

Physics 11 Unit 1 Graphing Worksheet

Key

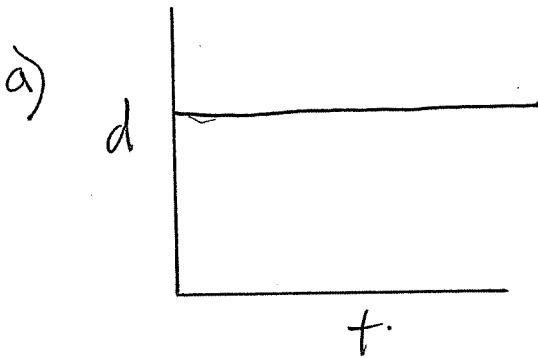
Name: _____

Date: _____

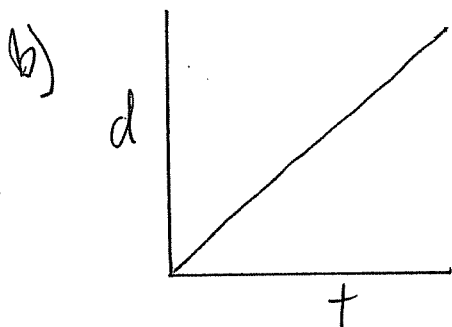
We often graph data because it allows to visualize patterns. Typically patterns are repeatable and once we recognize the pattern we can make predictions.

1. Distance vs time graphs

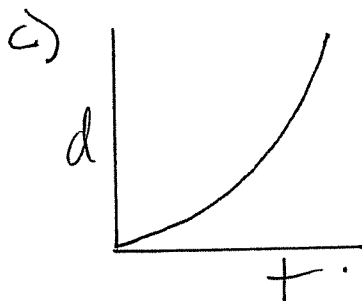
- The slope of a graph is rise/run
- For a d vs. t graph, slope = distance/time = velocity
- Based on this describe the motion depicted in the graphs below.



slope = vel
zero slope, therefore zero velocity



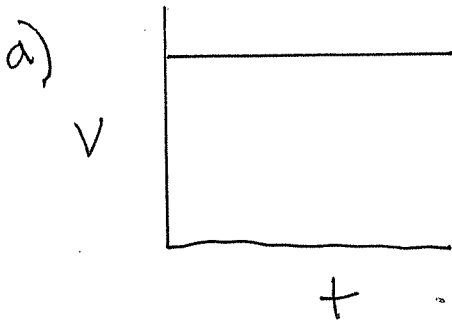
+ slope, positive vel, OR moving forward @ a constant speed



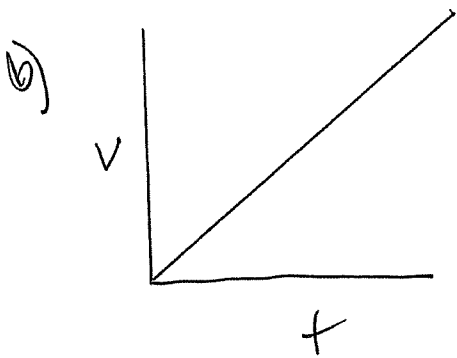
increasing slope = increasing velocity OR accelerating

2. Velocity vs time graphs

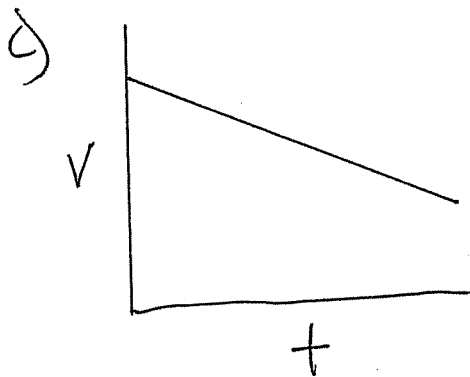
- The slope of a graph is rise/run
- For a v vs. t graph, slope = velocity/time = acceleration
- Based on this describe the motion depicted in the graphs below.



slope = 0 , accel = 0
OR
CONST VEL.



