

## Planet Holloway **websheet 2.4**

### Physics Chapter 2

You may print this out and write on it or work on your own paper.

### **Show all work.**

#### **Uniform Acceleration**

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Hint: Acceleration is due to gravity. English =  $32 \text{ ft/s}^2$ . Metric =  $10 \text{ m/s}^2$ .

Directions: Show all work.

1. Joe Jogger, jogging along at  $8.0 \text{ ft/sec}$ , comes up beside the Mad Bomber just as he lights the fuse on his bomb. Joe, trying to get away, sprints to  $38 \text{ ft/sec}$  by the time the bomb explodes. If the bomb was not thrown and had an accurate  $2.0$  second fuse,
  - a. What was Joe's average acceleration?
  - b. How far did Joe get from the bomb before it exploded?
2. Skateboard Scottie leaps aboard his jet-powered skateboard and fires up the jet engine. He accelerates at  $1000 \text{ m/sec}^2$  for  $0.50$  seconds. (Pretty amazing stuff).
  - a. How fast is he going at the end of the  $0.50$  seconds?
  - b. What is his average speed for the  $0.50$  seconds?
  - c. How far does he travel forward in the  $0.50$  seconds?
  - d. If he slams on his super brakes and screeches to a stop in  $0.20$  seconds, what is his negative acceleration (deceleration)?
3. Studley McSnow is flying down the sky slope, reaching  $100 \text{ m/sec}$  as he hits the bottom. At the bottom, he suddenly crashes and burns (not literally "burns"), skidding and tumbling and flopping and sliding  $300.0$  horizontal meters before coming to rest.
  - a. What was his average negative acceleration (deceleration) during his classy "stopping routine" at the bottom of the slope?
  - b. How long did he skid and tumble, etc. before coming to rest?
4. At the snap of the ball, Bobo McMoose, dynamite defensive end, reaches  $20 \text{ ft/sec}$  in  $1.0$  second and stays at that speed for  $1.5$  more seconds as he heads toward the opposing quarterback unimpeded. At that instant, he makes contact with the hapless quarterback. Both come to a crunching rest in  $2.0$  additional seconds. (The quarterback was not moving when contact was made.)
  - a. What was Bobo's initial acceleration?
  - b. What was Bobo's negative acceleration (deceleration) as he sacked the quarterback?
  - c. From the snap of the ball to crunching rest, how far forward did Bobo travel?
  - d. What was Bobo's average speed for his entire sacking run?
5. Duffy McDuffer, an extraordinary local golfer, smacks the ball with his driver and, amazingly, sends the ball straight up at a velocity of  $320 \text{ ft/sec}$  (shades of baseball pop-ups).
  - a. How high does the ball rise in flight?
  - b. How long is the ball in the air before returning to tee level?

- c. How fast is the ball moving when it returns to tee level?
- d. Exactly where is the ball and what is its velocity at  $t = 13$  seconds?

Physics  
Worksheet – Uniform Acceleration

**Key**

- 1.
  - a.  $15 \text{ ft/s}^2$
  - b. 46 ft
  
- 2.
  - a. 500m/s
  - b. 250 m/s
  - c. 125 m
  - d.  $2500 \text{ m/s}^2$
  
- 3.
  - a.  $16.7 \text{ m/s}^2$
  - b. 6 s
  
- 4.
  - a.  $20 \text{ ft/s}^2$
  - b.  $10 \text{ ft/ s}^2$
  - c. 60 ft
  - d. 13.3 ft/s
  
- 5.
  - a. 1600 ft
  - b. 20 s
  - c. 320 ft/s
  - d. Coming down 144 ft from top OR 1456 ft up.  
Its velocity = 96 ft/s (down)