

Confusing Colors

Student Worksheet

Name _____

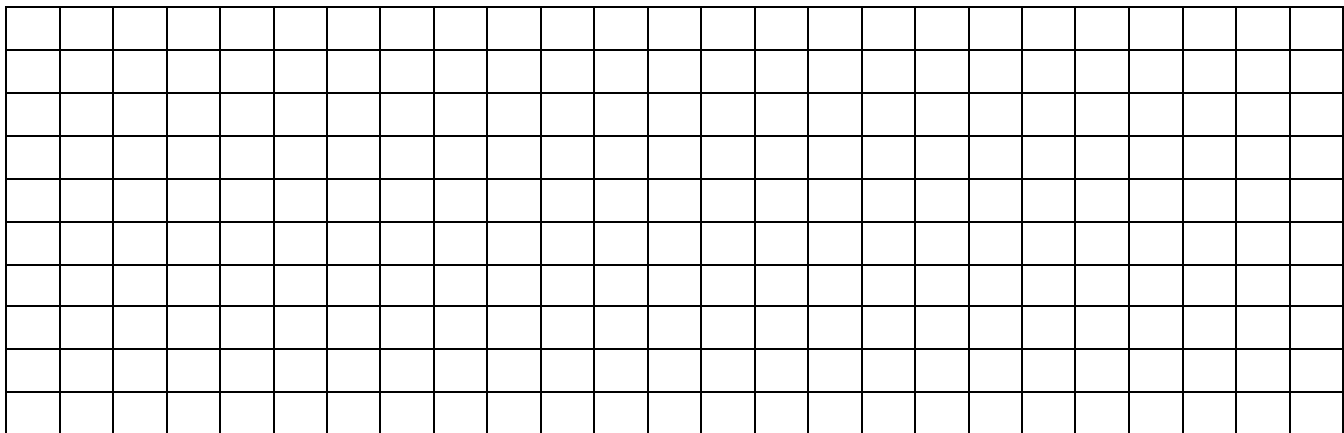
I. Practicing Lines of Best Fit.

One of the most exciting events in the Olympics is the men's pole vault event. The following is a list of Olympic years and the height of the winning jump that year. Note that the Olympics were not held in 1916, 1940, and 1944.

Year:	1904	1908	1912	1920	1924	1928	1932	1936	1948	1952
Height (ft):	11.5	12.2	13.0	13.4	13.0	13.8	14.1	14.3	14.1	14.9

Year:	1956	1960	1964	1968	1972	1976	1980	1984	1988	1992
Height (ft):	15.0	15.4	16.7	17.7	18.0	18.0	19.0	18.9	19.8	19.0

1. Make a scatter plot of the points for the years and heights using dots. Let the x-axis represent the year number, 1904 = 4, 1908=8, 1912=12 . . . Let the y-axis represent the height of the winning jump. Do not connect the dots with line segments! Plot each ordered pairs with the year number as x and the height as y. Label each axis appropriately.



2. Draw a line of best fit for the data points of the year number and height. **[Remember: A best-fit line is a line that best approximates the slope of the majority of the points that have been plotted. It is not necessary for the line to intersect any of the actual points. You should have some points above the line and some points below the line.]**

3. Write the equation in slope-intercept form for the line on the graph using two points that are on the line. Be sure and pick two points that you can distinguish the exact ordered pair for. You must show your work to receive credit.

4. What does the slope of the line mean? Hint—What units are they measured in?
5. Predict how high the winning jump will be in 2004.
6. Predict how high the winning jump will be in 2008.
7. As the Olympics progressed, the height of the winning jump increased. Do you think that it will continue to increase over time or will it level off? Why?

II. Confusing Colors Experiment

Things You Should Understand Before You Start

1. Each person will look at a list of color words—red, green, black, blue . . . Each list varies in length and each word will be written in color.
2. You will be asked to say the "color of the ink" for each word as quickly as possible. Your time will be recorded.
3. We will use two different lists: Matching and Non-matching. The matching list has the color words in the appropriate color. I.e. blue is actually blue ink, and green is actually green ink. The non-matching are not.
4. We will use three different timers just to control any errors and find the average of the three times.
5. You will keep track of the word list lengths and corresponding times below.

Matching Experiment

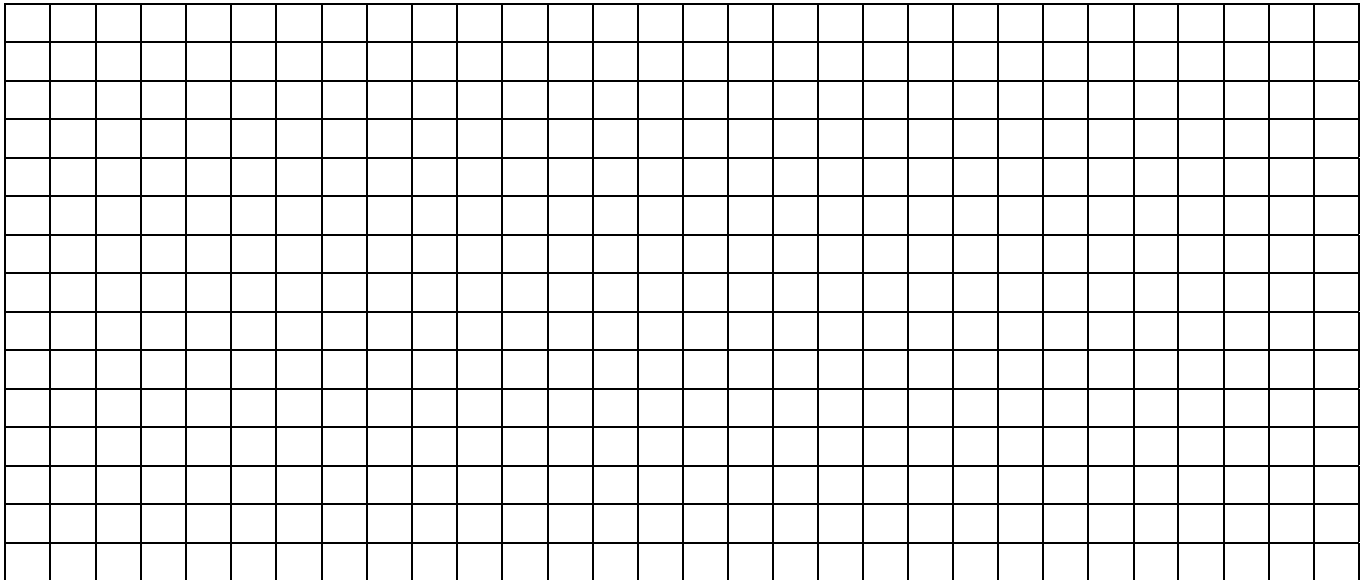
Length	First Timer	Second Timer	Third Timer	Average Time

Non-matching Experiment

Length	First Timer	Second Timer	Third Timer	Average Time

You must show your work and reasoning on each step to get any credit for this experiment. Also, when you draw the graphs make the length of the word list on the x-axis and the time in seconds on the y-axis. Remember to label each axis correctly.

1. Make a scatter plot of the points for the matching experiment using just **dots**. Do not connect the dots with line segments! Plot the ordered pairs with the word length as x and the average time as y.
2. Make a scatter plot of the points for the non-matching experiment using **squares** on the same coordinate plane as in problem #1. Again, do not connect the squares with line segments!



3. Draw a best-fit line for the data points of the matching and the non-matching graph.
4. Write the equation in slope-intercept form for the line on the matching graph using two points that are on the line. Be sure and pick two points that you can distinguish the exact ordered pair for.
5. Write the equation in slope-intercept form for the line of the non-matching graph using two points that are on the line. Be sure and pick two points that you can distinguish the exact ordered pair for.
6. What do the slopes of your lines mean? Hint—What units are they measured in?
7. Predict how long it would take to read a list of 100 matching words.
8. Predict how long it would take to read a list of 75 non-matching words.
9. Why is the equation of a line important for making predictions?

CONFUSING COLORS

Grading Rubric

Grading Scale	Criteria
EXCELLENT 4	<ul style="list-style-type: none">-Awesome class participation-All answers completed with all work shown.-Completed detailed graphs with appropriate titles and scales-Great written responses with clear concise sentences showing complete understanding.
GOOD 3	<ul style="list-style-type: none">-Good group participation-All answers completed with some work shown.-Good graphs-Good written responses with complete sentences.
SATISFACTORY 2	<ul style="list-style-type: none">-Adequate group participation-Most answers completed with little work shown.-Good graphs but missing scale and/or labels-Written responses contains incomplete sentences or thoughts.
NOT YET 1	<ul style="list-style-type: none">-Unsatisfactory group participation-Some answers completed-Poor graphs-Written response is poorly written with no grasp of understanding or thought process.