

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

**Problem a2:** 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 a3:** 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:** 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 b3:** 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:** 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 c3:** 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 throwed 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?

**Problem d1:** Find the midpoint of the segment connecting the points (6,4) and (3,-4).

**Problem d2:** Mark planted two trees on a planning grid at coordinates  $(0,8)$  and  $(12,4)$ . He wants to plant a row of hedges such that any hedge is the same distance from each of the two trees. Determine the midpoint of the line segment connecting the two trees.

**Problem d3:** You and your friend Anna both work in downtown Axis Town, where the streets run north-south, the avenues run east-west, and the street blocks are all 100 meters by 100 meters. Your office is at 12th Street and 9th Avenue, and Anna's office is at 2nd Street and 7th Avenue. You're meeting for lunch at a restaurant exactly halfway between your offices. Find the intersection where the restaurant is located.