Dec 13, 2019

Answers Distance and Acceleration Worksheet
Chapter 10 Review

Test Tuesday!!

Warm-Up

1. A roller coaster car rapidly picks up speed as it rolls down a slope. As it starts down the slope, its speed is 4 m/s. But 3 seconds later, at the bottom of the slope its speed is 22 m/s. What is its average acceleration?

$v_i = 4m/s$
$v_f = 22m/s$
$a =$
$t = 3s$

$$a = \frac{v_f - v_i}{t} = \frac{22m/s - 4m/s}{3s} = \frac{18m/s}{3s} = 6m/s^2$$

m/s/s

The roller coasters average acceleration is $6m/s^2$

2. If a Ferrari, with an initial velocity of 10 m/s, accelerates at a rate of 50 m/s/s for 3 seconds, what will its final velocity be?

$v_i = 10m/s$
$v_f =$
$a = 50m/s^2$
$t = 3s$

$$v_f = v_i + at$$
$$= 10m/s + (50m/s/\cancel{s})(3\cancel{s})$$
$$= 10m/s + 150m/s$$
$$= 160m/s$$

The final velocity on the car is 160m/s.

Answers Science 10 Graphing Acceleration and Calculating Distance WS

1 a) the acceleration of the object

$$a = \frac{v_f - v_i}{t} = \frac{50m/s - 0m/s}{5s} = \frac{50m/s}{5s} = 10m/s^2$$

b) the total distance travelled by the object

$$D = \frac{vt}{2} = \frac{(50)(5)}{2} = 125m$$

2. a) the acceleration from A to B

Because it is a horizontal line with constant speed the acceleration is zero.

b) the acceleration from B to C

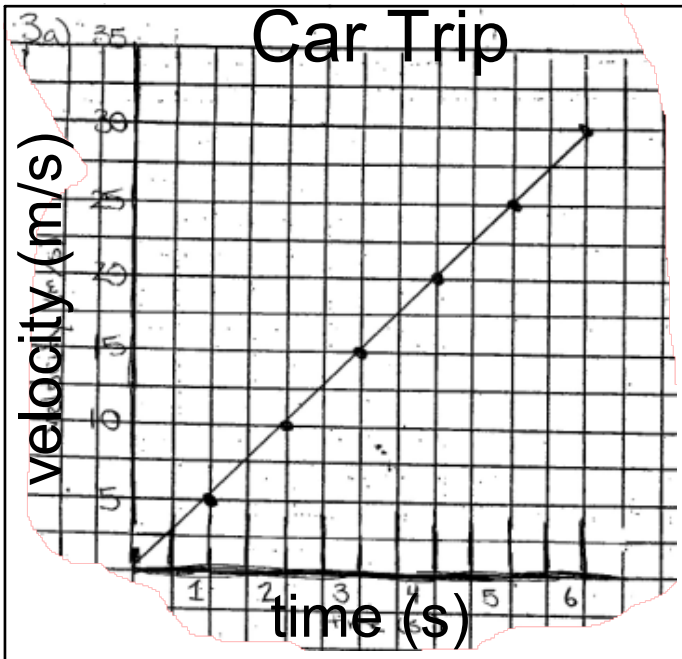
$$a = \frac{v_f - v_i}{t_2 - t_1} = \frac{10m/s - 2m/s}{8 - 4} = \frac{8m/s}{4s} = 2m/s^2$$

c) the distance from 0s-4s

$D = vt$

$= (2)(4)$

$= 8m$



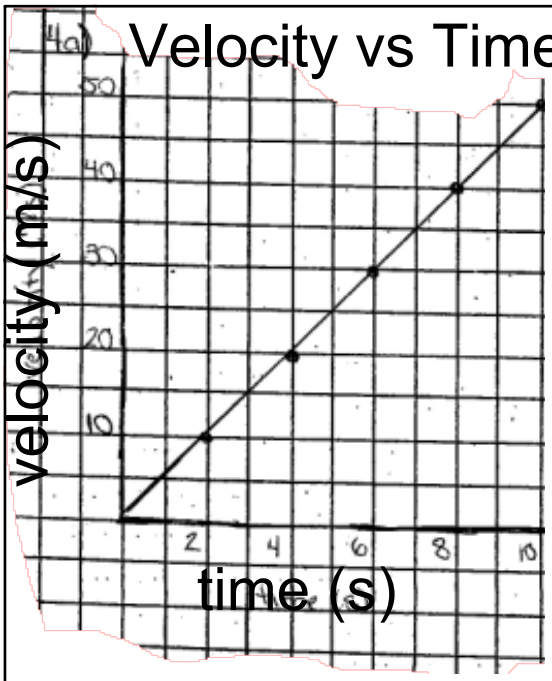
b) the acceleration of the car

$$a = \frac{v_f - v_i}{t} = \frac{30m/s - 0m/s}{6s} = \frac{30m/s}{6s} = 5m/s^2$$

c) How far did the car travel at 6.0s?

