

1. The graph of the linear function $y = f(x)$ passes through the points $(-2, 1)$ and $(1, -5)$.
 - a. Sketch an accurate graph of the function $y = f(x)$.
 - b. Use your graph to approximate $f(5)$.
 - c. Use your graph to find the approximate solution to the equation $f(x) = -2$.
 - d. Find an algebraic expression for the function $f(x)$ and use this to find the exact value of $f(5)$ and the exact solution to the equation $f(x) = -2$.

2. The grading scale in this class is linear. An average of 95% corresponds to a grade of 4.0, and an average of 65% corresponds to a grade of 2.0.
 - a. Find a function that expresses your grade G in terms of your average A .
 - b. Find your course grade if your average is 85%.
 - c. What average do you need to get a grade of 3.8?

3. A temperature of 0°C corresponds to 32°F , while a temperature of 100°C corresponds to 212°F .
 - a. Express the Celsius temperature C in terms of the Fahrenheit temperature F . *Suggestion:* First sketch the appropriate graph.
 - b. What Fahrenheit temperature corresponds to 20°C ?
 - c. What Celsius temperature corresponds to 86°F ?
 - d. Express the Fahrenheit temperature F in terms of the Celsius temperature C .

4. Assume that the relationship between the number of 12 oz. sodas the PUB sells in a day and the price is linear. Suppose that if they charge 60 cents for a soda, they will sell 180 sodas a day, but that if they raise the price to 80 cents, they will only sell 120 sodas.
 - a. Express the number of sodas sold q in terms of the price p in cents. *Suggestion:* First sketch the appropriate graph.
 - b. How many sodas will they sell if the price is 50 cents?
 - c. Suppose the PUB sells only 30 sodas per day. What price are they charging?

5. Your daily profit (in dollars) if you sell n lattes is given by the function $P(n) = \frac{3}{4}n - 30$. On Monday you lose \$12. You sell twice as many lattes on Tuesday as you did on Monday. How much money did you make on Tuesday?

6. The height (in feet) of a balloon t hours after 1:00 pm is given by the function
$$H(t) = 400 + 1500t$$
 - a. Find the height of the balloon at 2:20 pm.
 - b. What time is the balloon 1875 feet above the ground?
 - c. How many feet does the balloon rise between 1:53pm and 2:03 pm?

7. The function f adds 3 to its input and then multiplies the result by 6.
 - a. Solve the equation $f(x) = -30$.
 - b. Find the input to the function f which is equal to its output.