1) The perimeter of a rectangle is 80 feet, and one of the sides is 8 feet long. What is the area of the rectangle?
   a) 80 square feet
   b) 36 square feet
   c) 256 square feet
   d) 32 square feet
   e) None of these

2) Solve for B: \( A = \frac{1}{2} h(B + b) \)
   a) \( B = 2A - bh \)
   b) \( B = \frac{A}{2h} - b \)
   c) \( B = \frac{A}{h} \)
   d) \( B = \frac{2ha}{b} \)
   e) \( B = \frac{2A}{h} - b \)

3) Jaime won $200,000 in a state lottery. He first paid income tax of 30% on the winnings. He invested the rest - some at 1.5% and the rest at 4%, earning $4350 interest per year. How much did he invest at each rate?
   a) $50,000 at 1.5% interest and $90,000 at 4% interest
   b) $50,000 at 1.5% interest and $150,000 at 4% interest
   c) $98,000 at 1.5% interest and $42,000 at 4% interest
   d) $146,000 at 1.5% interest and $54,000 at 4% interest
   e) $194,000 at 1.5% interest and $36,000 at 4% interest
4) Find all solutions to the equation $2t^2 = 7$.
   a) $\pm \sqrt{5}$
   b) $\frac{-7 \pm \sqrt{41}}{2}$
   c) $\pm \sqrt{\frac{7}{2}}$
   d) $\sqrt{\frac{7}{2}}$
   e) No Solution

5) Find all solutions to the equation $24 = 3t^\frac{3}{5}$.
   a) $\pm \frac{8}{3}$
   b) $\frac{8}{3}$
   c) 32
   d) $\frac{-24 \pm \sqrt{21}}{6}$
   e) $\pm 32$

6) Given the problem $\frac{2}{x} - \frac{x}{3} = \frac{4}{x} + \frac{x}{5}$, which of the following would be an appropriate first step?
   I. Add the numerators and denominators on both sides of the equation
   II. Multiply both sides of the equation by $15x$
   III. Isolate the variable
   IV. Find common denominators on both sides of the equation
   a) II
   b) III
   c) I or III
   d) II or IV
   e) All of these

7) John and Keith knock off liquor stores and resell the booze on eBay. Each month they have to pay $10,000 to keep people quiet. They plan to rob $x$ stores, but as they rob more stores security improves and they only get $100-x$ bottles of liquor at each store. Liquor sells for $12$ a bottle on the black market. Which of the following would be an appropriate equation to calculate their profit $P$?
   a) $P = -10000 + 12x - (100 - x)$
   b) $P = -10000 + 12x(100 - x)$
   c) $P = 10000 + 12x - (100 - x)$
   d) $P = 10000 - 12x(100 - x)$
   e) $P = 12x(100 - x) + 10000$
8) You and your friend Sully are paving the Music Building's new parking lot, depicted below. You have to determine the area that needs paving by creating an equation.

a) Define a variable useful in finding the area to be paved.

b) Create an equation for \( A \), the area to be paved, using your variable.

![Diagram of the Music Building's parking lot with dimensions 30 feet by 50 feet]

9) Solve each of the following equations for \( x \).

a) \[ |x^2 - 4| = 7x - 4 \]

b) \[ \frac{x}{x-4} = \frac{4}{x-4} + 4 \]
10) Solve the following equation for $x$.
\[ \sqrt{2x + 12} - x + 6 = 0 \]

11) A rock is tossed upward from the top of Steen Hall, 185 feet above the ground. If its initial rate is 10 feet per second, when will it hit the ground?

12) Create the equation of a circle with diameter endpoints at $(3,1)$ and $(3,-6)$. Then graph the circle.

Equation ______________________________