

**Pre-Calculus  
AP Calculus  
AP Physics 1  
Summer Assignment Packet  
Pueblo County High**

**Purpose:**

During the summer months before the beginning of the fall semester, all students who plan to take AP Physics 1, and/or AP Calculus or Pre-Calculus must complete the following assignment to prepare them for the topics they will study during the course. Through the completion of this assignment, students will review previously learned mathematical concepts, units of measure, and reasoning strategies, which form the foundation of this course.

**Assignment:**

1. Download, print, and complete the assignment packet for Pre-Calculus, AP Calculus, and AP Physics 1, from the PCHS website.  
**SHOW ALL WORK** to receive full credit.

**NOTE:** There is an additional reading assignment and notes for AP Physics 1

2. The assignment packet solutions will be turned-in on the first day of fall class.  
A quiz on this material will be given during the first or second week of class.
3. Please take this assignment seriously, as this assignment and the subsequent quiz, will represent the initial assessments for this course.
4. If you have questions about either of these assignments, email us at the following  
Ms. Devon Burke            [dburke@district70.org](mailto:dburke@district70.org)  
Ms. Michelle Sciacca       [msciacca@district70.org](mailto:msciacca@district70.org)

SUMMER WORK 2017

1. Express each of the following numbers in scientific notation.

a) 123,876.3 \_\_\_\_\_

c) 0.00000000000211 \_\_\_\_\_

b) 1,236,840 \_\_\_\_\_

d) 0.0000205 \_\_\_\_\_

2. Express each of the following numbers in standard notation.

a)  $8.2 \times 10^6$  s \_\_\_\_\_

c)  $4.350 \times 10^{-6}$  m \_\_\_\_\_

b)  $6.892 \times 10^{-4}$  g \_\_\_\_\_

d)  $5.1 \times 10^5$  N \_\_\_\_\_

3. Convert the following metric measurements:

27.5 mg = \_\_\_\_\_ g

8 mm = \_\_\_\_\_ cm

0.025 km = \_\_\_\_\_ cm

160 cm = \_\_\_\_\_ mm

26,000 cm = \_\_\_\_\_ m

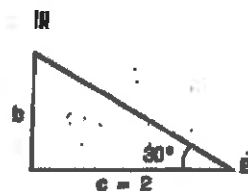
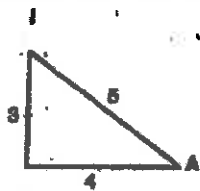
5 L = \_\_\_\_\_ mL

109 g = \_\_\_\_\_ kg

14 km = \_\_\_\_\_ m

56,500 mm = \_\_\_\_\_ km

4. Answer the questions that refer to the following triangles.



a) For triangle I, find the cosine of angle A.

b) Find side c for triangle II.

c) For triangle III, find side b and the hypotenuse WITHOUT using Pythagorean theorem.

5. Work each problem in the space provided, express your final answers in simplest terms, and circle.

a) Rearrange for  $V_1$ :  $\frac{P_1 V_1}{T_1} = \frac{P_2 V_2}{T_2}$

c) Rearrange for x:  $2x + y = 10$

b) Rearrange for a:  $\Delta d = vt + \frac{1}{2} at^2$

d) Solve for x:  $x^2 = 0.0036$

6. Solve the following formula problems showing the correct procedure.

1a) Rearrange for V:  $D = \frac{m}{V}$

b) Find the volume (V) of a sample if its density (D) is  $4.5 \text{ g/cm}^3$  and its mass (m) is 36.0 g.  
Carry along the units in your calculation to obtain the proper units in your answer.

2a) . Solve for  $d_1$ :  $\sqrt{\frac{d_2}{d_1}} = \frac{V_1}{V_2}$

b) If  $V_2$  is one half  $V_1$ , what will  $d_1$  be in terms of  $d_2$ ?

## Pre-Calculus, AP Calculus, and AP Physics

Simplify each expression.

1)  $\frac{10p^2 - 100p}{3} \cdot \frac{1}{p - 10}$

2)  $\frac{27n^2 - 9n}{7} \cdot \frac{10n}{27n^2 - 9n}$

3)  $\frac{x^2 - 6x - 16}{x - 1} \cdot \frac{9x^2}{x + 2}$

4)  $\frac{6}{3k} + \frac{4k - 6}{3k - 18}$

5)  $\frac{2}{2b + 3} - \frac{4}{b + 4}$

6)  $\frac{\frac{20}{x^2}}{\frac{5}{x} + \frac{x}{4}}$

**Solve each system by whichever method you choose. ( Substitution or Elimination)**

7)  $x + 3y = -15$   
 $6x - 6y = 30$

8)  $-11x - 9y = 13$   
 $x - 6y = -8$

9)  $3x + 3y = -15$   
 $-5x + 9y = -3$

10)  $15x + y = 13$   
 $5x - 8y = 21$

**Evaluate each expression.**

11)  $5 + 4(6 + 2) - 2$

12)  $5 - 3 - (4 - 2 \times 2)$

13)  $(2 + 6) \times 5 - 3 \times 6$

14)  $(10 - 6) \div (6 - 1 - 3)$

15. Simplify each of the following expressions and circle.

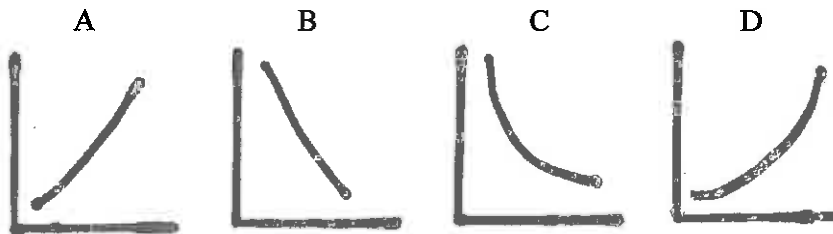
a)  $x^{12}x^{13}$

c)  $\frac{x^7}{x^{-5}} =$

b)  $\frac{2x + 4}{4x - 2}$

### GRAPHING ASSIGNMENT

1. Answer the questions that refer to the following graphs.



a) Which graph(s) represent(s) an inverse relationship? \_\_\_\_\_

b) Which graph(s) represent(s) a direct relationship? \_\_\_\_\_

c) Which graph(s) has/have the general equation,  $y = kx^2$ ? \_\_\_\_\_

2. Suppose you recorded the following data during a study of the relationship of force and acceleration.

Prepare a graph on the graph paper provided showing these data. Answer each question on the back of the graph paper.

Force (N)	Acceleration ( $m / s^2$ )
0.0	0.0
10.0	6.0
20.0	12.5
30.0	19.0
40.0	25.0

a) Describe the relationship between force and acceleration as shown by the graph.

b) Calculate the slope of the graph? Show your work and remember to include units with your slope.

( $N = kgm/s^2$ )

c) Write the specific equation for this line.

d) Calculate the force that must be applied to produce an acceleration of  $15 m/s^2$ ?

e) Calculate the acceleration produced when the force is  $50.0 N$ ?

