

Acceleration and Gravity
Formative Assessment

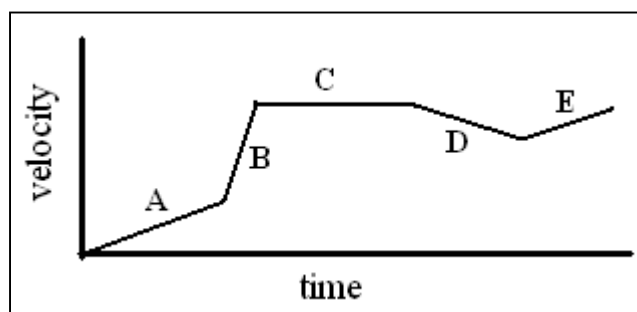
Name _____
 Date _____ Block _____

Answer completely in the space provided. You may do any work on the back.

- List two ways an object can accelerate
Speed up
Slow down
Change direction
- Acceleration is a measure of the rate at which an object's velocity changes over time.
- What is the acceleration of a car that speeds up from 10 m/s to 40 m/s in about 5 seconds?
6 m/s/s; $a = \Delta v / t = (40 \text{ m/s} - 10 \text{ m/s}) / 5 \text{ s} = (30 \text{ m/s}) / 5 \text{ s}$
- How much time would it take to for a hockey puck traveling at 20 m/s to come to rest if it accelerated at a rate of -10 m/s²?
2 s; $t = \Delta v / a = (0 \text{ m/s} - 20 \text{ m/s}) / -10 \text{ m/s}^2 = (-20 \text{ m/s}) / -10 \text{ m/s}^2$
- A rock is moving in the negative direction, it then suddenly speeds up. Which direction was its acceleration... positive or negative?
Negative; if motion and acceleration are in the same direction, then speed will increase
- What is the only force acting on an object that is in "free fall"?
gravity
- A ball is thrown straight up here at Hillgrove. What is its instantaneous speed at the top of its flight?
zero
- For the same ball, what is its acceleration at the top of its flight?
About 10 m/s/s down; always...

- How fast would your physics textbook be going 7 seconds after being dropped out the window of a tall building? *Not that you would.* Please treat this as a free fall situation.
70 m/s; $v = g * t = 10 \text{ m/s/s} * 7 \text{ s}$
- How tall does the building need to be so that the textbook can actually fall that far?
245 m; $d = 0.5 * g * t^2 = 0.5 * 10 \text{ m/s/s} * (7 \text{ s})^2 = 5 \text{ m/s/s} * 49 \text{ s}^2$

Use this graph for #11 and 12



- Where on the graph is the object not accelerating?
C; horizontal line has no slope
- Where on the graph does the object have the greatest acceleration?
B; steepest slope

Circle the questions you answered incorrectly. Remove this strip and turn in to your teacher.

- | | | |
|---|----|----|
| 1 | 6 | 11 |
| 2 | 7 | 12 |
| 3 | 8 | |
| 4 | 9 | |
| 5 | 10 | |

Name: