

# Constructing a Line Graph

# Experimental Data

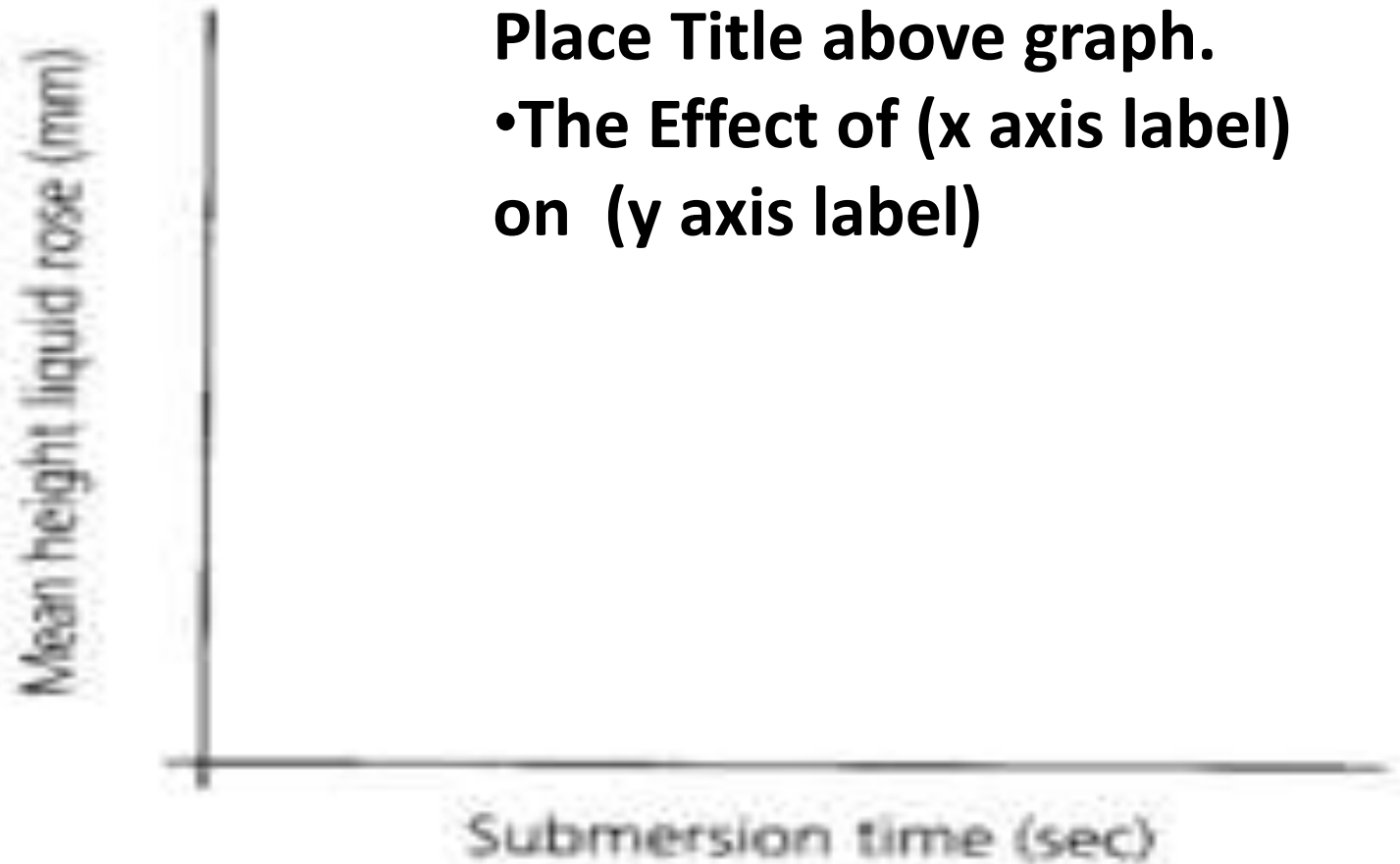
**x**

**y**

<i>Independent Variable</i> Submersion time (sec.)	<i>Dependent Variable</i> Mean height liquid rose (mm)
10	11
15	14
20	14
25	15
30	16
35	17
40	19

# Labels & Title

## 1. Draw and Label Axes



Place Title above graph.

