LINEAR EQUATIONS (OR LINES) CAN BE USED TO MODEL "REAL-WORLD" PROBLEMS.
Remember to clearly indicate what the variables (x and y) represent.

1. The equation to convert from Celsius degrees to Fahrenheit is given by $y = \dfrac{9}{5}x + 32$, where

x is _____ and y is _____ .

(a). Find the Fahrenheit temperature for $-6°$ C.

(b). Find the slope and y-intercept and graph the line.

(c). Interpret the meaning of the slope.

(d). Interpret the meaning of the y-intercept.

2. It costs \$300 to join a fitness club plus \$30 each month of membership.

(a). Write a linear equation for the total cost of membership as a function of the number of months.

(b). Graph the line.

(c). How much will it cost for 1 year?

3. When the economy is down, values on homes tend to depreciate. Suppose a home appraised for \$280,000 initially and then only \$220,00 after 1 year.

(a). Write a linear equation for value of the home as a function of the number of months.

(b). Find the value of the home after 18 months.

(c). How long before the home is only worth half of its original value?

4. You go down to watch your friend run the marathon. 50 minutes after the start gun, you see her pass the 4 mile mark. You see her again at the 12 mile mark after 2 hours and 4 minutes.

(a). Write a linear equation for the time it takes her to run the marathon as a function of the number of miles.

(b). What does the y-intercept represent?

(c). What does the slope represent?

(d). When should you look for her at the finish line (26.2 miles)?