	8

Which ball travelled at the fastest speed?

a.	Nerf(sponge)
b.	Hacky Sack
c.	Kickball
d.	Soccer Bal

15. A group was testing how sail-size on their toy boat affected the distance it travelled. Their results are below.

Sail	Area of Sail (in sq cm)	Distance Trial 1 (cm)	Distance Trial 2 (cm)	Distance Trial 3 (cm)	Average Distance (cm)
Sail 1	56	28	34	30	31
Sail 2	104	112	205	157	158
Sail 3	168	10	11	10	10

What conclusion can be drawn from the group's data?

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| a. | A mid-sized sail will travel the greatest distance |
| b. | Small sails travel the greatest distance |
| c. | The larger the sail, the greater the distance |
| d. | The students must have applied different forces to each sail |

16. Four friends wanted to compare how they ride bikes. They all rode for 10 minutes in the same direction. The table below describes their ride. Which one rode at the greatest speed?

Friend	Distance Traveled in 10 minutes (miles)
A	1.0
B	0.5
C	1.3
D	0.8

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|----|---|----|---|
| a. | A | c. | C |
| b. | B | d. | D |

17. A student uses a toy car and ramp to investigate how surface affects the speed of a rolling object. What should the student intentionally change when doing this experiment?

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|----|---|
| a. | The color of the toy car |
| b. | The distance the toy car travels |
| c. | The material on which the toy car rolls |
| d. | The weight of the toy car |

18. A student is designing an experiment to find out which type of ball will roll the fastest, a golf ball or a basketball. What variable should be controlled and not allowed to vary in this experiment?

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|----|--------------------------------------|
| a. | Brand of the golf ball or basketball |
| b. | Color of the ball |
| c. | Direction the ball is being rolled |
| d. | The temperature of the room |

19. The table below contains results of an experiment testing which object would travel the farthest when sliding down a ramp.

Object	Distance (cm)
Calculator	62cm
Checker	53 cm
Pop cap	49 cm
Quarter	88 cm

Which object had the least amount of friction while sliding down the ramp?

a.	Calculator
b.	Checker
c.	Pop cap
d.	Quarter

Continue on the next page.

Use the word bank to fill in the blanks to name the simple machine.

inclined plane

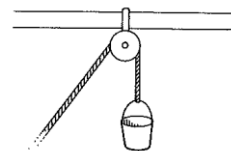
pulley

screw

wheel and axel

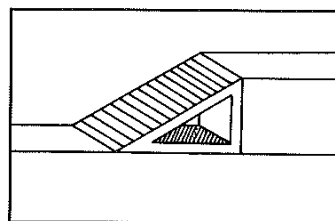
20. What kind of simple machine is shown? _____

21. How does the simple machine help you do work?



22. What kind of simple machine is shown? _____

23. How does the simple machine help you do work?



24. What kind of simple machine is shown? _____

25. How does the simple machine help you do work?

