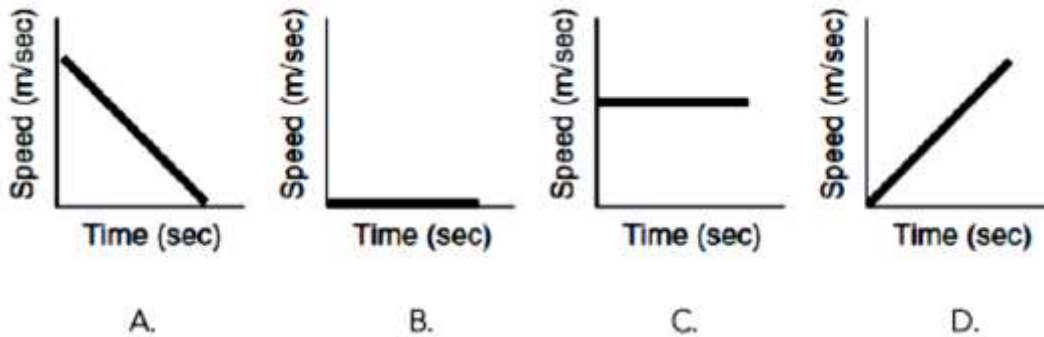


# 7<sup>th</sup> GRADE SCIENCE WINTER BREAK PACKET

**DUE DATE: JANUARY 2<sup>ND</sup> 2020**

It is in your best interest to attempt every question in this packet, since it will GREATLY help you prepare for your upcoming Benchmark on January 12<sup>th</sup> 2020. Be sure to use your notes and SRPs to support you answering questions confidently.

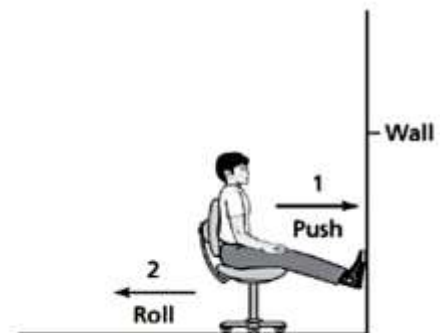
For questions #1-3, use the graphs provided below and your knowledge of science.



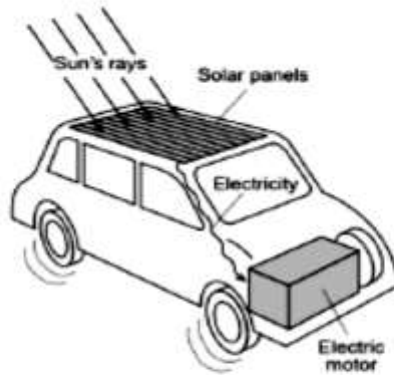
1. What is the independent variable based on the graphs? \_\_\_\_\_
2. Which graph below shows an object slowing down? \_\_\_\_\_
3. Which graph indicates a direct relationship between the two variables indicated in the graphs? \_\_\_\_\_

Which best explains why the chair rolls backwards when the person pushes against the wall?

- A. gravity pulls the chair downward
- B. the wall exerts a force in the opposite direction
- C. friction causes the chair to slow down
- D. the surface of the wall is smooth



The diagram below represents energy transformations in a moving electric toy car.



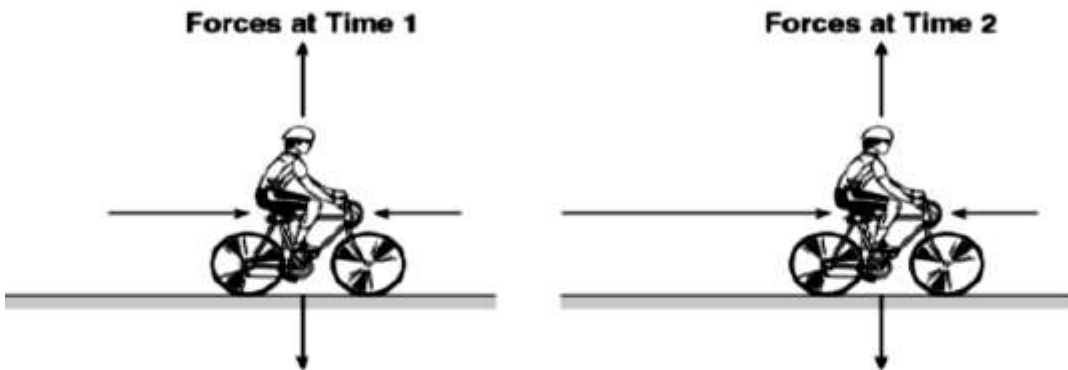
Which form of energy is the original source of power for this car?

- a. electrical
- b. sound
- c. mechanical
- d. light

A car manufacturer reduces the mass of a car by 250 kg. If the new design is otherwise identical to the old design, how will the new car compare to the old car?

- A. It will have a greater gravitational attraction to the road.
- B. It will need less force to move
- C. It will require more fuel to operate.
- D. It will release more gas emissions.

The arrows in the diagram below represent the forces acting on a moving bicycle at two different times, time 1 and time 2. The length of each arrow represents the amount of force being applied.



