

Which Line Fits Best?

WORKSHEET 1 - continued

Name _____

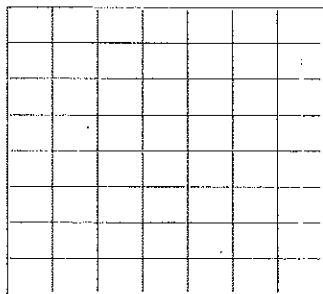
Date _____

Each student should answer the following questions:

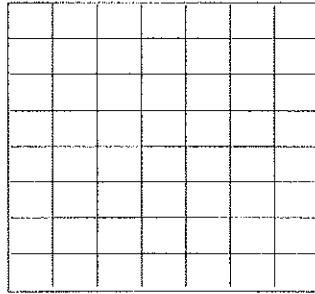
1. Write two or three sentences describing what patterns you see in the graph.

2. Mathematically describe the class scatter plot.

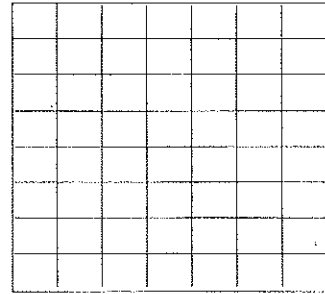
3. Sketch a scatter plot to illustrate each correlation.



Negative correlation



No correlation



Positive correlation

Which Line Fits Best?

WORKSHEET 2 - ESTIMATED TREND LINE

Name _____

Date _____

Each group will:

1. Position the black line over each individual student's scatter plot to indicate where a trend exists.
 2. Choose two points on the line and draw the line.
 3. Find the equation of the line.
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4. Compare the lines and equations among group members. Decide which line best represents the trend.
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5. Transfer the line to the second overhead grid and turn it in.

STUDENT NOTES

INSTRUCTIONS FOR THE GRAPHING CALCULATOR:

••These instructions are for the TI-80 calculator. If you have a different calculator, please refer to your manual for instructions.••

Before you begin:

Press **Clear** to clear anything that may be on your screen. You should now have a blank screen with the cursor blinking.

Press **STAT** and choose **4 Clrlist 2nd L₁ , 2nd L₂** Enter. This will clear any data previously entered in lists 1 and 2 in your calculator.

Press **2nd STAT PLOT** to retrieve the stat plot menu. Choose **4 Plotsoff** and press **Enter** to clear any old plots that may be already in memory.

Press **Y=** then **Clear** to clear any graphs which may already be present in your **Y=** menu.

To input data:

Press **STAT**, then **Enter** to input data. You will see two lists **L₁** and **L₂** displayed. You will begin typing the **L₁** list which will be the values for the diameter of each circular object. Press the appropriate value for the diameter and press **Enter**. The screen will automatically be highlighted to the next value. When you finish entering all diameters, press the right arrow key (**→**) to input the **L₂** values or the circumference values in the same manner. Be sure you have the **L₂** values that correspond to the appropriate **L₁** values.

To graph the scatter plot:

Press **2ndSTAT PLOT** to retrieve the stat plot menu. **1 PLOT** will be highlighted. Press **Enter**. **OFF** will be highlighted. Use left arrow key (**←**) to highlight **ON** and press **Enter**. This will turn on the plot. Use the down arrow key (**↓**) to highlight the scatter plot. It will be the first graph after **Type**. Press **Enter**. Use the down arrow key (**↓**) to **L₁** and press **Enter**. Use the down arrow key (**↓**) to **L₂** and press **Enter**.

Press **Window**. This is where you set how big your viewing area will be. The window should be set so that the **XMin** and **XMax** correspond to the values in your **L₁** list. The same should be done for the **YMin** and **YMax** values.

Press **Graph**. The display should show your scatter plot.

To find the equation of the line of best fit:

Press **STAT** and use the right arrow key to **CALC**. This will give you a new menu.

Choose **3 LinReg(aX+b)**. The display **LINREG(aX+b)**. Choose **2nd L₁ , 2nd L₂** and hit **Enter**. The display will now show values for **a**, **b**, and **r**.

To graph this line:

Choose **Y=** then **Y- VARS**. Choose **2 STATISTICS**. Use right arrow keys (**→**) to **EQ** and choose **5 REGEQ**. The **a** and **b** values will appear in the **Y₁** equation. Press

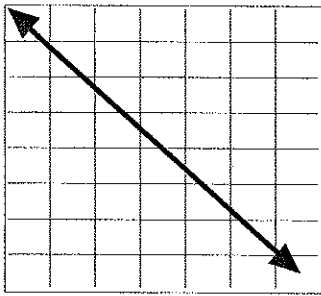
Graph to display the line of best fit.

Answers to Worksheet 1

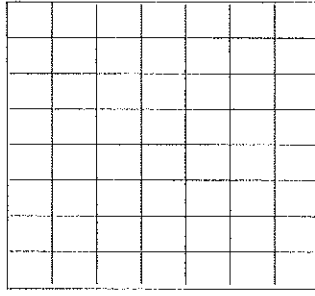
The answers to steps 1-6 will vary from group to group.

Questions.

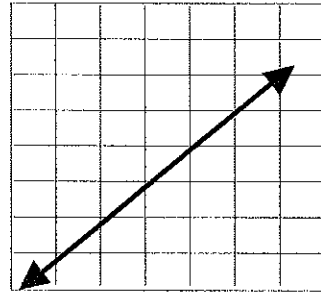
1. The scatter plot follows a linear pattern that appears to intersect at (0,0).
2. Students should describe a linear pattern with a positive correlation.
3. Students should graph data points on or around the lines graphed below.



Negative correlation



No correlation



Positive correlation

Answers to Worksheet 2

Student responses will vary according to data collected. The ideal equation of the line should be $y=3.14x$.