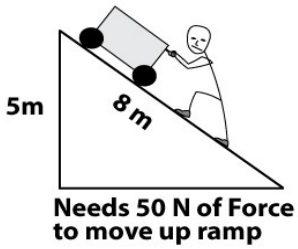
CISD Grade 6 Science Unit 07

GO ON

1 Jordan wants to safely be able to move a cart up a ramp and onto a truck. To see which ramp would be most beneficial, he experiments to see how the length of the ramp changes the amount of force (measured in Newtons, *N*) needed.

1.



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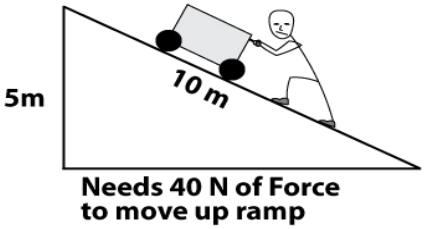

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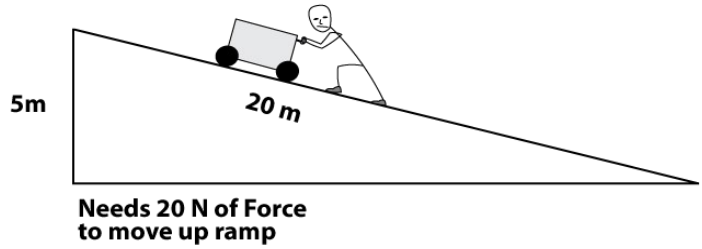


Which of the following conclusions can he make from his experiment about how to safely move the cart?

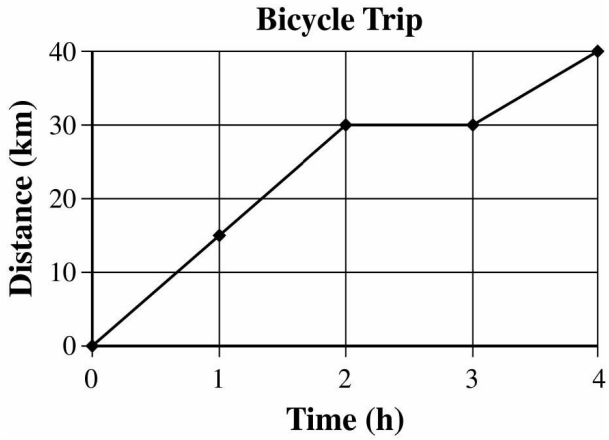
A The taller the ramp, the more force you need to move the box.

B As the length of the ramp increases, the amount of force needed decreases.

C It is easier to move objects on a cart than it is to move them by hand.

D The amount of force needed to move an object never changes as you move a particular item.

2



The graph above shows the distance and time a cyclist traveled on a 4.0 hour ride. Which of the following statements is TRUE based on the graph data?

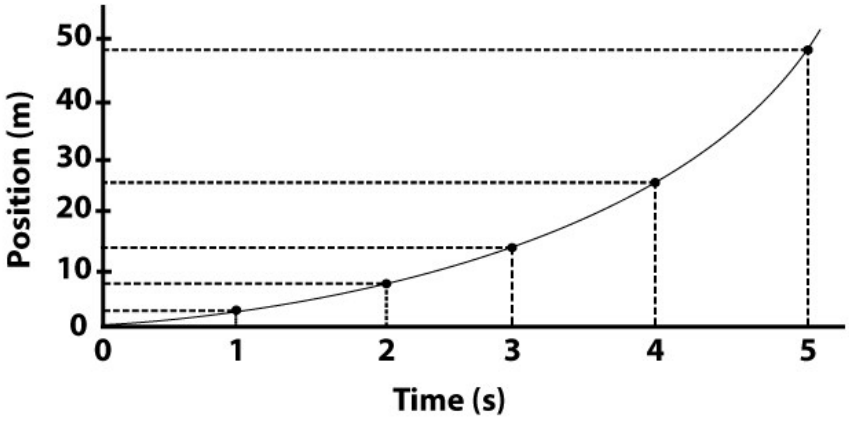
F The average speed of the cyclist in the first two hours was 15.0 km/hr.

G The cyclist traveled at a constant speed throughout the ride.

H The fastest speed of the cyclist was in the last hour of the ride.

J Between the second and third hour of the ride, the cyclist traveled 30 km.