- The Effect of (x axis label) on (y axis label)

# Data Pairs

## 2. Write Data Pairs

(10, 11)

(15, 14)

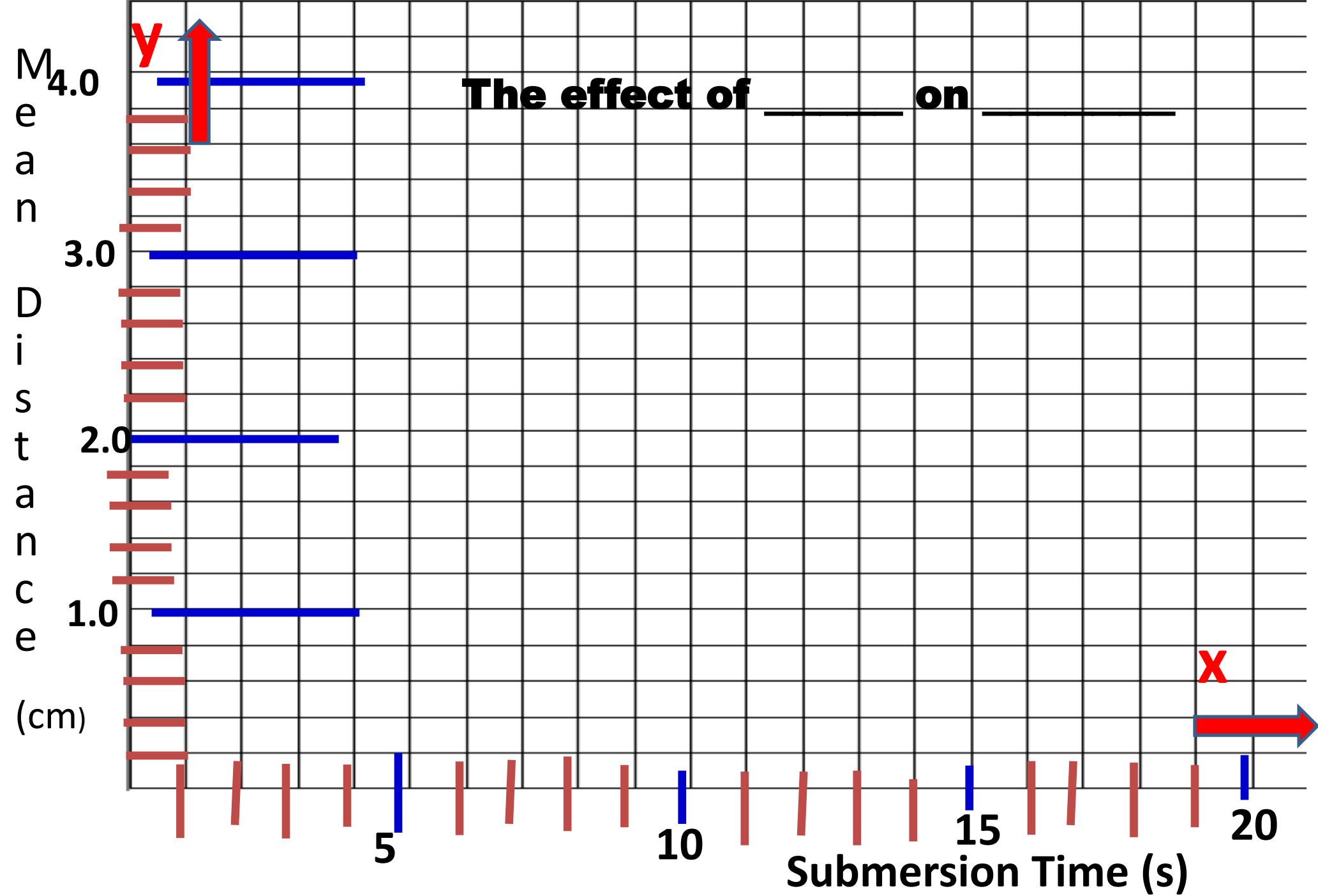
(20, 14)

(25, 15)

(30, 16)

(35, 17)

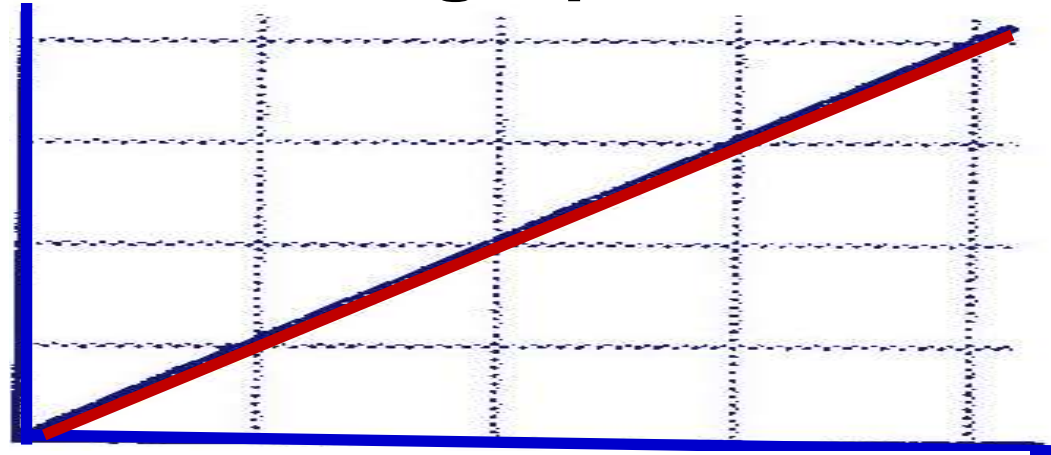
(40, 19)



