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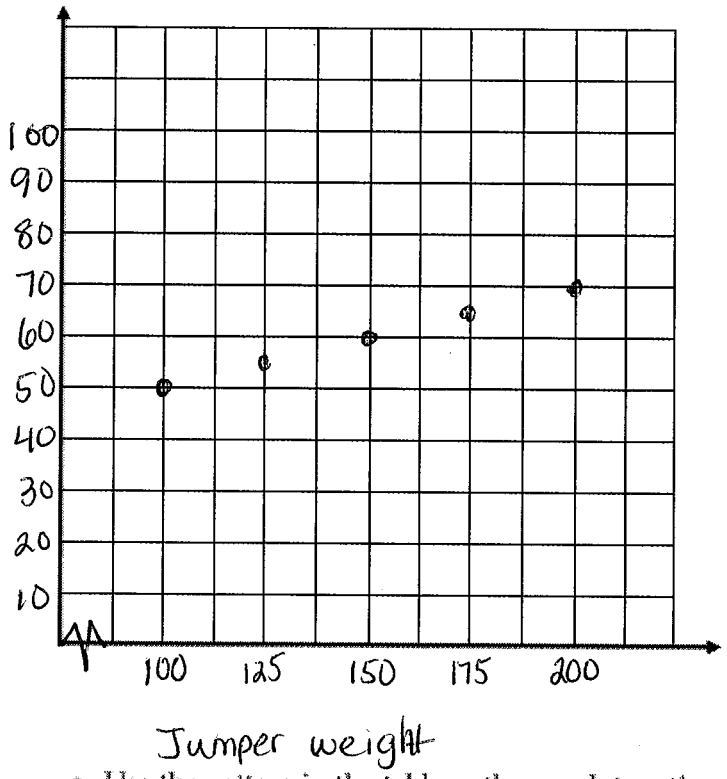
The table below gives data from tests of a full-size bungee jump.

Jumper Weight (in pounds)	100	125	150	175	200
Stretched Cord Length (in feet)	50	55	60	65	70

a. Which variable does it make sense to consider independent and which dependent?

Jumper weight is independent and stretched cord is dependent because the amount the cord is stretched is affected by the weight

b. Plot the given data on a coordinate graph.



c. Use the pattern in the table or the graph to estimate the stretched cord length for jumpers who weigh:

i. 85 pounds

47 feet

ii. 135 pounds

57 feet

iii. 225 pounds

75 feet

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d. Would it make sense to connect the points on your data plot? Explain your reasoning.

Yes, because there are weight values in between those that we have graphed.

e. Describe the overall pattern relating *stretched cord length* L to *jumper weight* w.

As jumper weight increases by 25 pounds, stretched cord length increases by 5 feet.

f. The technician who did the tests suggested that the pattern could be summarized with a symbolic rule $L = 30 + 0.2w$. Does that rule give estimates of stretched cord length that match the experimental data? Explain.

Yes, $30 + 0.2(100) = 50$ and $30 + 0.2(200) = 70$ which are values in the table.

17 When there appears to be a relationship between values of two variables, how do you decide which should be considered the *independent variable* and which should be considered the *dependent variable*?

The independent variable causes change in the dependent variable.

OR

The dependent variable is affected by the independent variable.

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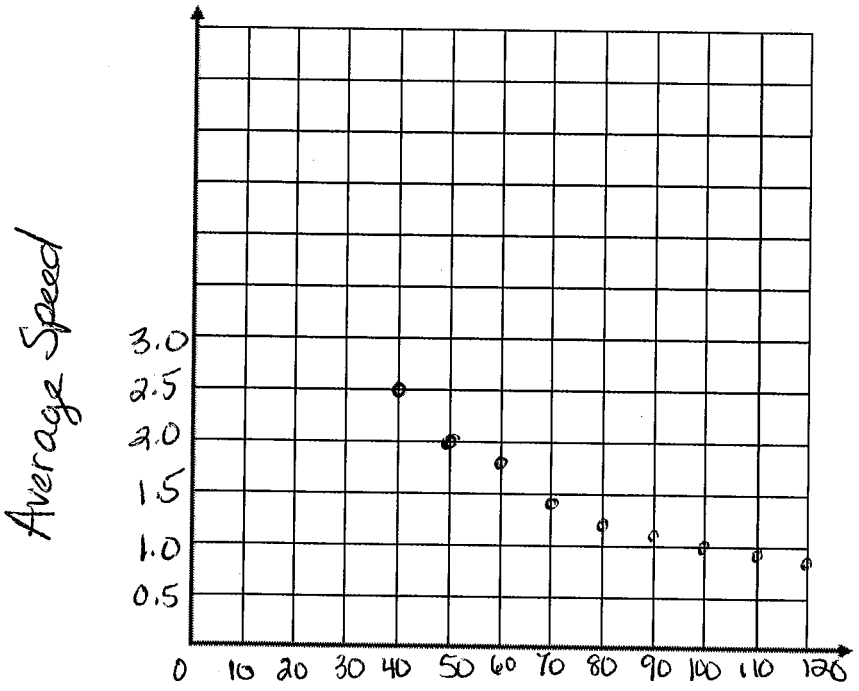
7 In 2012, the Olympic record in the women's 100-meter freestyle swim race was 53.00 seconds. It was set by Ranomi Kromowidjojo from the Netherlands. She swam at an average speed of $100 \div 53 \approx 1.88$ meters per second.

a. Make a table and a graph showing the way *average speed* for the 100-meter race changes as *time* increases from 40 seconds to 120 seconds (2 minutes) in steps of 10 seconds.

Race Time(sec)	40	50	60	70	80	90	100	110	120	
Average Speed(m/s)	2.5	2	1.7	1.4	1.3	1.1	1	0.9	0.8	



b. Describe the pattern of change shown in your table and graph.

As race time increases at a constant rate, Average speed decreases at a decreasing rate.

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c. Write a rule showing how to calculate *average speed* s for any *race time* t.

$$s = \frac{100}{t}$$

d. Which change in *race time* will cause the greatest change in *average speed*: an increase from 50 to 60 seconds or an increase from 110 to 120 seconds? Explain how your answer is illustrated in the shape of your graph.

The change from 50 to 60 seconds is greater. This is shown in the graph because it is steeper or drops more rapidly.