

Name: \_\_\_\_\_

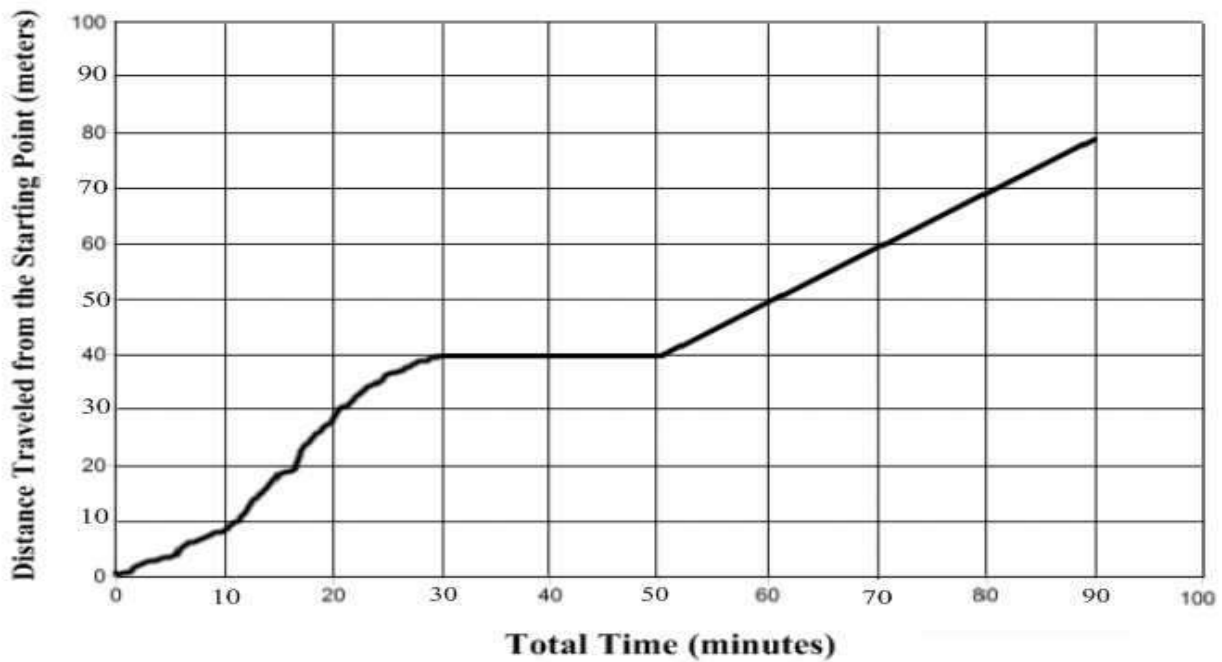
Date: \_\_\_\_\_

## 6<sup>th</sup> Force & Motion Summative Assessment

1. During a youth track event, a runner travels a distance of 100 meters in a time of 20 seconds.
- a. What is the runner's average speed?
  - b. Name a force that could change the speed of the runner and explain how this force would affect the speed of the runner.

2. A mountain biker is in a race and his team tracks his motion on a distance vs. time graph (illustrated below). During the race, the biker has a flat tire and must stop to change it before finishing the race.
- a. How long did it take the mountain biker to change the flat tire? Describe how you get your answer using information from the graph.
  - b. For how long was the mountain biker moving at constant speed? Describe how you get your answer using information from the graph.

**Mountain Biker's Total Distance Traveled vs. Time Graph**



3. A swimmer is competing in a 300-meter race. Her coach monitored her progress during the race and plotted her total distances traveled at the end of each one-minute time interval on a bar graph.

Use the graph to answer the following questions.

- a. During which minute is the swimmer moving the slowest? Describe how you get your answer using information from the graph.
- b. During which time intervals did the swimmer's speed change? Describe how you get your answer using information from the graph.

**0 to 1 minute**

**1 to 2 minute**

**2 to 3 minute**

**3 to 4 minute**

**4 to 5 minute**

**5 to 6 minute**

- c. During which time intervals were the forces on the swimmer balanced? Describe how you get your answer using information from the graph.