# Slope

Sketch the graph.

distance (meters)



time (seconds)

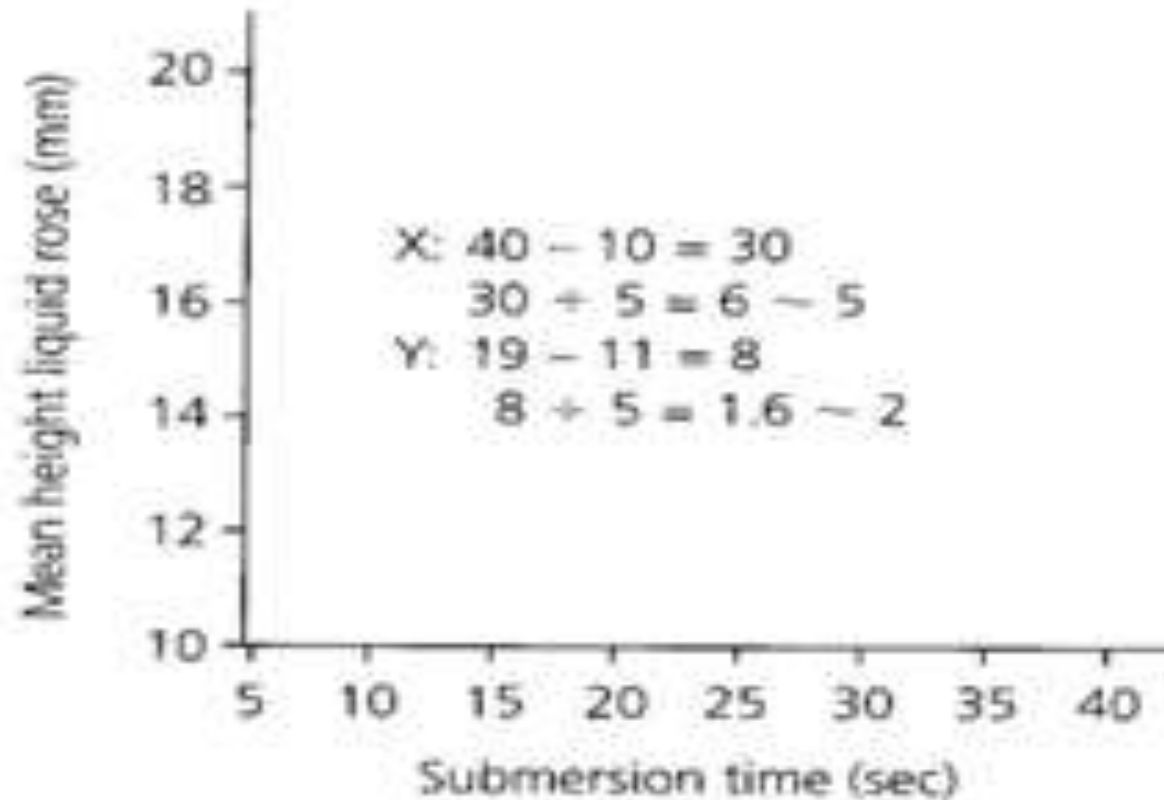
1. What does the slope of this line represent? **speed**

$$\text{slope} = \frac{\text{rise}}{\text{run}} = \frac{y}{x} = \frac{\text{distance (d)}}{\text{time (t)}}$$