$$D = \frac{vt}{2} = \frac{(30m/s)(6s)}{2} = \frac{180m}{2} = 90m$$

Velocity vs Time Graph



a) As time increases what happens to the speed?
The speed increases as time increases

b) Calculate the acceleration of the object.

$$a = \frac{v_f - v_i}{t} = \frac{50m/s - 0m/s}{10s} = \frac{50m/s}{10s} = 5m/s^2$$

c) How far did the object travel?

$$D = \frac{vt}{2} = \frac{(50m/s(10s)}{2} = 250m$$

5. a) by looking at the graph which car was accelerating faster A or B?
Car A because it has a steeper slope than car B

b) Calculate the acceleration for A and B

Car A $a = \frac{v_f - v_i}{t} = \frac{10km/h - 0km/h}{2h} = \frac{10km/h}{2h} = 5km/h^2$

Car B $a = \frac{v_f - v_i}{t} = \frac{10km/h - 0km/h}{4h} = \frac{10km/h}{4h} = 2.5km/h^2$

c) $D_A = 1/2\ vt$
$= 1/2\ (10)(2)$
$= 10m$

$D_B = 1/2\ vt$
$= 1/2\ (10)(4)$
$= 20m$

$D = \frac{(a+b)(h)}{2}$
$= \frac{(15+60)(10)}{2}$
$= \frac{(75)(10)}{2}$
$= \frac{750}{2}$
$= 375m$

6.

$D = \frac{1}{2} vt$
$D = \frac{1}{2}(10m/s)(30s)$
$D = \frac{1}{2}(300m)$
$D = 150m$

$D = vt$
$D = (10m/s)(15s)$
$D = 150m$

$D = \frac{1}{2} vt$
$D = \frac{1}{2}(10m/s)(15s)$
$D = 75m$

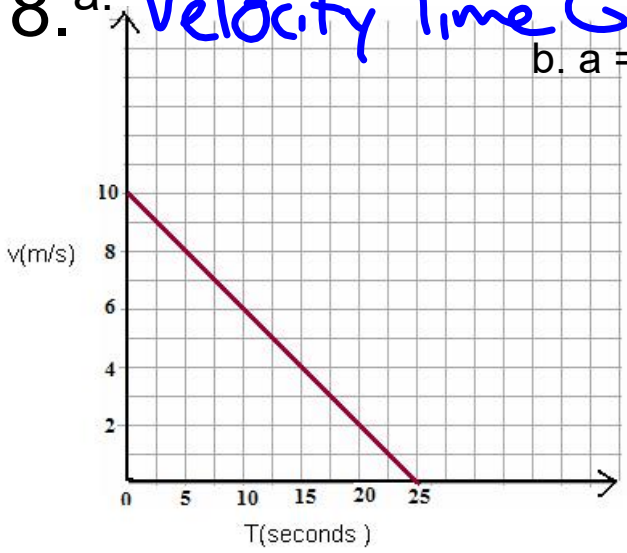
Total Distance = 150m + 150m + 75m
= 375m

7. a. Find the acceleration for segment 1 and 2.

Segment 1 $a = \frac{v_f - v_i}{t} = \frac{40\ ft/s - 20\ ft/s}{10\ s} = \frac{20 ft/s}{10s} = 2ft/s^2$

Segment 2 $a = \frac{v_f - v_i}{t} = \frac{60ft/s - 40\ ft/s}{40\ s - 10s} = \frac{20ft/s}{30s} = 0.66ft/s^2$

8. a. Velocity Time Graph



b. $a = \frac{v_2 - v_1}{t_2 - t_1} = \frac{0 - 10}{25-0} = \frac{-10}{25} = -0.4m/s^2$

c. $D = \frac{1}{2} vt$

$D = \frac{1}{2}(10)(25)$

$D = \frac{1}{2}(250)$

$D = 125m$

Review Chapter 10

Acceleration is the change in speed over time.

There are 3 types of acceleration:

- Constant
- Instantaneous
- Average

Formulas (will be provided)

$$a = \frac{v_f - v_i}{t} \qquad t = \frac{v_f - v_i}{a} \qquad v_f = v_i + at \qquad v_i = v_f - at \qquad d = vt \qquad d = \frac{vt}{2}$$

Graphing:

The line on a velocity vs time graph represents acceleration.
To find acceleration from a graph find the slope of the line.
To find distance from a graph calculate the area under the grap

Complete Review Sheet Chapter 10.

ASK QUESTIONS IF YOU DO NOT UNDERSTAND!!!!!

WE WILL CONTINUE REVIEW MONDAY!!

ANSWERS WILL BE POSTED ON THE WEBSITE!!!!

Test Chapter 10 Tuesday!!!

Answers graphing accleration and calculating distance WS.notebook