Jimmy the Cat
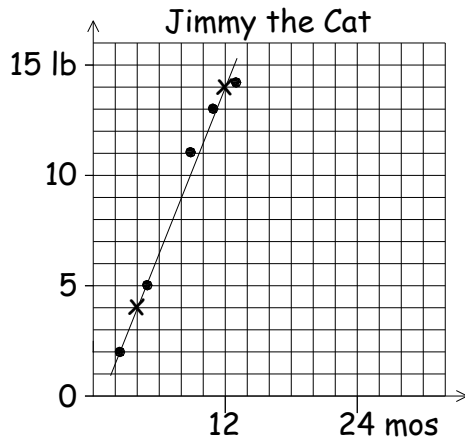
Here is a graph showing Jimmy's age in months vs. his weight in pounds. I've drawn a line that seems to fit the data points. Your first task is to determine the equation of the line which models Jimmy's growth.

Jimmy the Cat

Determine the slope of the graph using the <u>two x-marked points</u>. Be sure to <u>include the appropriate units</u> of the slope with the value.

Jimmy the Cat

pt 1: (,   )

pt 2: (,   )

Slope m = $\dfrac{y_2 - y_1}{x_2 - x_1}$:

Compute 'b', the y-intercept: Consider using y = mx + b, substituting in x, y, & m and then solving for 'b'. You can also solve for 'b' algebraically first and then substitute. Be sure to <u>include the appropriate units</u> with the value.

Now that you have found the slope and y-intercept, write the line's equation in <u>slope-intercept</u> form.

The equation you've just found is called a <u>mathematical model</u>. A model in mathematics can be an equation or a graph to describe some real-world phenomenon. Let's make sure we understand what this model tells us about Jimmy. Let's investigate:

1)   Give a <u>narrative interpretation</u> of the <u>slope</u> using words/idea from our <u>everyday</u> language.

2)   Do you think the slope is appropriate <u>indefinitely</u>? Why/why not?

3) Give a <u>narrative interpretation</u> of the <u>y-intercept</u> using words/idea from our <u>everyday</u> language.

4) <u>According to the model</u>, what was Jimmy's weight when he was born? Is this a reasonable answer?

5) <u>According to the model</u>, what was Jimmy's predicted weight when he was 5 months old? How does this compare with his actual weight?

6) <u>According to the model</u>, what was Jimmy's predicted weight when he was 9 months old? How does this compare with his actual weight? Is this a reasonable prediction?

7) <u>According to the model</u>, at what age will Jimmy reach 20 lbs? Is this a reasonable prediction?

8) <u>According to the model</u>, what is Jimmy's weight now, when he is 14 years old? Is this a reasonable prediction?

9) How good do you think this model is? What are its limitations?

<u>Additional Concepts:</u>
   interpolation   extrapolation   model breakdown   domain   range