$$\text{speed} = \frac{\text{distance (d)}}{\text{time (t)}}$$

# Determine Scale for Axis

## 3. Determine Scales for Axes

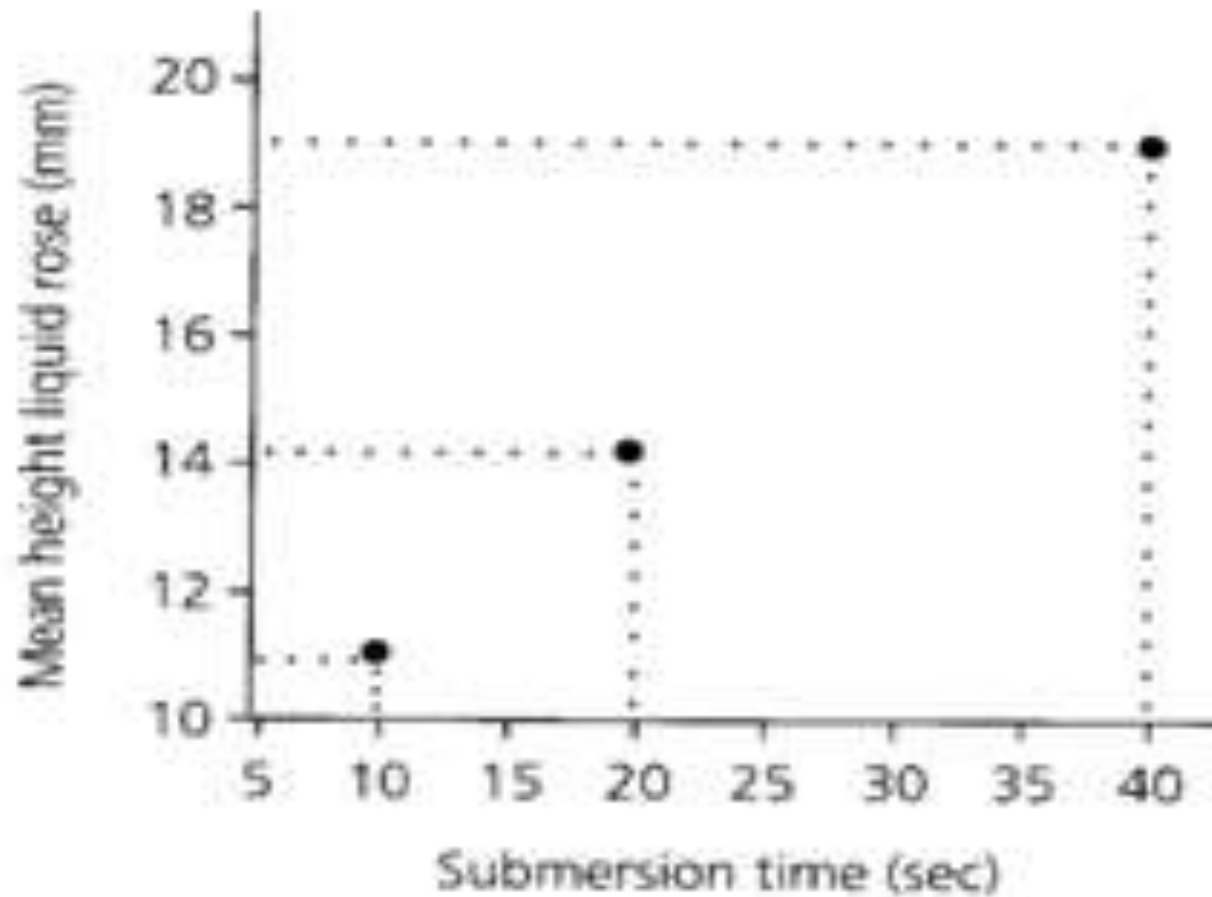


For each axis

$$\frac{\text{maximum value} - \text{minimum value}}{5}$$

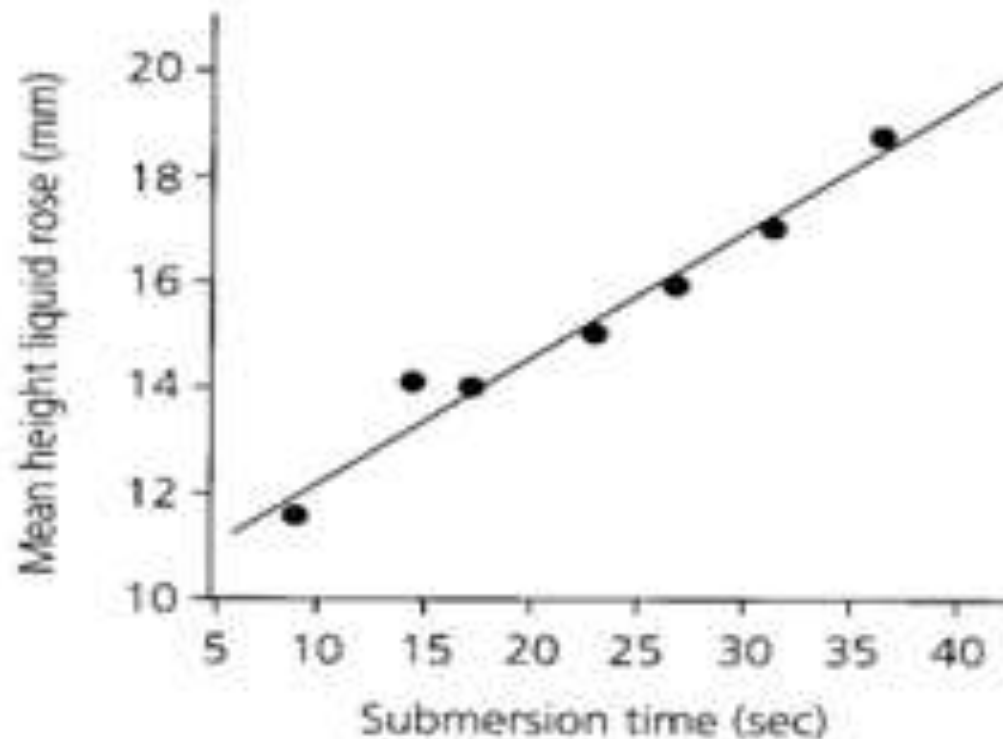
Then round off to a nearest common counting unit.