**0 to 1 minute**

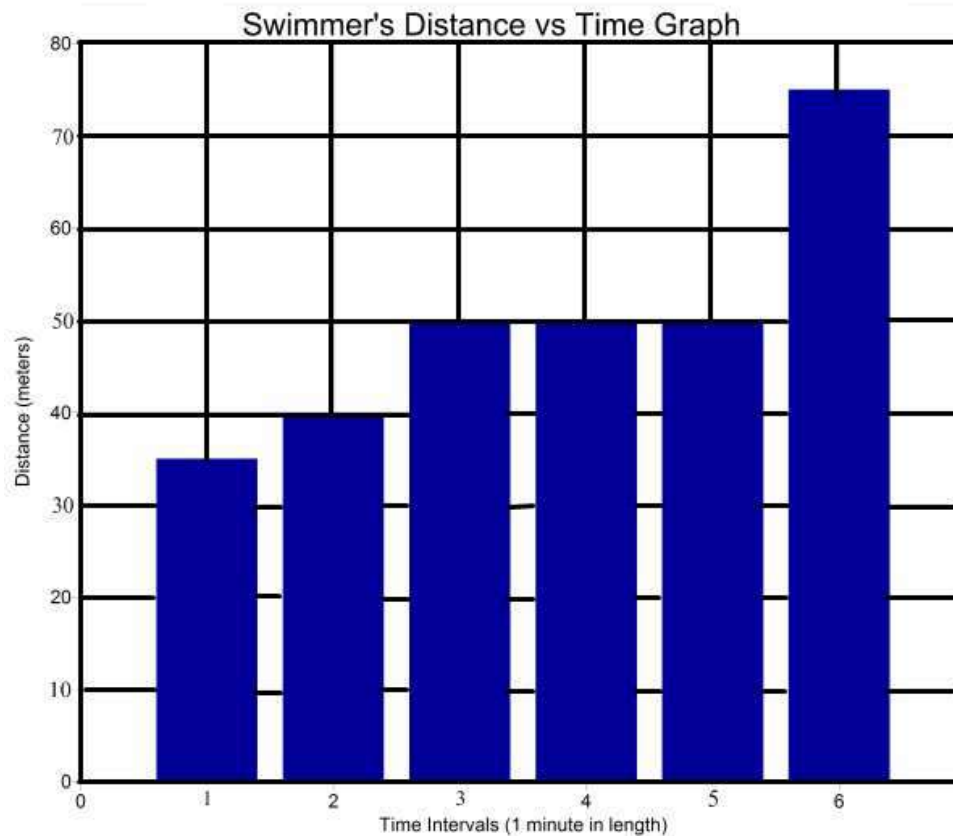
**1 to 2 minute**

**2 to 3 minute**

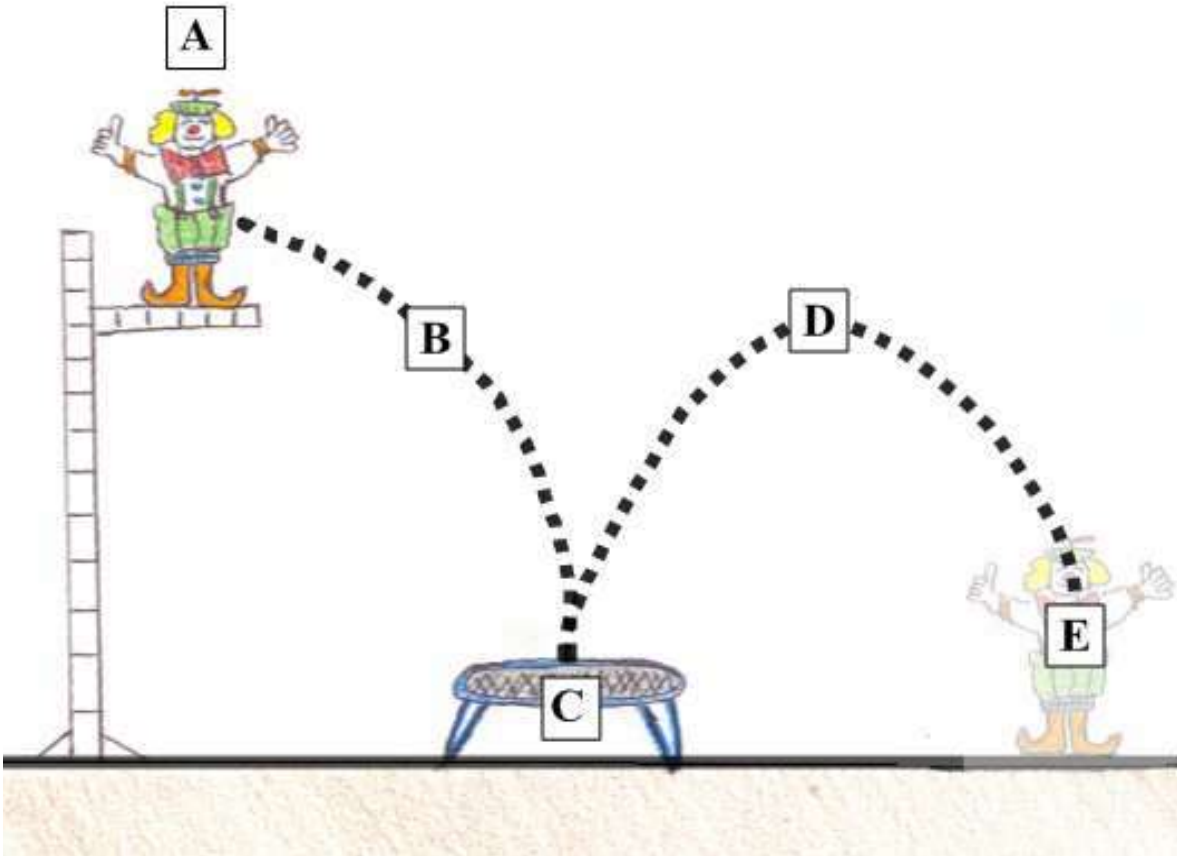
**3 to 4 minute**

**4 to 5 minute**

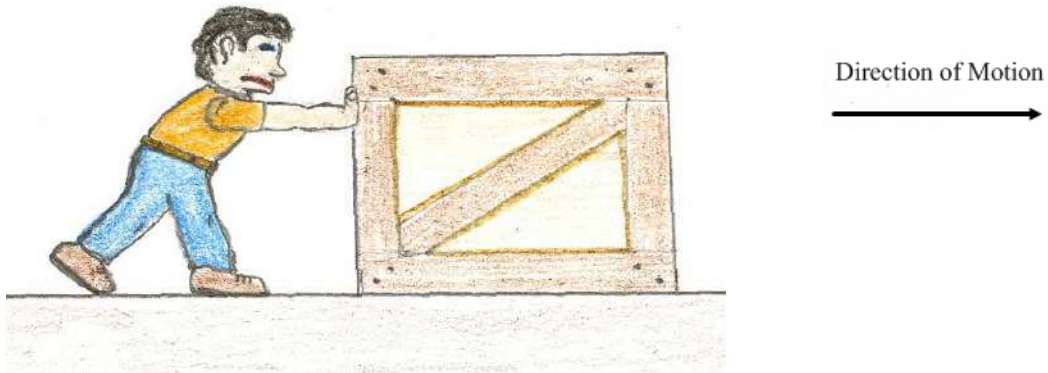
**5 to 6 minute**



4. During a circus act, a clown completes a stunt. He jumps from the top of a tall platform and lands on a large trampoline, which then launches him back up into the air where he eventually lands on the ground.
- At which identified locations (**A**, **B**, **C**, **D**, or **E**) does the force of **gravity** act on the circus clown? Explain why you chose that location (or locations).
  - Name two other forces that act on the clown during the stunt and identify the location (or locations) where these forces act.