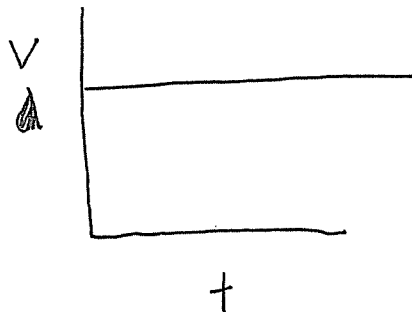
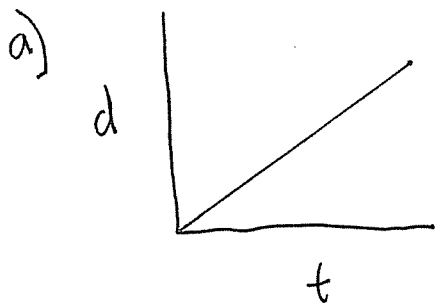
+ slope = ⊕ accel OR speeding up



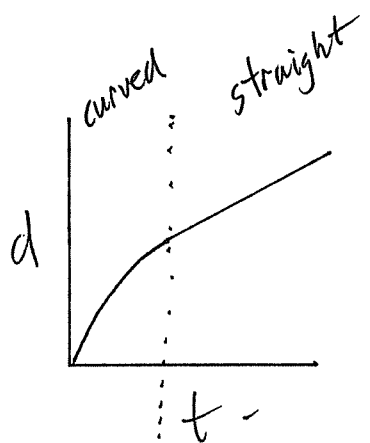
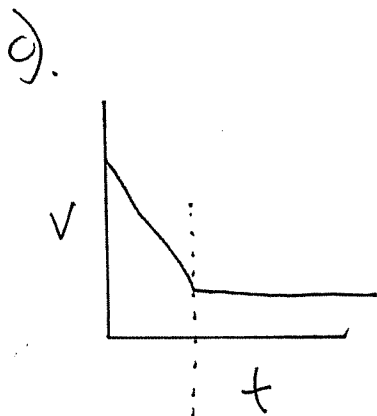
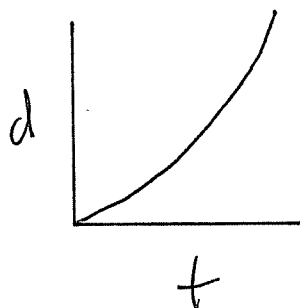
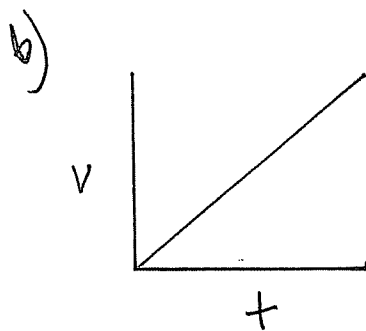
- slope = - accel OR SLOWING DOWN