## 4. Plot Data Pairs





## 5. Summarize Trends



**Draw “best fit” trend line**

As the length of time the paper towel was submerged increased, the height the liquid rose also increased.



# Practice

**An experiment was performed to see how altitude effects atmospheric pressure.**

**The data is summarized as in the data table below.**

Copy the data table including the blank boxes in your notebook

- 1. Fill in the blanks for**
- 2. Label the independent and dependent variable** on the data table.
- 3. Which variable is x and which is y?** Label the data table.

<b>2.</b>	<b>2.</b>
<b>3.</b>	<b>3.</b>
<b>Altitude, (1000 feet)</b>	<b>Pressure (psi)</b>
<b>0</b>	<b>14.7</b>
<b>5</b>	<b>13.9</b>
<b>10</b>	<b>11.5</b>
<b>15</b>	<b>9.7</b>
<b>20</b>	<b>9.1</b>

# Practice answers

<b><i>2. independent variable</i></b>		<b><i>2. dependent variable</i></b>	
<b>3. x axis</b>		<b>3. y axis</b>	
Altitude, (1000 feet)		Pressure (psi)	
0		14.7	
5		13.9	
10		11.5	
15		9.7	
20		9.1	

# Bell Work, Wednesday, Sept 14

Use the data from Tuesdays bell work.

Create a line graph for Tuesday's data as follows:

1) Draw and label the axes with the IV (independent variable) and DV (dependent variable) on the correct axis.

2) Determine the scale for the axes and number the axes.

