

PHYSICS_QUIZ.09.05.08

1. (5 pts) A vector has a magnitude of 100 and is pointed at an angle of 70° above horizontal. What are the **i** and **j** components of this vector? **Show work**

2. (5 pts) The **i** and **j** components of a vector are $-150 \mathbf{i} + 75 \mathbf{j}$. What is this vector in polar coordinates?
Show work

3. (4 pts) What is the SI unit for acceleration?

- | | | | | | |
|-----------|-------------|-----------|----------|-------------------|---------|
| a. meters | b. newtons | c. joules | d. m/s | e. m/s^2 | f. amps |
| g. volts | h. coulombs | i. farads | j. watts | k. kilograms | l. ohms |

4. (4 pts) What is the SI unit for electric charge?

- | | | | | | |
|-----------|-------------|-----------|----------|-------------------|---------|
| a. meters | b. newtons | c. joules | d. m/s | e. m/s^2 | f. amps |
| g. volts | h. coulombs | i. farads | j. watts | k. kilograms | l. ohms |

5. (4 pts) What is the SI unit for mass?

- | | | | | | |
|-----------|-------------|-----------|----------|-------------------|---------|
| a. meters | b. newtons | c. joules | d. m/s | e. m/s^2 | f. amps |
| g. volts | h. coulombs | i. farads | j. watts | k. kilograms | l. ohms |

6. (4 pts) What is the SI unit for force?

- | | | | | | |
|-----------|-------------|-----------|----------|-------------------|---------|
| a. meters | b. newtons | c. joules | d. m/s | e. m/s^2 | f. amps |
| g. volts | h. coulombs | i. farads | j. watts | k. kilograms | l. ohms |

7. (5 pts) You use a meter stick to measure the diameter of a wooden dowel. If your measurement is 36.5 cm, what is the percent uncertainty of your measurement? **show work**

8. (5 pts) An ohmmeter has a precision of ± 0.01 ohms. If you measure a resistor to be 35.67 ohms, what is the percent uncertainty of your measurement? **show work**

9. (10 pts) The accepted value for the acceleration due to gravity near the earth's surface is 9.81 m/s^2 . You use a photo-gate to measure the fall of an object and measure the following values for the acceleration of gravity. (a) Calculate the % error of each measurement, (b) the average of all the trials, and (c) the % error of the average of the trials. **Show work only for part "c"**

	A	B
1		% error
2	9.87	
3	10.2	
4	9.34	
5	9.85	
6	9.65	
7	8.92	
8	11.3	
9	9.33	
10	AVERAGE VALUE OF "g"	% error of average
11		
12		
13		

10. (4 pts) Which two of the following is a vector quantity?

A. resistance B. acceleration C. energy D. force E. speed

11. (10 pts) You are given a force table. Two weights are hung from the table

- 200 grams at 130° _____ **i** _____ **j**
- 145 grams at 47° _____ **i** _____ **j**

Find the resultant and the equilibrant. **Show work**

12. (15 pts) You are given a force table with the following three weights hung.

- 50 grams at 45° _____ **i** _____ **j**
- 75 grams at 130° _____ **i** _____ **j**
- 200 grams at 90° _____ **i** _____ **j**

Find the resultant and the equilibrant. **Show work**

13. You walk 50 times around a circular track of diameter 50 meters.

(a) (3 pts) How far have you walked (what is the total distance)?

(b) (3 pts) What is the your displacement?

14. Your mass is 45 kg.

(a) (2 pts) What is your weight on the earth?

(b) (2 pts) What is your mass on the moon?

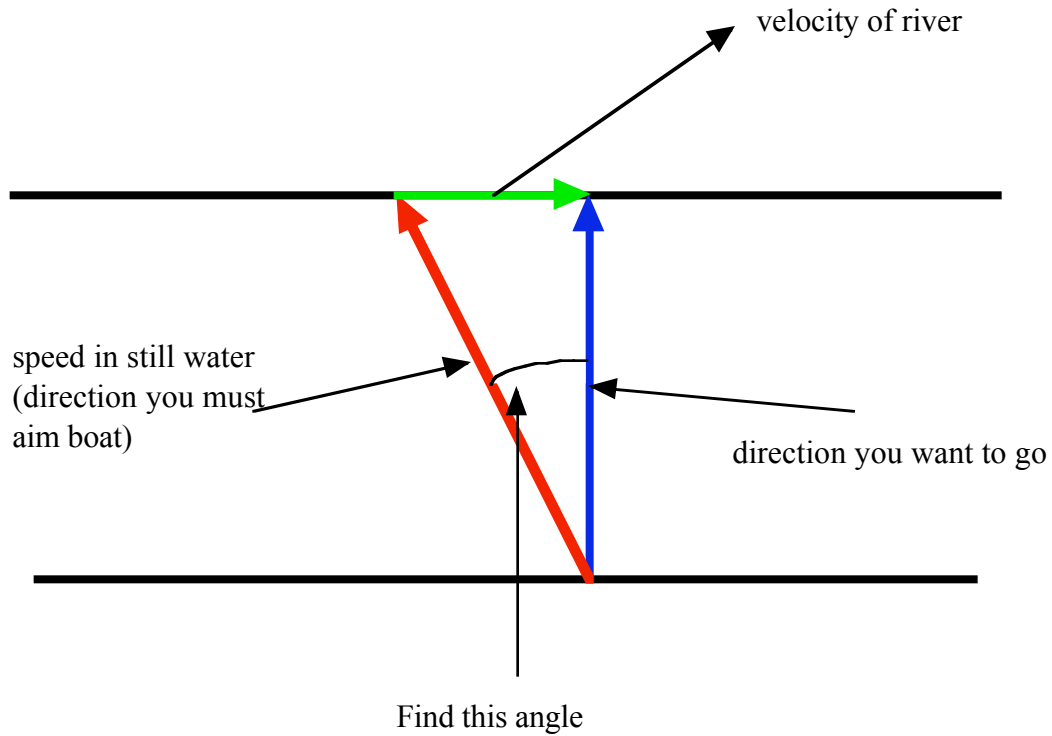
(c) (2 pts) What is your weight on the moon where “g” is equal to 1.6 m/s^2 ?

15. (4 pts) If I tell you that I am traveling at 30 m/s in a direction of 30° south of east what am I telling you?

- A. My speed only
- B. My velocity
- C. That I am trying to get away from you

16. (10 pts)

You and your friends can row a boat in still water at a speed of 5.5 m/s. You want to travel straight across a river that flows towards the right at a speed of 1.5 m/s. At what angle from the perpendicular to the shore do you need to aim the boat in order to go straight across the river?



17. Write the formula that you must use to program a spreadsheet to calculate % error. The accepted value is in cell A1 and the measured value is in cell B1.