3



The graph above shows the position of a moving object from 0 to 5 seconds. Which of the following statements is TRUE for the moving object?

A The moving object is accelerating and changing its speed throughout the measurement.

B The moving object is traveling at a constant speed throughout the measurement.

C The moving object is slowing down and finally stops at the 5-second mark.

D The distance the moving object travels is the same for each second.

GO ON

4 A student who was training for a cross country race jogged for 2.0 hours and covered a distance of 14.0 kilometers.

What was the average speed of the student?

F 1.5 km/h

G 7.0 km/hr

H 13.0 km/hr

J 30.0 km/hr

5 The energy related to the motion of an object is called —

A potential energy

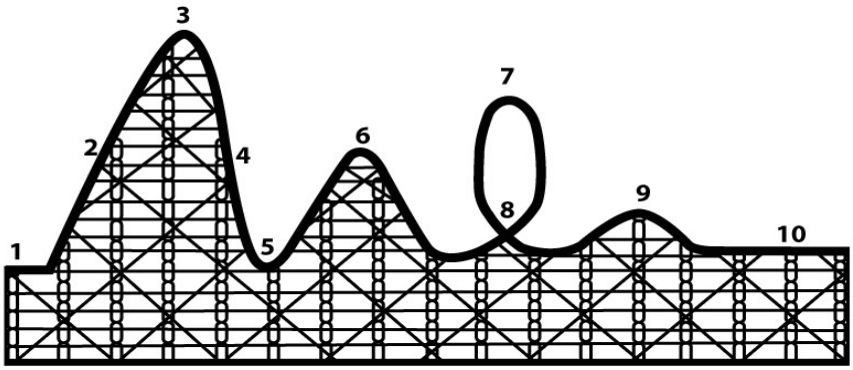
B kinetic energy

C electrical energy

D chemical energy

GO ON

Use the following model of a roller coaster for the next two questions.



6 At what point would the Speedy roller coaster car have the most kinetic energy?

F 3

G 4

H 5

J 6

7 At what point would the Speedy roller coaster car have the most potential energy?

A 3

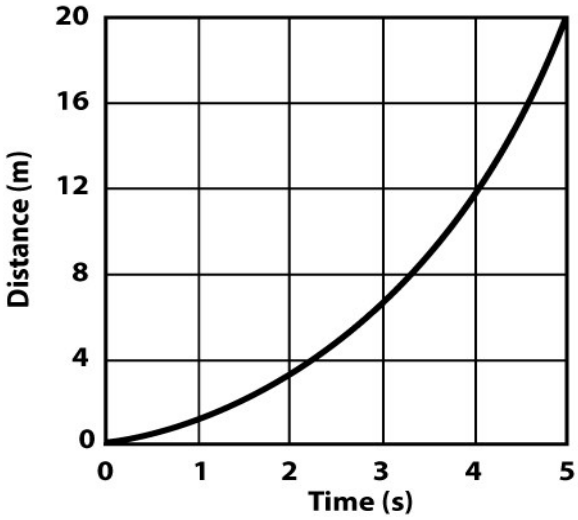
B 4

C 5

D 6

GO ON

Use the following graph for the next question.



Students in a physics class placed a steel ball at the top of a long ramp. As the ball rolled down the ramp, the students measured the distance the ball had traveled at various times. The graph above is a record of their measurements.

8 What unbalanced force is affecting the steel ball the most, and how is it affecting the ball's motion?

F Friction with the ramp is the greatest unbalanced force, and it is causing the ball to slow down.

G Friction with the air is the greatest unbalanced force, and it is causing the ball to slow down.