**X= IV**

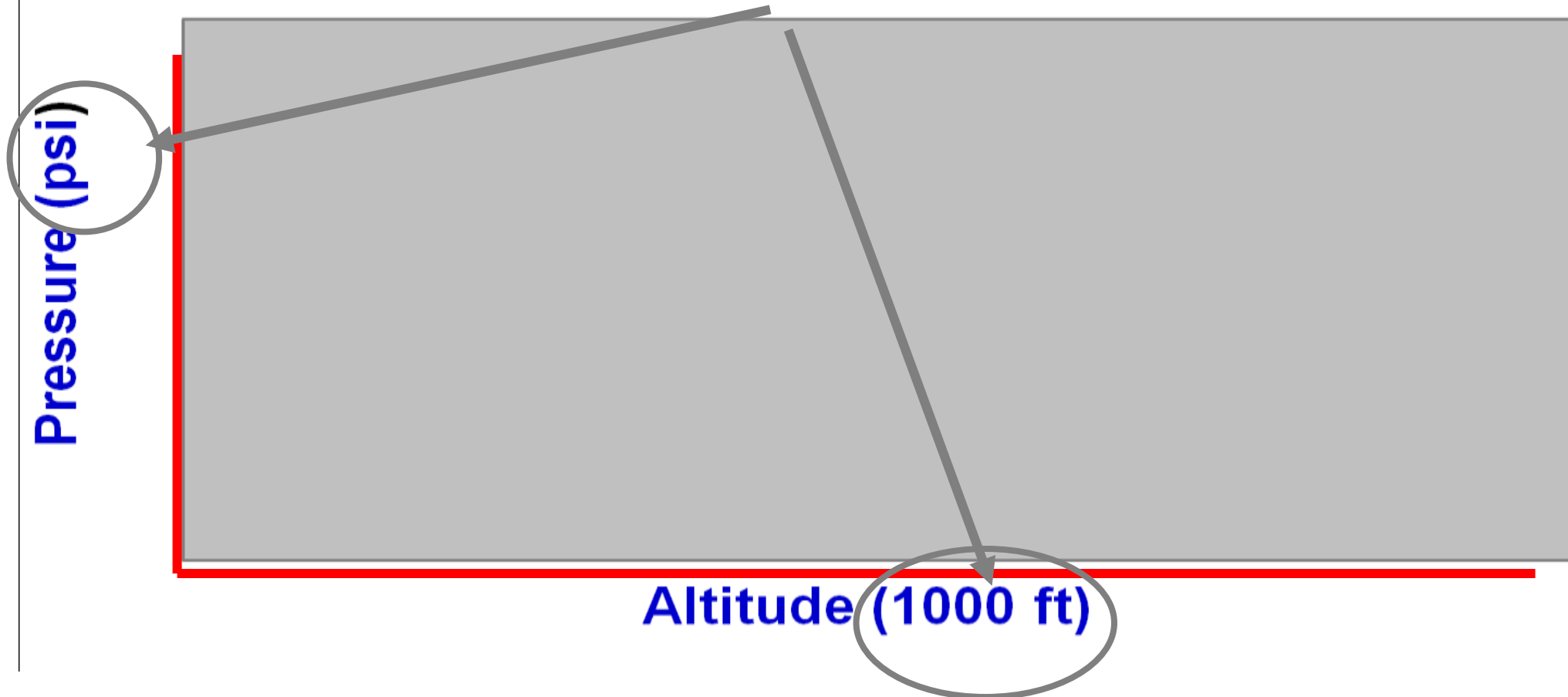
**Y =DV**

Altitude, (1000 feet)	Pressure (psi)
0	14.7
5	13.9
10	11.5
15	9.7
20	9.1

# Bell Work Answers, Wednesday, Sept 14

1. Draw and label the axes with the independent variable and dependent variable on the correct axis.

**Notice the units in the labels.**



# Bell Work Answers, Wednesday, Sept 14

2) Determine the scale for the axes and number the axes.

$$\text{Scale} = \left( \frac{\text{maximum} - \text{minimum}}{5} \right), \text{ round - off}$$

**x axis scale:**

$$20 - 0 = 20$$

$$20 \div 5 = 4,$$

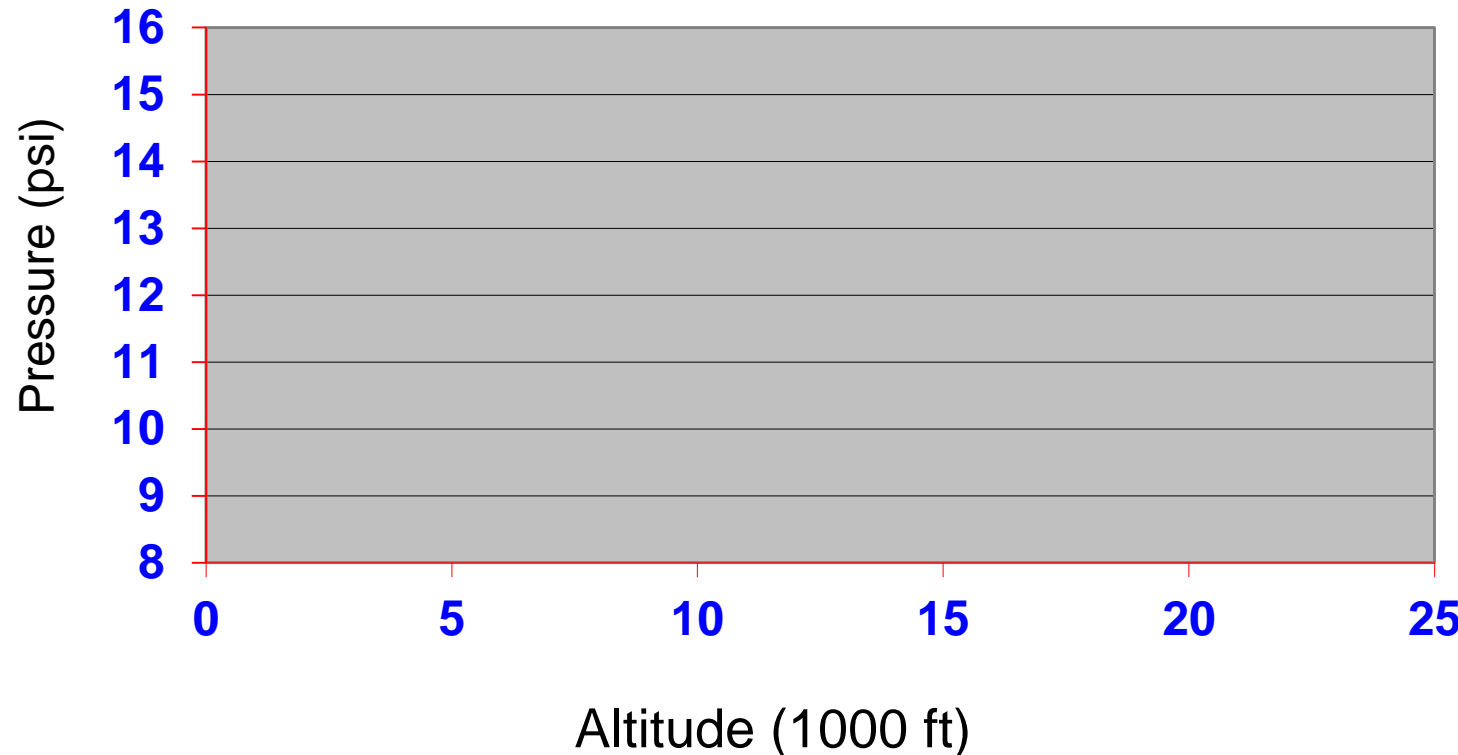
**round up to 5**

**y axis scale:**

$$14.7 - 9.1 = 5.7$$

$$5.7 \div 5 = 1.14,$$

**round to 1**



# Practice

Create a line graph for Tuesday's data as follows:

