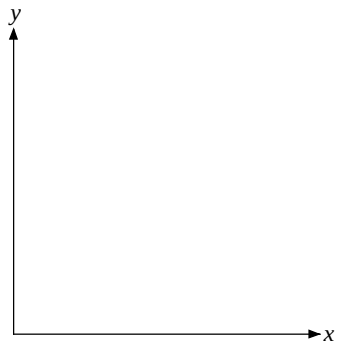
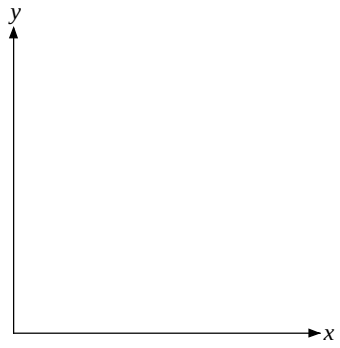
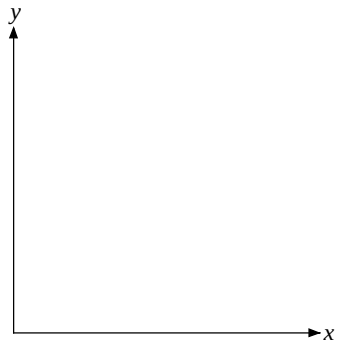
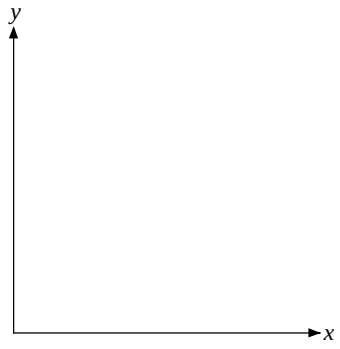
Four Functions

1. Sketch a graph to model each of the following situations.
Think about the shape of the graph and whether it should be a continuous line or not.

A: Candle Each hour a candle burns down the same amount. x = the number of hours that have elapsed. y = the height of the candle in inches.	
B: Letter When sending a letter, you pay quite a lot for letters weighing up to an ounce. You then pay a smaller, fixed amount for each additional ounce (or part of an ounce.) x = the weight of the letter in ounces. y = the cost of sending the letter in cents.	
C: Bus A group of people rent a bus for a day. The total cost of the bus is shared equally among the passengers. x = the number of passengers. y = the cost for each passenger in dollars.	
D: Car value My car loses about half of its value each year. x = the time that has elapsed in years. y = the value of my car in dollars.	

2. The formulas below are models for the situations.

a. Which situation goes with each formula? Breifly justify your choices.

$y = \frac{300}{x}$ $\quad y = 12 - 0.5x$ $\quad y = 30 + 20x$ $\quad y = 2000 \times (0.5)^x$

b. Use these equations to label the axes in your graphs above, and draw these functions IN A DIFFERENT COLOR on top of your graph. DO NOT erase your first sketches.

3. Answer the following questions using the equation.
Under each answer show your reasoning.

a. How long will the candle last before it burns completely away? .....

b. How much will it cost to send a letter weighing 8 ounces? .....

c. If 20 people go on the coach trip, how much will each have to pay? .....

d. How much will my car be worth after 2 years? .....