Calculus
AP Calculus
Math Analysis
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, AP Calculus, Calculus, and/or Math Analysis 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 / dimensional analysis, and reasoning strategies, which form the foundation of this course.

Assignment:

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

   NOTE: There is an additional reading assignment and handouts for AP Physics 1 on the website.

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. Michelle Sciacca msciacca@district70.org
   Ms. Devon Burke dburke@district70.org

Summer Work 2018 Name_____

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

Simplify each expression.

1) $\frac{7p - 42}{p - 6} \cdot \frac{1}{p + 2}$

2) $\frac{1}{m - 1} \cdot \frac{m^2 - 6m - 16}{m - 8}$

3) $\frac{3x + 30}{x^2 + 13x + 30} \cdot \frac{7x}{3}$

4) $\frac{3}{2r} + \frac{r + 6}{3r^2 - 12r}$

5) $\frac{n + 5}{5n + 3} - \frac{3n}{2n}$

6) $\frac{\frac{2x - 3}{x - 4}}{\frac{x - 4}{2x - 3} + \frac{2x - 3}{x}}$

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

7) $7x - 3y = 9$
$14x - 4y = 12$

8) $16x - 9y = -9$
$-8x + 10y = 10$

9) $14x - 9y = 11$
$-7x + 10y = 22$

10) $12x + 3y = -12$
$-2x + 7y = -28$

Evaluate each expression.

11) $6 \div (6 - 4) + 4 - 4$

12) $(2 + 2)(1 + 4 - 4)$

13) $(15 + 9) \div ((2 - 1) \times 6)$

14) $6 \times 5 + 4 \times 4 + 3$

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

a) 300,000,000 _____ c) 0.0000000000423 _____

b) 422000 _____ d) 0.000238 _____

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

a) 5.985×10^{2} _____ c) 7.065×10^{-3} _____

b) 6.28×10^{-6} _____ d) 2.5×10^{5} _____

17. Convert the following metric measurements:

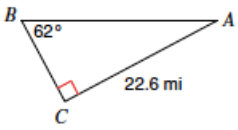
27.5 μg = _____ g 2.5 L = _____ cL 0.47 km = _____ mm

57200 cm = _____ m 75 mL = _____ L 25 km = _____ m

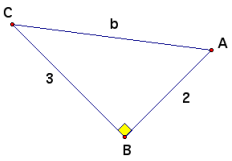
250 m = _____ km 5.6 m = _____ cm 42500 cm = _____ km

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

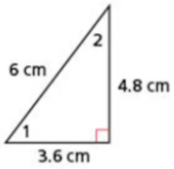
I



II



III



a) For triangle III, solve for the cosine of angle 2.

b) Solve for side b for triangle II.

c) For triangle I, find side a and the hypotenuse WITHOUT using Pythagorean theorem.

19. Simplify each of the following expressions and circle.

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

c) $\dfrac{x^{-14}}{x^{-5}}$

b) $\dfrac{3x - 6}{9x + 12}$

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

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

b) Find the volume (V) of a sample if its density (D) is 2.8 g/cm^3 and its mass (m) is 42.0 g. Carry along the units in your calculation to obtain the proper units in your answer.

21a. Solve for d_2: $\sqrt{\dfrac{d_2}{d_1}} = \dfrac{V_1}{V_2}$

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

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

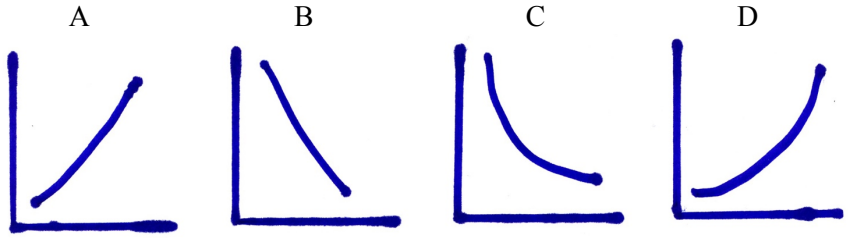
a) Rearrange for v: $\Delta d = vt + \frac{1}{2} at^2$

c) Solve for x: $x^2 = 0.64$

b) Rearrange for T_1: $\frac{P_1V_1}{T_1} = \frac{P_2V_2}{T_2}$

d) Rearrange for x: $3x + y = 15$

23. 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 = k/x? _____

24. Suppose you recorded the following data during a study of the relationship of time and speed.
Prepare a graph on the paper provided showing these data. Answer each question on the back of the graph paper.

Time (s)	Speed (m/s)
0	0
1	20
2	45
3	60
4	84
5	105

a. Describe the relationship between time and speed as shown by the graph.
b. What is the slope of the graph? Show your work and remember to include units with your slope.
c. Write the specific equation for this line.
d. Calculate the time required for the object to reach a speed of 72 m/s.
e. Calculate the speed attained after a time of 7 s.