1) Plot the data pairs.

2) Draw a trend line.

3). Write a hypothesis.

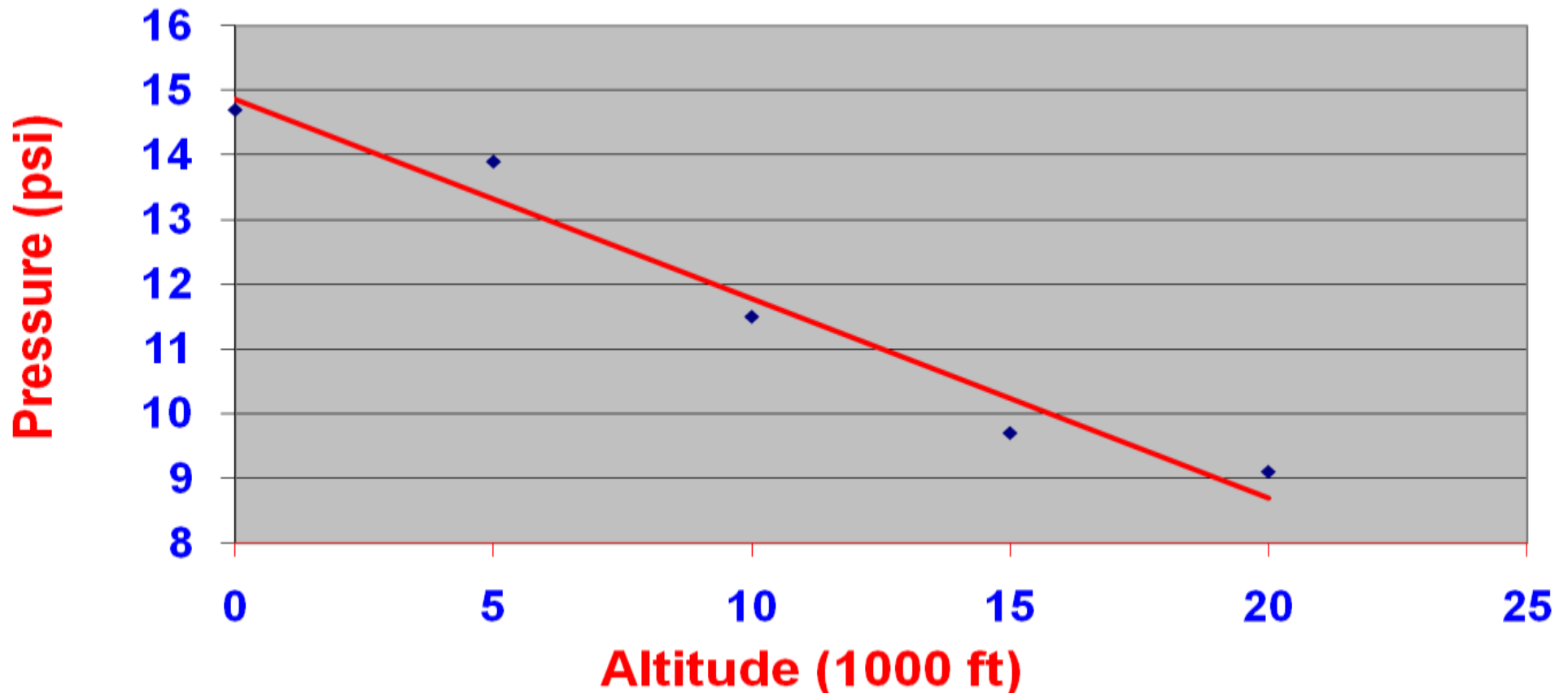
<b>IV</b>	<b>DV</b>
<b>x</b>	<b>y</b>
Altitude, (1000 feet)	Pressure (psi)
0	14.7
5	13.9
10	11.5
15	9.7
20	9.1