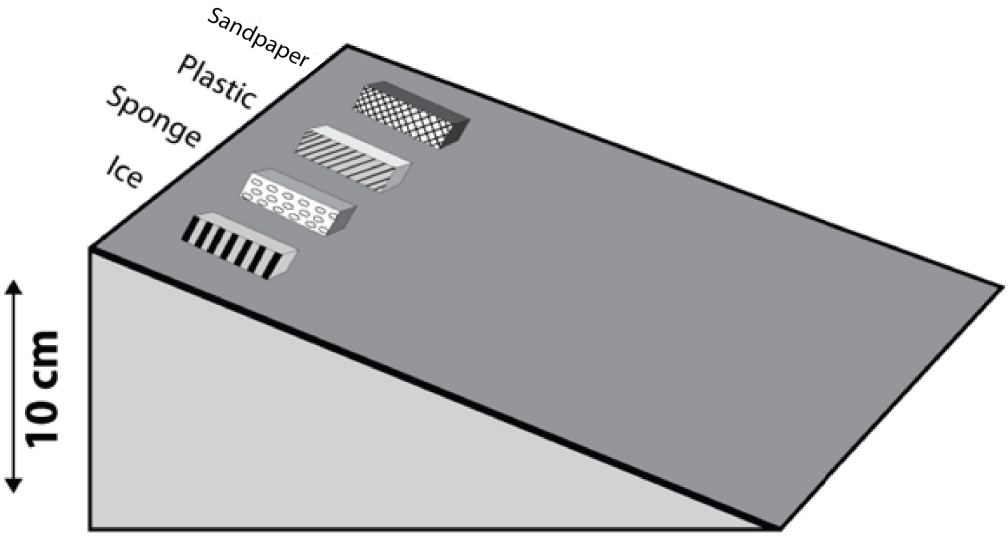
H Gravity is the greatest unbalanced force, and it is causing the ball to speed up.

J The initial push of the ball is the greatest unbalanced force, and it is causing the ball to speed up.

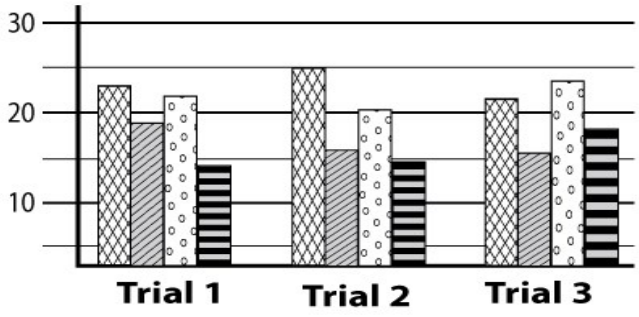
GO ON

The following is the data from the experiment. Use it to answer the next four questions.

Maria is studying inclined planes using blocks of the same surface area and mass. She sets up an experiment to measure how long it takes different materials to slide down a ramp. Her experimental results are shown in the data table and graph below.



Block Type	Trial 1 (s)	Trial 2 (s)	Trial 3 (s)	Average (s)
Sand-paper	23	25	22	23.3
Plastic	18	16.5	16.25	X
Sponge	22	20.5	23	21.8
Ice	14	14.5	17	15.5



GO ON

9 Based on the illustration of her lab setup, what is Maria comparing?

A how the mass of a block affects its movement on an inclined plane

B how the height of an inclined plane affects the movement of blocks

C how different amounts of friction between blocks and the ramp affect the movement of the blocks

D how temperature affects the movement of blocks on an inclined plane

10 Which pattern on the graph represents the plastic block?

F 

G 

H 

J 

11 Why did the ice move down the ramp at the fastest average speed?

A The ice produced the least amount of friction.

B The ice is the least massive block.

C The ice produced the greatest amount of friction.

D The ice is the least dense block.

12 What should Maria use as a label for the y-axis on her graph?

F time (seconds)

G distance (centimeters)

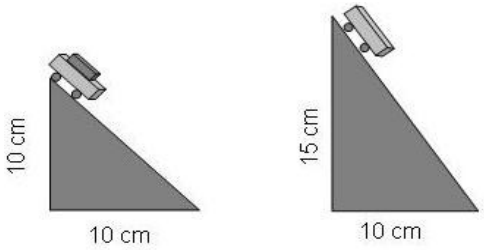
H speed (cm/s)

J height of ramp (centimeters)

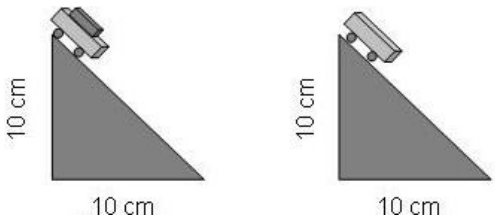
GO ON

13 Devon wants to know how mass affects the speed of a cart moving down an inclined plane. Which two experimental setups should Devon use?

