WORKSHEET ACC 2.doc

1. The velocity of an object increases from 8.75 m/s to 21.35 m/s in9.2 seconds. Calculate its acceleration.

$a = ?$
$v_i = 8.75 m/s$ (3)
$v_f = 21.35 m/s$ (3)
$t = 9.2 sec$ (2)

$a = \frac{v_f - v_i}{t}$
$= \frac{21.35 - 8.75}{9.2}$
$= 1.369565217$
$= 1.4 m/s^2$

2. A ball rolls across a pool table with a constant acceleration of $3.1 m/s^2$. If it starts from rest (0m/s), what is its speed after 3.0 seconds?

$a = 3.1 m/s^2$
$v_i = 0 m/s$
$v_f = ?$
$t = 3.0 sec$

$v_f = v_i + at$
$= 0 + 3.1(3.0)$
$v_f = 9.30 m/s$
$9.3 m/s$

3. A sports car accelerates from rest at 5 m/s^2 for 8 seconds. Calculate the final speed.

$a = 5 m/s^2$
$v_i = 0.0 m/s$
$v_f = ?$
$t = 8 sec$

$v_f = v_i + at$
$= 0.0 + 5(8)$
$= 40 m/s$

4. A car has an initial speed of 18.4 m/s and after a period of 9.0 s its speed is 8.2 m/s. Calculate the acceleration of the car.

$a = ?$
$v_i = 18.4 m/s$
$v_f = 8.2 m/s$
$t = 9.0 sec$

$a = \frac{v_f - v_i}{t}$
$= \frac{8.2 - 18.4}{9.0}$
$= -1.13333 m/s^2$
$= -1.1 m/s^2$

5. A child girl on a bike has accelerated at 1.9 m/s^2 for 10 s. At the end of this time the child is travelling at 28.0 m/s. What was her initial speed?

$a = 1.9 m/s^2$
$v_i = ?$
$v_f = 28.0 m/s$
$t = 10 sec$

$v_i = v_f - at$
$= 28.0 - 1.9(10)$
$v_i = 9 m/s$

6. Bob is riding his skooter at 9.6 m/s. When he reaches the top of a hill ramp, he is travelling at 2.3 m/s. If it takes him 28 s, what is his acceleration?

$a = ?$
$v_i = 9.6\ m/s$
$v_f = 2.3\ m/s$
$t = 28\ sec$

$a = \frac{v_f - v_i}{t}$
$= \frac{2.3 - 9.6}{28}$
$= -0.2607\ m/s^2$
$= -0.26\ m/s^2$

A bike accelerates at 0.14 m/s^2 for 54s and is travelling at 11.5 m/s at the bottom of the hill. What was the initial speed?

$a = 0.14\ m/s^2$
$v_i = ?$
$v_f = 11.5\ m/s$
$t = 54\ sec$

$v_i = v_f - at$
$= 11.5\ m/s - 0.14(54)$
$= 3.94\ m/s$
$= 3.9\ m/s$

8. Fred is driving at 22.3 m/s when he applies the brakes and he accelerates at -2.6 m/s^2. How long [seconds] does it take to stop?

$a = -2.6\ m/s^2$
$v_i = 22.3\ m/s$
$v_f = 0\ m/s$
$t = ?$

$t = \frac{v_f - v_i}{a}$
$= \frac{0 - 22.3}{-2.6}$

$t = 8.5769\ sec$

$t = 8.6\ sec$

9.
A cannon is fired vertically upward with an initial speed of 46.0 m/s. The acceleration due to gravity is 9.81m/s^2. Calculate it's velocity at the end of 2.50 seconds.

$a = 9.81 m/s^2$

$V_i = 46.0 m/s$

$V_f = ?$

$t = 2.50 sec$

$V_f = 70.525 m/s$

$= 70.5 m/s$

10. A stunt driver accelerates from rest to 7.9 m/s^2 for 3.2 seconds. What is the final velocity?

$V_i = 0 m/s$
$a = 7.9 m/s^2$
$t = 3.2 sec$
$V_f = ?$

$V_f = V_i + at$
$= 0 m/s + 7.9 m/s^2 (3.2 sec)$
$= 25.28 m$ Round to 2 SD
$= 25 m$

11. A runner starts at rest and increases his speed to 4.2m/s. If he accelerates at 0.004m/s^2, how long did it take him?

$V_i = 0 m/s$
$V_f = 4.2 m/s$
$t = ?$
$a = 0.004 m/s^2$

$t = \frac{V_f - V_i}{a}$
$= \frac{4.2 m/s - 0 m/s}{0.004 m/s^2}$
$= 1050 sec$

1 sign. digit
1000 sec

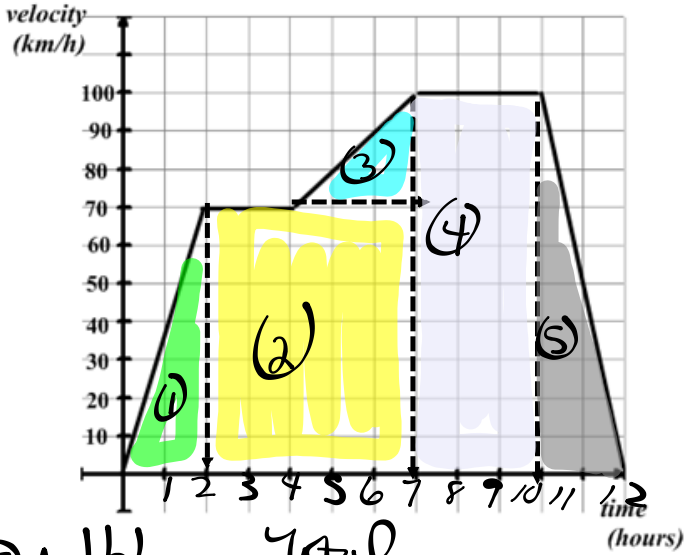
12. A car accelerates from 5 m/s to 25 m/s in 10 seconds. What is its acceleration?

$a = \frac{V_f - V_i}{t}$
$= \frac{25 - 5}{10}$
$= 2 m/s^2$

12. A car accelerates from 5 m/s to 25 m/s in 10 seconds. What is its acceleration?

$$a = \frac{v_f - v_i}{t}$$
$$= \frac{25-5}{10}$$
$$= 2\ m/s^2$$

13. Determine the total distance travelled?



① $A = \frac{1}{2}bh$
$= \frac{1}{2}(2)(70)$
$= 70\ km$

② $A = bh$
$= 5(70)$
$= 350\ km$

③ $A = \frac{1}{2}bh$
$= \frac{1}{2}(3)(30)$
$= 45\ km$

④ $A = bh$
$= 3(100)$
$= 300\ km$

⑤ $A = \frac{1}{2}bh$
$= \frac{1}{2}(2)(100)$
$= 100\ km$

Total
$70 + 350 + 45 + 300 + 100$
$865\ km$

Attachments

WORKSHEET ACC 2.doc

Acceleration Problems.doc

WORKSHEET ACC 1.doc