# Practice

- 1) Plot the data pairs.**
- 2) Draw a trend line.**

**Trend line: A straight line that passes as close to as many points as possible.**

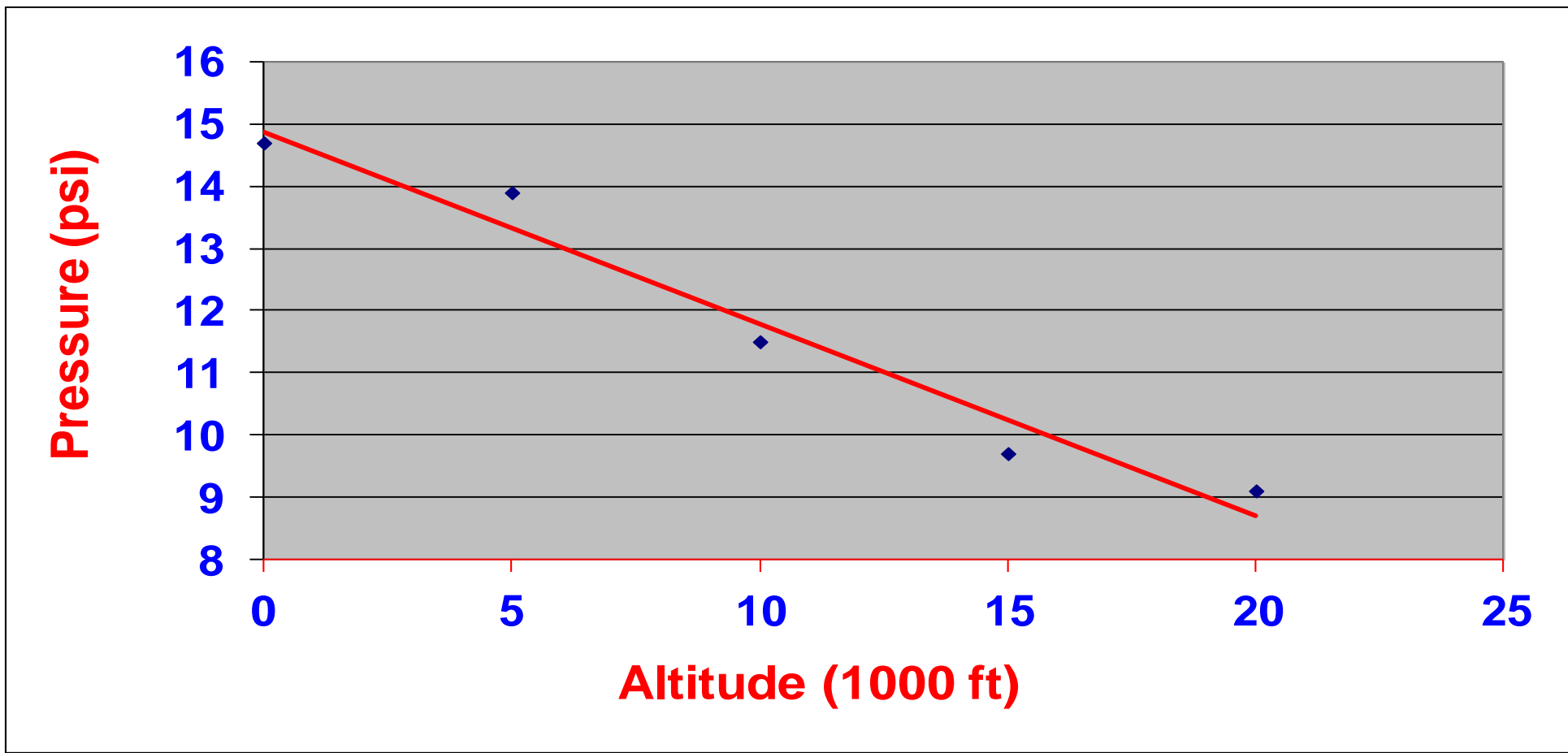


# Practice

1. Hypothesis: A prediction of how changing the independent variable will change the dependent variable.

2.  
If the \_\_\_\_\_ is \_\_\_\_\_  
*(independent variable) (explain how the independent is changed)*  
then the \_\_\_\_\_ will \_\_\_\_\_.  
*(dependent variable) (explain how the dependent will change)*

If the altitude is increased  
(independent variable) (explain how the independent is changed)  
then the air pressure will decrease.  
(dependent variable) (explain how the dependent will change)



# Did you:

- 1. Draw and label axis?**
- 2. Give graph a title (The Effect of    (x)    on    (y)   )?**
- 3. Determine scale for each axis and scale each axis (place numbers on each axis)?**
- 4. Plot the data (put a point on the graph for each ordered pair)?**
- 5. Summarize trends by drawing a best fit line (draw a trend line)?**
- 5. Answer the lab questions?**
- 6. Write the title of the experiment in your table of contents and assign a page number?**
- 7. Put the title of the experiment and your lab group color at the top of a new page in your book?**

