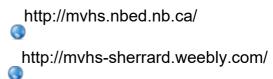
## Physics 112

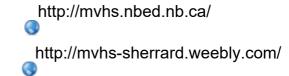
Friday, October 12/18



- 1. FAs from Previous Sections
- 2. Return FA Kinematic Equation #1
  Submit LC and Justifications
  Graphical Tracking Sheet
- 3. Questions? Worksheet Motion Problems Complete for Monday
- 4. FA Kinematic Equation #2
- 5. Acceleration due to Gravity
- 6. Freely Falling Bodies
- 7. Worksheet Freeling Falling Bodies

### Physics 122

Friday, October 12/18



- 1. FA Static Torque #2 FA - Static Torque #1 and #2
- 2. SA U1 S1&2 -> Tuesday, October 16/18 (~10 minutes/problem)
  - Calculate R using perpendicular components of two or more vectors.
  - Solve a push/pull problem.
  - Solve a suspended object problem (complex).
  - Solve an inclined plane problem.
  - Solve a static torque problem with only vertical forces.
  - Solve a static torque problem with forces acting at angles.
- 3. Worksheet Relative Velocity (Textbook Problems)
  - See Next 2 Pages
  - Try Some

# Textbook: C3 Page 110 - PP #21, 22, 25, 27(a) #1

### **PRACTICE PROBLEMS**

- 21. A kayaker paddles upstream in a river at 3.5 m/s relative to the water. Observers on shore note that he is moving at only 1.7 m/s upstream. Determine the velocity of the current in the river.
- 22. A jet-ski speeds across a river at 11 m/s relative to the water. The jet ski's heading is due south. The river is flowing west at a rate of 5.0 m/s. Determine the jet-ski's velocity relative to the shore.
- 25. A swimmer is standing on the south shore of a river that is 120 m wide. He wants to swim straight across and knows that he can swim 1.9 m/s in still water. He drops a stick in the water and finds that it floats with the current to a point 24 m west in 30.0 s.
  - (a) Determine the direction in which the swimmer should head so that he lands directly across the river on the north bank.
  - (b) If he follows your advice, determine how long it will take him to reach the far shore.
- 27. A lone canoeist paddles from her cabin, heading directly east. When there is no wind, the velocity of the canoe is 1.5 m/s. However, a strong wind is blowing from the north, and the canoe is pushed southwards at a rate of 0.50 m/s. Calculate the velocity of the canoe relative to the shore.

### Chapter 3

#### **Practice Problems**

- 21. 1.8 m/s[downstream]
- 22. 12 m/s[S24°W]
- 23. (a) N20.5°E
  - (b) 227 km/h[N30.0°E]
  - (c) 1.10 h
- **24**. (a)  $1.6 \times 10^2 \text{ km}[\text{W}18^{\circ}\text{N}]$ 
  - (b)  $3.0 \times 10^2$  km/h[N],  $2.2 \times 10^2$  km/h[W],  $2.5 \times 10^2$  km/h[S]
- (c)  $1.3 \times 10^2 \text{ km/h}[\text{W}18^{\circ}\text{N}]$
- 25. (a) N25°E
- (b) 69 s
- 26. (a) 2.1 km[W54°N]
  - (b) S54°E
  - (c) 2.4 h
- 27. (a) 1.6 m/s[E18°S]

### #2

# Textbook: C3 Page 117 - PFU #23, 24, 29

#### **PRACTICE PROBLEMS**

- 23. Thao can swim with a speed of 2.5 m/s if there is no current in the water. The current in a river has a velocity of 1.2 m/s[S]. Calculate Thao's velocity relative to the shore if
  - (a) she swims upstream
  - (b) she swims downstream
- 24. A physics teacher is on the west side of a small lake and wants to swim across and end up at a point directly across from his starting point. He notices that there is a current in the lake and that a leaf floating by him travels 4.2 m[S] in 5.0 s. He is able to swim 1.9 m/s in calm water.
  - (a) What direction will he have to swim in order to arrive at a point directly across from his position?
  - (b) Calculate his velocity relative to the shore.
  - (c) If the lake is 4.8 km wide, how long will it take him to cross?
- 29. A canoeist wants to travel straight across a river that is 0.10 km wide. However, there is a strong current moving downstream with a velocity of 3.0 km/hr. The canoeist can maintain a velocity relative to the water of 4.0 km/hr.
  - (a) In what direction should the canoeist head to arrive at a position on the other shore directly opposite to his starting position?
  - (b) How long will the trip take him?

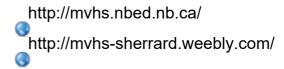
### **Chapter 3 Review**

#### **Problems for Understanding**

- 23. (a) 1.3 m/s[N] (b) 3.7 m/s[S]
- **24.** (a)  $[E26^{\circ}N]$  (b) 1.7 m/s[E]
  - (c) 47 min
- 25. 4.4 m/s[N5.4°E]
- 26. 12 km[W24°N]
- 27. (a)  $2.0 \times 10^1 \text{ km}[\text{N}16^{\circ}\text{E}]$ 
  - (b) 9.9 km/h[N16°E]
- 28. 0.217 m/s<sup>2</sup>[S19.7°W]
- 29. (a) He should aim upstream at an angle 41° with respect to the river bank.
  - (b) 2.3 min

# Science 10

### Friday, October 12/18



- 1. Word Equations
- 2. Chemical Equations
- 3. Law of Conservation of Mass
- 4. Examples Balancing Chemical Equations
- 5. Worksheets Balancing Chemical Equations