

**Problem a1:** Line B crosses point A(2,3) and B(4,8), what is the slope of line B?

**Problem a2:** A line passes through points (2,3) and (4,v), the slope of this line is 5. What is the value of v?

**Problem a3:** The amount of money that farmers in Massachusetts paid to maintain their between 1991 and 2008 is modeled by the equation  $P=3.53t+100$ , where P is the amount of money the farmers paid, in millions of dollars, and t is the year (assuming 1991 is  $t=0$ ). How much money does farmers get in the year 2001?

**Problem a4:** A college bookstore charges \$60 for a yearly membership. The first book is free with the membership, and any book after that costs \$7.60 including tax. How many money does a student spend after buying books and a yearly membership?

**Problem b1:** Solve this linear system using your method:  $6x - 5y = 8$  and  $-12x + 2y = 0$ .

**Problem b2:** Consider the system of linear equations  $9x - 14y = -3$  and  $2x - ay = -6$ . Which is the value of a will result in the above system of equations with no solutions?

**Problem b3:** As a construction manager, you are asked to build a new straight road, which crosses the point (0,0). There is another straight road already built, which can be expressed as  $y=2x-1$ . You are asked to build your road such that it will never cross this other road. Find the correct value for a and b in the following equation of your road ( $y = ax+b$ ). Round any decimals to the nearest hundredth.

**Problem b4:** Tickets for a play were \$2 for each child and \$4 for each adult. At one showing of the play, one adult brought 4 children and the remaining adults brought 2 children each. The total ticket sales from the children and adults was \$60. How many children and adults attended the play?

**Problem c1:** Find the distance between A(2,0) and B(5,4)?

**Problem c2:** There exists two points A(2,4) and B(5,v), the distance between A and B is 5. What is the value of v?

**Problem c3:** The class of math is mapped on a coordinate grid with the origin being at the center point of the hall. Mary's seat is located at the point  $(-4, 7)$  and Betty's seat is located at  $(-2, 5)$ . How far is it from Mary's seat to Betty's seat?

**Problem c4:** You're leading the Shmoopville Beefalos in the championship football game against your bitter rivals, the Yooda City Wildcats. You're 3 yards from the end zone and 4 yards from the sideline, and you threw the ball 5 yards to Othello to complete the big play. Othello is 7 yards from the end zone. How far does Othello stand from the sideline?