Walk the Plank

**SOLUTIONS**

As you, your teacher, and other classmates walk the plank, use the chart below to record the weight shown on the scale.

Data will depend on the teacher's and students' weights.

NAME OF WALKER	DISTANCE FROM SCALE						
	0"	12"	24"	36"	48"	60"	72"
TEACHER							

Using the data from the chart, plot the points. Use a different color for each person.

Graphs will vary, but each individual's data should form a linear relationship.

WEIGHT SHOWN ON SCALE (POUNDS)

DISTANCE FROM SCALE (INCHES)
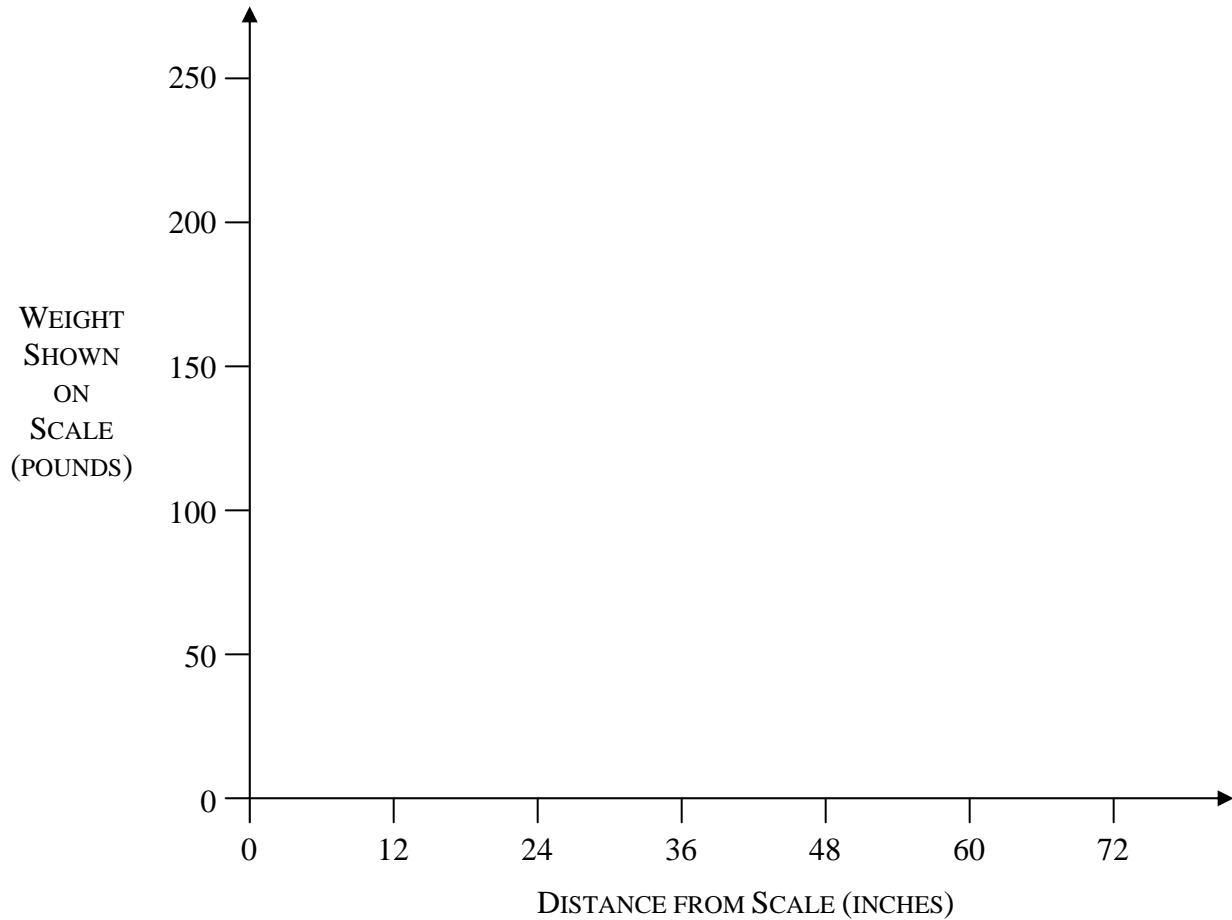
1. How are the lines similar?

   All lines have a negative slope and the same *x*-intercept.

2. How are the lines different?

   The slope of each line is different, as is the *y*-intercept.

3. What does the slope represent in the context of this situation?

   The slope represents the rate of change in terms of pounds per inch. A slope of -2, for instance, indicates that the weight shown on the scale decreases 2 pounds when that person moves 1 inch.

4. What does the y-intercept represent in the context of this situation?

   The *y*-intercept represents the combined weight of the person and the plank.

5. Write an equation for the line representing the weights shown when the teacher walked the plank, and write an equation for your line.

   Equations will vary.

6. Imagine that a 3000-pound elephant walked the plank. What weight would be shown on the scale if the elephant stood at the 48" line?

   The scale would show a weight of about 3050 pounds when the elephant is at 0" and a weight of 0 pounds at 72". The slope of the line for the elephant would be (0 – 3050) / 72 = -42.36. If the elephant stood at 48", the scale would show a weight of about 3050 – 48(42.36) ≈ 1016.72 pounds

7. Where would the elephant need to stand for the scale to show a weight of 2000 pounds?

   If the elephant stood at a distance of *d* inches, the scale would show 2000 pounds when 3050 – 42.36*d* = 2000. This happens when *d* ≈ 24.8 inches.