As a result of the change in the forces from time 1 to time 2, the bicyclist will

- A. stop moving
- B. move slower in a forward direction
- C. move in a backward direction
- D. move faster in a forward direction

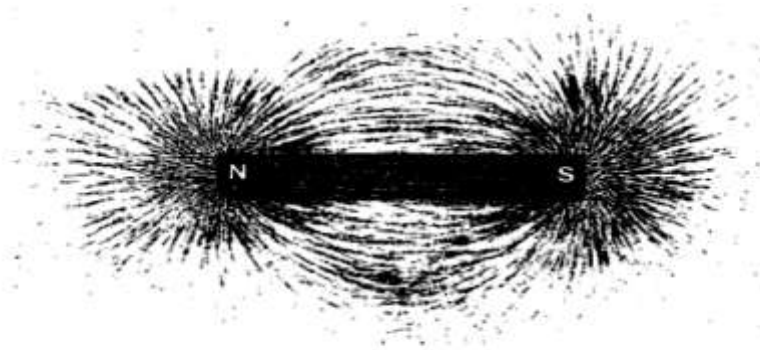
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The diagram below represents a bar magnet. When iron filings were placed near the magnet, they moved to form the pattern shown.



Explain why more iron filings are located at the ends of the magnet than at the center of the magnet.

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The diagram represents a horse pulling a cart with bags of grain on it. The arrow represents the direction in which the horse is moving.



Identify three forces acting on the wagon \_\_\_\_\_,  
\_\_\_\_\_, \_\_\_\_\_

Explain why the bags of grain may continue to move forward if the wagon suddenly stops moving.

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What types of energy are present in this picture? Cite specific examples based on the diagram:

ENERGY TYPE	EXAMPLE

Describe the energy transformation that occurs when a person rides down a roller coaster from the top to the bottom:

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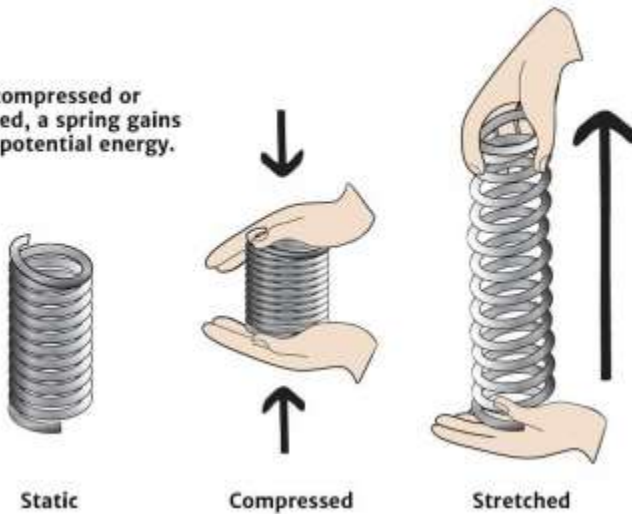
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### Elastic Potential Energy

When compressed or stretched, a spring gains elastic potential energy.



Which state of the spring in the diagram provided has the most elastic potential energy? Explain

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How stretching a spring compare to stretching a rubber band, in terms of potential energy?

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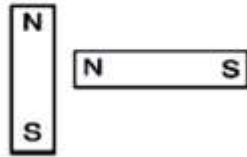
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Which position of two magnets results in the greatest attraction between the magnets?



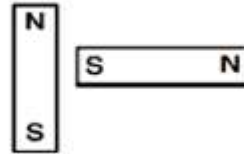
A.



B.

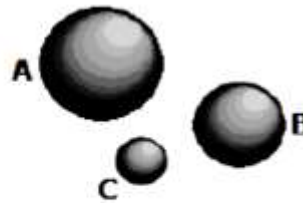


C.



D.

The diagram to the right shows three different sized spheres all made of solid lead. If the same force is applied to all three spheres, which one will have the greatest acceleration?



- A. A
- B. B
- C. C
- D. A, B, and C will all have the same acceleration

The diagram below shows a stationary toy train on a frictionless surface. Two unequal opposing forces are about to be applied to the toy train.



If the unequal opposing forces are applied to the toy train at the same time, what will occur?

- a. the toy train will move to the left
- b. the toy train will move to the right
- c. the toy train will alternate between moving left and right
- d. the toy train will remain stationary

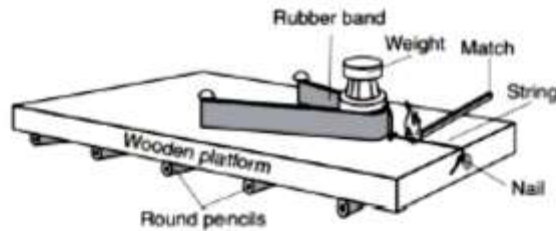
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The diagram shows a set of materials that a science teacher used to demonstrate motion. The rubber band has been stretched with a string that has been tied to the nail. A weight is resting on the platform. The platform is resting on several round pencils on a tabletop.



On the diagram above, draw an arrow to represent the direction the wooden platform will move when the lit match burns through the string and the weight is propelled from the platform.

The table below lists four changes to the materials in the diagram. Will the changes cause the distance the wooden platform moves to decrease, increase, or remain the same? For each change in the left column, circle your answer in the right column.

Change to Materials	Effect this Change Will Have on the Distance the Wooden Platform Moves
Shorten the string to stretch the rubber band.	decrease increase remain the same
Use a wooden platform that has a greater mass.	decrease increase remain the same
Remove the pencils from under the wooden platform.	decrease increase remain the same
Use scissors to cut the string instead of burning it with a match.	decrease increase remain the same