

2.6 Fitting a Line to Data TEXAS a.5, 2A.1.B

MATERIALS • overhead projector • overhead transparency • metric ruler • meter stick • graph paper

QUESTION How can you approximate the *best-fitting line* for a set of data?

EXPLORE Collect and record data

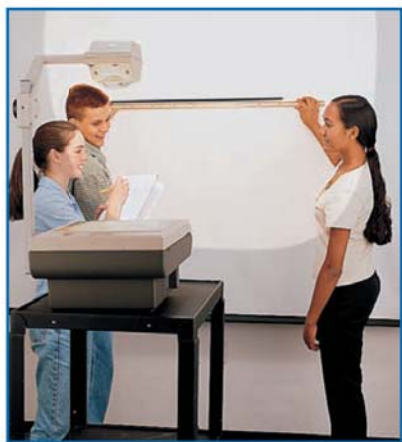
STEP 1 Set up

Position an overhead projector a convenient distance from a projection screen. Draw a line segment 15 centimeters long on a transparency, and place the transparency on the projector.



STEP 2 Collect data

Measure the distance, in centimeters, from the projector to the screen and the length of the line segment as it appears on the screen. Reposition the projector several times, each time taking these measurements.



STEP 3 Record data

Record your measurements from Step 2 in a table like the one shown below.

Distance from projector to screen (cm), x	Length of line segment on screen (cm), y
200	?
210	?
220	?
230	?
240	?
250	?
260	?
270	?
280	?
290	?

DRAW CONCLUSIONS Use your observations to complete these exercises

- Graph the data pairs (x, y) . What pattern do you observe?
- Use a ruler to draw a line that lies as close as possible to all of the points on the graph, as shown at the right. The line does not have to pass through any of the points. There should be about as many points above the line as below it.
- Estimate the coordinates of two points on your line. Use your points to write an equation of the line.
- Using your equation from Exercise 3, predict the length of the line segment on the screen for a particular projector-to-screen distance less than those in your table and for a particular projector-to-screen distance greater than those in your table.
- Test your predictions from Exercise 4. How accurate were they?

