Summer Assignment for Physics
2025

Welcome to Physics! This summer packet is intended as a warm-up before we get going in September. Please do the packet during the last week or two of the summer, any earlier and it is not really a warm-up. You do not need to know any physics to complete this packet. It is designed to help you practice the skills you will need to use in your physics class. Show all of your work to receive credit, just like you would in a math class.

This packet should be prepared to be submitted in class on the first day of school. You do not need to print it, an assignment will be posted for this purpose.

Algebra

You will need to use skills you learned in Algebra 1 in Physics class this year. Complete the problems below. (Note: all of these values should have units, like meters, seconds etc., but since you are new to physics, we will leave them out for now.)

A very important equation in physics is **F = ma**

1) If a=4 and F=20, what is the value of m?

2) If a=3 and m=6, what is the value of F?

3) If F=27 and m=6, what is the value of m?

Another equation used in physics is $\mathbf{K = \frac{1}{2}mv^2}$

4) If m=10 and v=4, what is the value of K?

5) If v=3 and K=20, what is the value of m?

6) If m=10 and K=20, what is the value of v?

A 3rd equation used in physics is $\mathbf{d = vt + \frac{1}{2}at^2}$

7) If v=0, t=2 and a=10, what is the value of d?

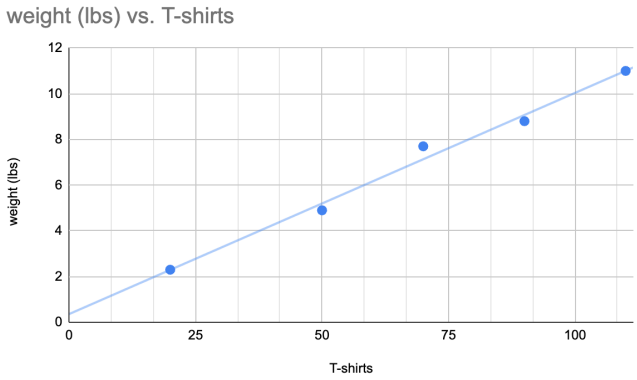
8) If v=1, t=3 and a=2, what is the value of d?

9) If v=0, t=2 and d=10, what is the value of a?

Graphing

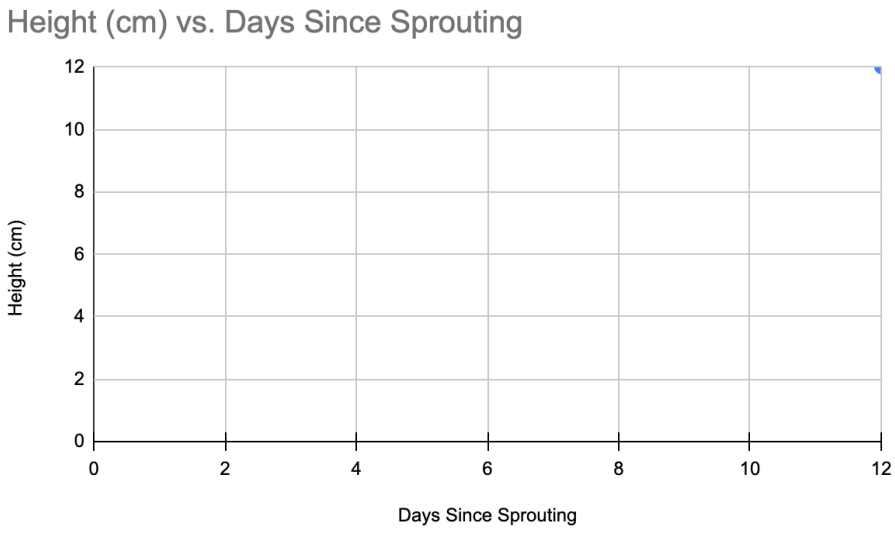
In physics, we use graphing to explore relationships between different values and we almost always use scatter plots. Below is an example of a scatter plot and the data used to create it. Notice that we use a trendline, rather than connecting the data points. Here is a link where you can learn more.

T-shirts	weight (lbs)
20	2.3
50	4.9
70	7.7
90	8.8
110	11



10) a. Use the data in the table below to *create a scatter plot* on the grid provided.

Time Since Sprouting (Days)	Height (cm)
2	2.7
4	5.2
6	5.6
8	9.2
10	11.5

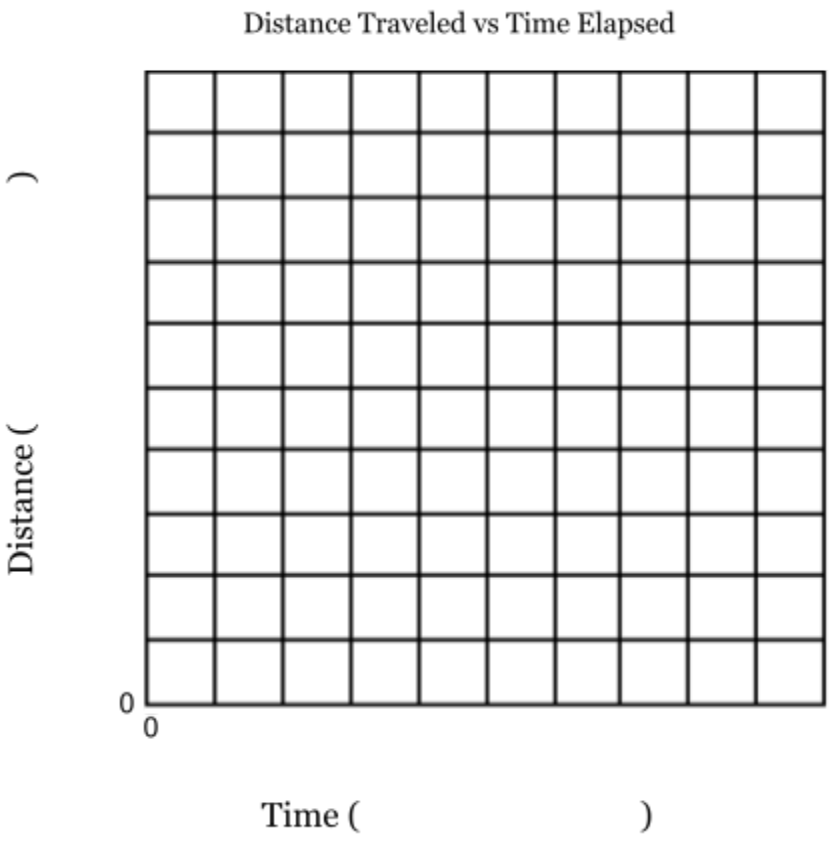


b. Once your data is plotted, *draw in a single trendline*. About half your data points should be below the line and half should be above. (Note: in math class you called this a linear regression.)

c. Recall that the slope of a line is found by choosing 2 points *on the line* (which won't necessarily be data points) and finding rise/run. *Find the slope* of the trendline you drew and *include appropriate units*.

11) a. On the grid provided, *create a scatter plot* using the data table below. You will need to fill in the appropriate units on the axes and decide on the grid markings yourself. Your axes should be marked off in even increments, although the vertical and horizontal axes do not have to have the same increments. These increments should be chosen so that the graph fills most of the space available. The origin has been labeled for you.

Time Elapsed (seconds)	Distance Travelled (meters)
0	0
1	34
2	70
5	180
8	290
11	377
14	480



b. Once your data is plotted, *draw in a single trendline.*

c. *Find the slope* of the trendline you drew and *include appropriate units.*