A



B



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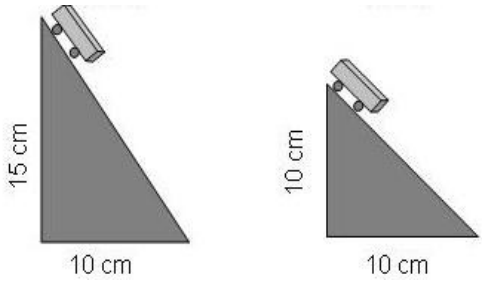

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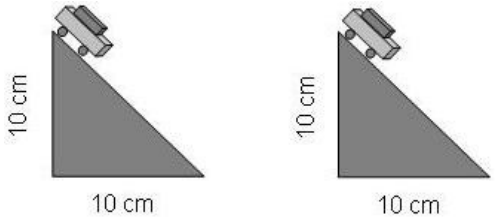
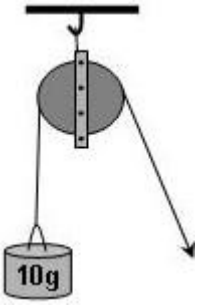


GO ON

14 Which pulley system requires the LEAST amount of force to raise the 10 g mass?

F



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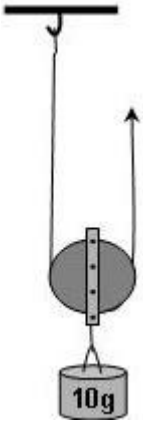

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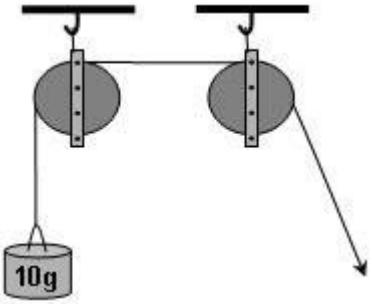

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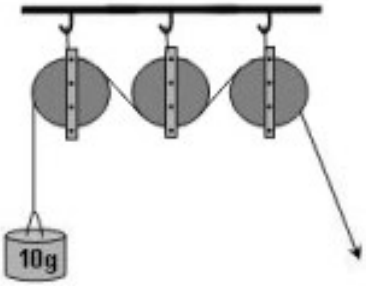
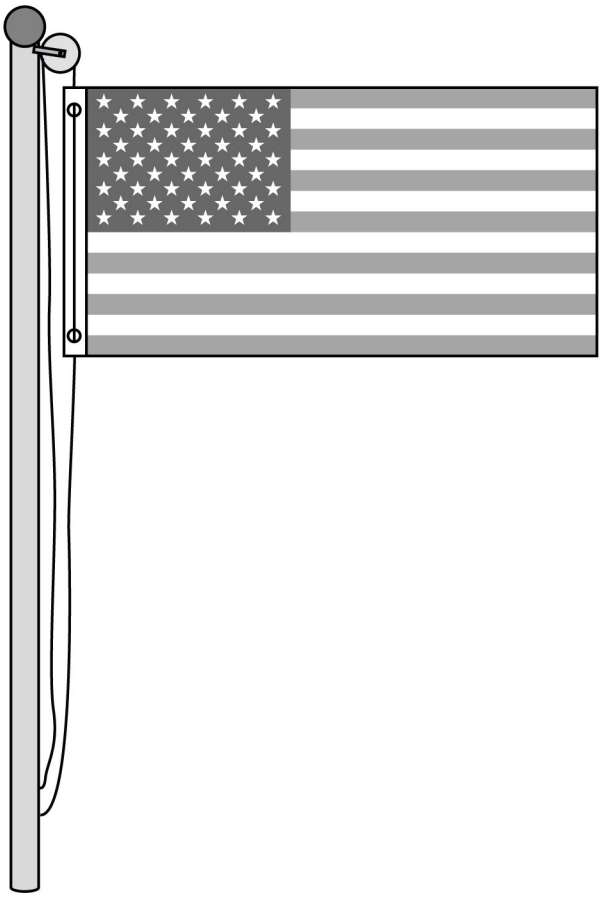


GO ON

15 Every morning the flag is raised up the flag pole at school. In order to raise the flag, a simple machine is used. Please identify the simple machine used in the picture below and explain how the simple machine increases or decreases the amount of force needed to raise the flag.



BE SURE YOU HAVE RECORDED ALL OF YOUR ANSWERS ON YOUR ANSWER DOCUMENT

STOP