

STUDY GUIDE**Chapter 2****Velocity and Acceleration**

Use the terms below to fill in the blanks.

acceleration

direction

meters per second squared (m/s²)

slowing down

$$a = \frac{v_f - v_i}{t} = \frac{\Delta v}{t}$$

divide

meters per second (m/s)

subtract

increasing speed

positive

time interval

negative

seconds(s)

velocity

change

Speed is the rate of motion of an object. _____ describes an object's speed and direction. The velocity of an object can _____ even if the speed of the object remains constant. This would occur if the _____ of the object's motion changes.

The rate of change of velocity is called _____. The size of an acceleration depends on both the change in velocity and the _____ of the change.

To calculate acceleration, _____ the change in velocity by the time interval. To find the change in velocity, _____ the initial velocity (v_i) from the final velocity (v_f). The equation for acceleration is _____. Final velocity will be less than initial velocity if an object is _____ and acceleration will have a _____ value. Final velocity will be greater than initial velocity if an object is _____ and acceleration will have a _____ value.

The units for velocity are _____. The unit for time is _____.

_____. Therefore, the units for acceleration are _____.

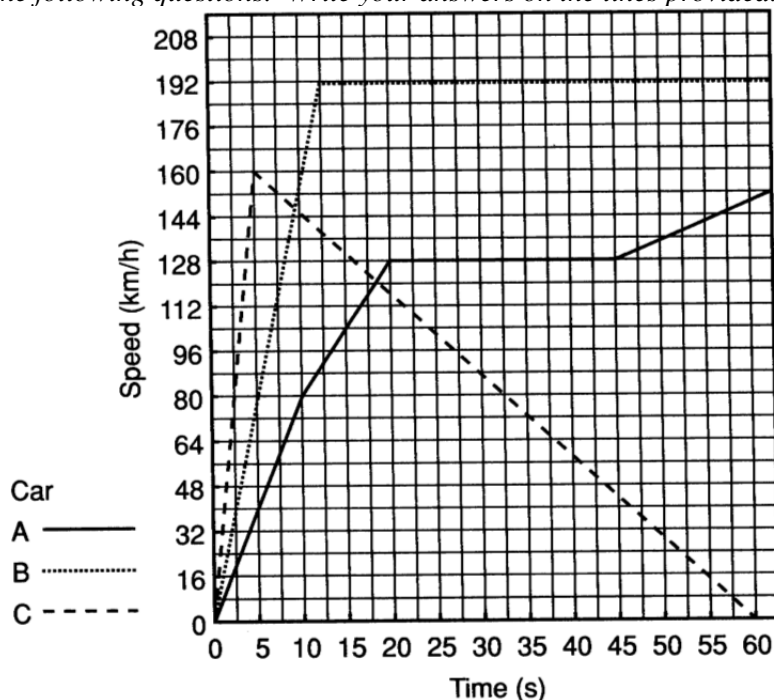
_____.

REINFORCEMENT**Chapter 2****Velocity and Acceleration****THE CAR RACE**

The graph below represents three cars during the first minute of a race. Using the following information, draw another curve on the grid representing the motion of Car D.

Car D accelerates from a rest position at 0 seconds to a speed of 208 km/h at 5 seconds and maintains this speed for 5 seconds. The car decelerates to 32 km/h at 20 seconds. It then accelerates to a speed of 160 km/h at 30 seconds and maintains this speed for 5 seconds. Car D then decelerates to 112 km/h at 40 seconds, decelerates to 64 km/h at 50 seconds, and accelerates to 208 km/h at 55 seconds.

Use your graph to answer the following questions. Write your answers on the lines provided.



1. Over which time period is Car B's acceleration the greatest? _____
2. What is Car B's speed at 10 seconds? _____
3. When is Car B's acceleration at zero? _____
4. When is Car C's acceleration at zero? _____
5. Which car(s) have a negative acceleration during the race? _____
6. Which car has traveled the farthest at the end of one minute? _____
7. Which car may have had a reckless driver? Explain. _____