

Planet Holloway **websheet 3.7**

*AP Physics C* - Chapter 3

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

**Show all work.**

1. A hippo is launched at 78 m/s at  $62^\circ$  above the horizontal. When is it 42 m above the ground?
2. A baseball is thrown at 27 m/s at an initial angle of  $25^\circ$  with respect to horizontal. What is the maximum height of the throw?
3. A plane flying at a speed of 450 mph due west moves through a region where the wind is blowing at 180 mph  $20^\circ$  south of west. What is the new velocity of the plane relative to the ground?
4. A manatee swims at 3 m/s relative to still water. If the manatee is swimming in a river that has a current speed of 1.5 m/s, how long does it take the manatee to swim 200 m upstream and then back?
5. A duck paddles quickly at 4.5 m/s south across a river flowing at 2 m/s east to west. How far does the duck drift downstream while crossing the 40 m wide river?
6. A frog jumps up at 9 m/s at an angle of  $37^\circ$  above the horizontal. How high does the frog jump in the air?

Answers:

1. 0.64 s and 13.13 s
2. 6.51 m
3. 622.2 mph @  $5.7^\circ$  south of west
4. 177.8 s
5. 17.8 m
6. 1.46 m