3. Study the first graph and construct the second graph which represents the same motion.

CONST VEL

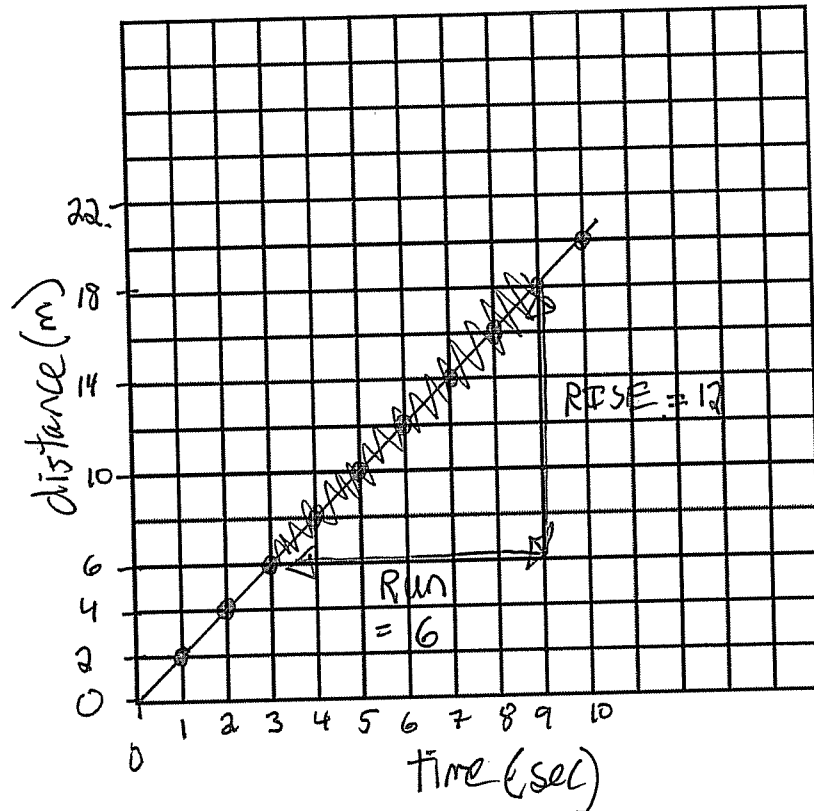


ACCELERATING



4. Graph the following data in the graph provided

Time	Distance(m)
1 sec	2
2	4
3	6
4	8
5	10
6	12
7	14
8	16
9	18
10	20



- include a title, label the axis, draw a line through data
- calculate the slope, show your working

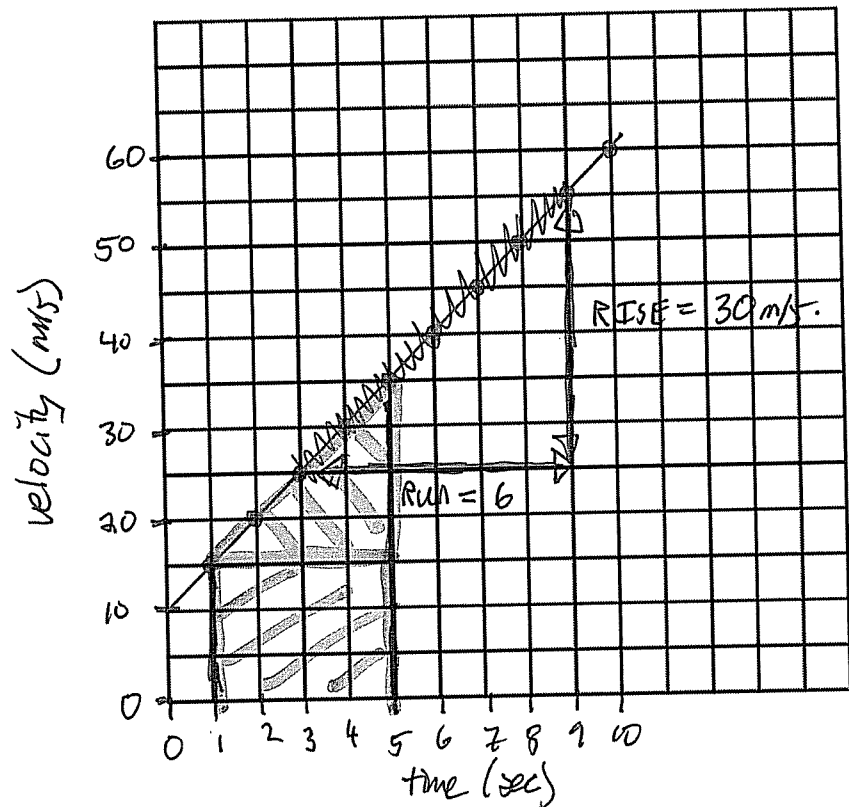
$$\text{slope} = \frac{12}{6} = 2 \text{ m/s}$$

- describe the motion of the object

constant velocity of 2 m/s.