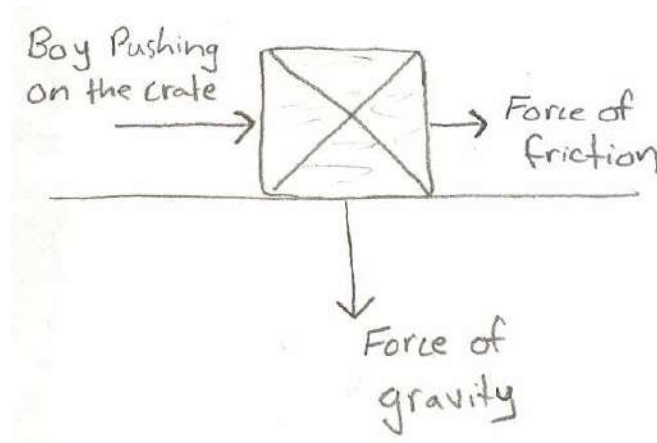


A teacher gave her science class a test. Each student was asked to do the following:



A boy is pushing a large crate across the floor at constant speed. Identify all of the forces acting on the crate and then draw a force diagram. Remember that a good force diagram shows the approximate sizes and directions of all of the forces that are acting on the crate.

The student provides the following force diagram in his response:



5. Carefully review the student's force diagram and label all of the errors. Draw a correct force diagram that will show this student how to correctly answer this question.