Worksheet basics+ Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**1.** Write the following numbers in scientific notation.

 **(a)** 49,000 **(b)** 0.00007 **(c)** -3,112,221,005,107

**2.** Rewrite the following quantities in their base metric units in scientific notation.

 **(a)** 2 kJ **(b)** 0.7 nW **(c)** 4.2 Gm **(d)** -2.2 cC **(e)** 81.2 MV

**3.** In all of the following scenarios, solve for B.

 **(a)** $C=TB$ **(b)** $V-B=2R$ **(c)** $\frac{B}{Z}=5-J$

 **(d)** $\frac{Q}{M}=8\frac{L}{B}$ **(e)** $B^{4}=D-2$ **(f)** $\frac{F}{B+A}=4K$

 **(g)** $JB+\frac{X}{S}=1-WB$

**4.** Without using a calculator, give an approximation for the following trigonometric functions.

 **(a)** cos(80o) **(b)** cos(50o) **(c)** sin(10o)

**5.** You have two vectors $\vec{A}=+5\hat{x}+3\hat{y} \vec{B}=+2\hat{x}-2\hat{y} $. Use these to help you solve the following:

 **(a)** $\vec{A}+\vec{B}$  **(b)** $\vec{A}-\vec{B}$  **(c)** $\vec{A}∙\vec{B}$  **(d)** $\vec{A}×\vec{B}$

**6.** Answer the following questions that refer to this function: $y=Ax^{2}-Bx+C$ .

 **(a)** Take the derivative $\frac{dy}{dx}$ of this function where A,B,&C are considered to be constants.

 **(b)** Integrate this function with respect to x where A,B,&C are considered to be constants.

 **(c)** Integrate this function with respect to A where x,B&C are considered to be constants.

 **(d)** Take the derivative $\frac{dy}{dx}$ again. This time A&B are considered to be constants, but C is not.

**7.**  **A** has units of meters (m), **B** has units of Joules squared per second (J2/s), and **C** has units of meters cubed times a second (m3s). In each situation, solve for the units of **Q** .

**(a)** $Q=ABC$ **(b)** $Q=\frac{AB}{C}$ **(c)** $A=QC^{2}$ **(d)** $BC=\frac{A}{Q^{2}}$