5. Velocity vs Time graph. Graph the following data on the graph provided

Time	velocity
1 sec	15 m/s
2	20
3	25
4	30
5	35
6	40
7	45
8	50
9	55
10	60



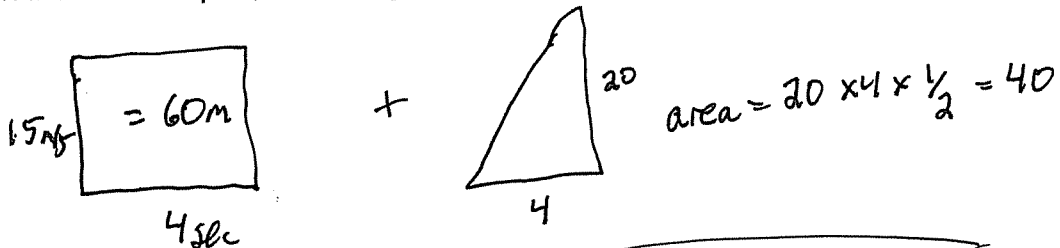
- include a title, label the axis, draw a straight line through the data
- calculate the slope, show your working $\text{RISE/RUN} = 30/6 = 5 \text{ m/s}^2$.
- describe the motion of the object

accelerating @ 5 m/s^2 .

equation of the line.

$$V = (5 \text{ m/s}^2)t + 10 \text{ m/s}$$

- The area under the graph represents the displacement of the object. Calculate the area under the graph (the displacement) between 1 second and 5 seconds. Break the area down into two shapes, a rectangle and a triangle. Show your working.

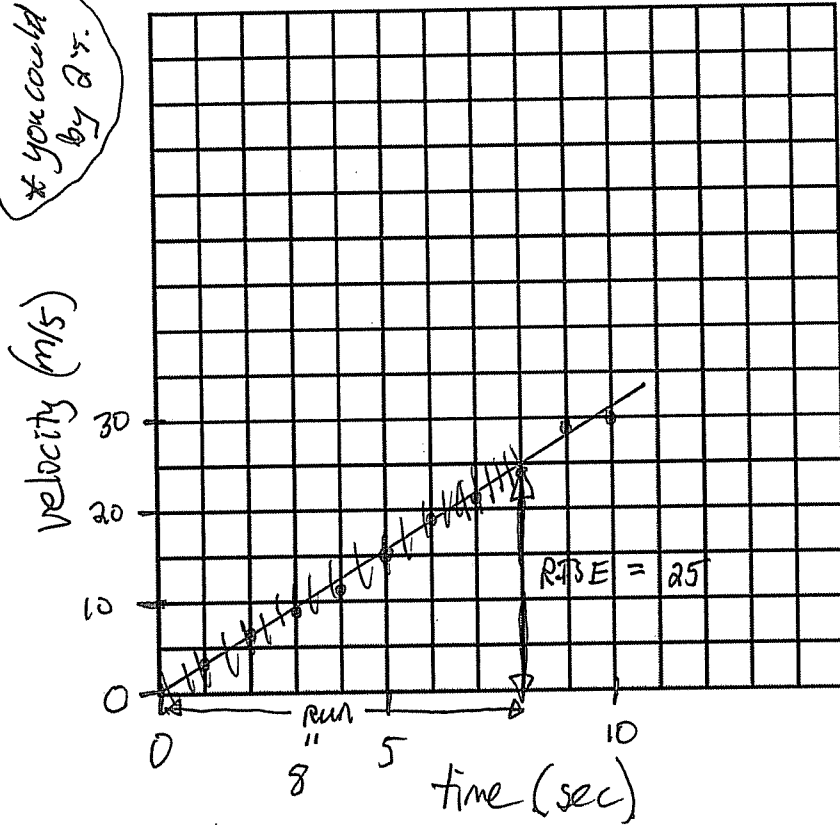


$$\text{Total area} = 60 + 40 = 100 \text{ m}$$

6. Graph the following data on the graph provided

Time	velocity
1 sec	3
2	6
3	9
4	11
5	15
6	19
7	21
8	24
9	29
10	30

* you could also go up by 2.5.



a) include a title, label the axis, draw a best fit line through data

b) calculate the slope, show your working - use points from the line. $\frac{25}{8} = 3.1 \text{ m/s}^2$.

c) write the specific equation of the line

$$v = (3.1 \text{ m/s}^2)t + 0 \text{ m/s}$$

↓
(I rounded)

d) describe the motion of the object

it is accelerating @ 3.1 m/s^2 .