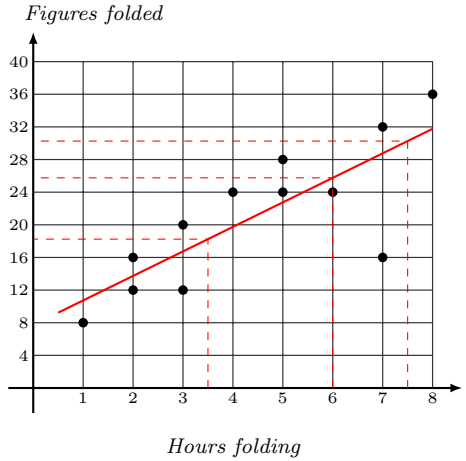
Artifact 19 – Trend Lines and Predictions

Name Period

trend line a straight line drawn through a scatterplot that approximates the linear relationship of the data; also called a line of best fit.
prediction a value estimated from the trend line, not read from one data point.
Draw it: about half the points above the line, half below. **Use it:** go from the given value to the line, then across or down. Read the line, not the nearest dot.

Origami Club

An origami club recorded the hours it folded and the figures it finished at twelve meetings.



1. Draw a trend line. How many points are above it? How many below?
A line through the middle: about half above and half below (5 and 7, 6 and 6, or 7 and 5). Least squares $y \approx 3x + 7.7$.

2. Use your line. Predict the figures finished in a 7.5-hour meeting.
About 30 figures (26 to 34).

3. Predict the figures finished in a 3.5-hour meeting.
About 18 figures (14 to 22).

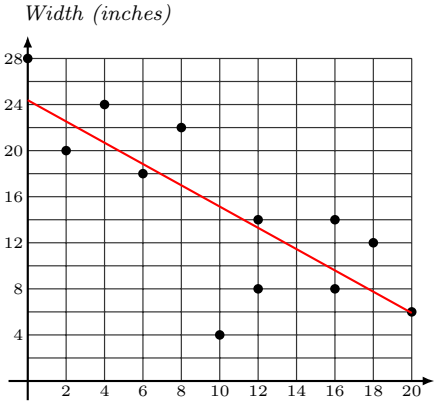
4. Predict the figures finished in a 6-hour meeting.
About 26 figures (22 to 30).

5. Predict the hours a meeting needs to finish 22 figures.
About 4.7 hours (4 to 5.4).

6. Predict the hours a meeting needs to finish 14 figures.
About 2.1 hours (1.4 to 2.8).

Puddle Drying

A puddle's width was measured twelve times after a storm.



7. Draw a trend line. How many points are above it? How many below?
About half above and half below. Least squares $y \approx -0.9x + 24.4$.

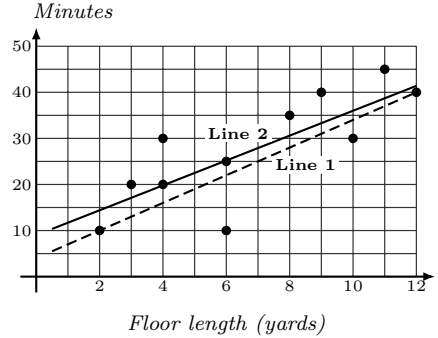
8. Predict the width 5 hours after the rain stopped.
About 20 inches (18 to 22).

9. Predict the width 14 hours after the rain stopped.
About 11 inches (9 to 13).

10. Predict the width 40 hours after the rain stopped. Which of your three predictions do you trust least? Explain.
The line gives about −13 inches: impossible, a width cannot be negative. Trust the 40-hour prediction least; 40 is far beyond the data, where the pattern cannot hold.

Mopping

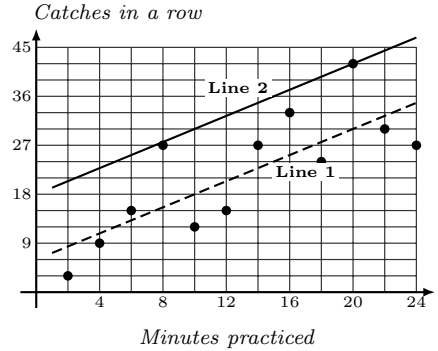
Two students drew lines for the same data.



11. Which line is the better trend line? How can you tell?
Line 2: 6 points above, 6 below. Line 1 leans on the two end points: 7 above, 3 below.

Juggling Practice

Two students drew lines for the same data.



12. Which line is the better trend line? How can you tell?
Line 1: 5 above, 7 below. Line 2 has the right tilt but sits above the cloud: 0 above, 11 below.

Check, at the end of class: Exit Ticket 3.01 on the Student Page. Three questions, on your own. Work here. Keys: 1 (D), 2 (B), 3 written: not a good trend line, it sits above most of the data.