Solve the following word problems. Read each problem carefully:

1. To determine the right dosage of Tylenol for children, doctors and parents use the chart below.

**Tylenol Dosage Table**

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Using the chart above, answer the following questions:

1. If a child weighs 20lbs, what dosage of Tylenol can the child have? Be sure to include units.
2. If a child takes 10 mL of liquid Tylenol, how much does the child weigh? Be sure to include units.
3. Do you know the exact weight of the child in part b? Why or why not?
4. Which variable, child’s weight or liquid Tylenol, do you think is the independent variable? In other words, which one is the input that determines the exact value of the other?
5. Based on your answer to part d, which do you think is the dependent variable?
6. Is this relation a function? Why or why not?
7. A young sumo wrestler decided to go on a special high-protein diet to gain weight rapidly. He gained weight at a rate of 5 kilograms per month. After 11 months, he weighed 140 kilograms.
8. In your own words, summarize the scenario.
9. Let W(t)represent the sumo wrestler's weight *W* (measured in kilograms) as a function of time *t* (measured in months).

List the important information.

* 1. The variables from the problem are listed for you. What do they represent?

|  |  |
| --- | --- |
| Variables | Meaning – What do they represent |
| *W* |  |
| *t* |  |
| *W(t)* |  |

* 1. The numbers from the problem are listed for you. What do they represent?

|  |  |
| --- | --- |
| Number | Meaning - What do they represent? |
| 5 |  |
| 11 |  |
| 140 |  |

* 1. Write an equation for the function *W(t)*. Start with the general equation

 *W(t) = mt + b.* Remember: *m* = slope and *b* = the y-intercept, or starting point

* + 1. Rate is another way to describe slope. At what rate is the sumo wrestler gaining weight?

*m* =

Substitute what your value for *m* in *W(t) = mt + b*, and write your new equation below.

* + 1. Next let’s find the starting point (*b*). The starting point in this situation is the sumo wrestler’s starting weight. We know from the problem that at

*t* = 11 months, the sumo wrestler’s weight W = 140 kg.

In other words when t = 11 months then *W( 11 ) = \_\_\_\_\_\_\_\_\_\_\_*

Substitute what you know in the equation *W(t) = mt + b*, and solve for *b*

* + 1. Substitute the values you found for *m* in part ii, and *b* in part iv into the equation: *W(t) = mt + b*

This is the equation for the function *W(t)*.

***Check for understanding:***

1. Using your equation from part iii, what is the sumo wrestler’s weight at *t* = 6 months?
2. What does your value for *m* represent?
3. What does your value for *b* represent?