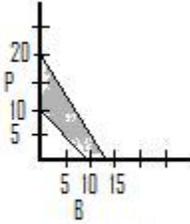
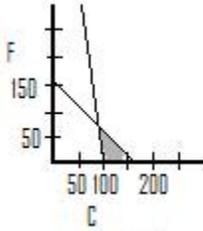
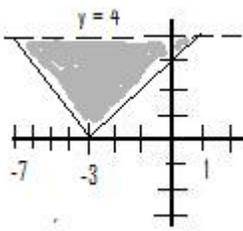


M²=Math Mediator Lesson 18: Systems of Inequalities

<p>Total Recall (Warm-up) (10 minutes approx.)</p>	<p>Total Recall: Exercise from yesterday's lesson on systems of equations.</p> <p>1. In the fashion world, the cost of a certain material and sewing time for a particular blouse is \$55.00. If a person decides to make and sell blouses and buys a sewing machine for \$2000.00; how many blouses would they have to sell for \$70.00 each in order to pay off the sewing machine? Write two equations and solve for the intersection point.</p> <p>A: Cost: $y = 55x + 2000$ Profit: $y = 70x$ Substitution ($70x = 55x + 2000$) and solve for x, where $x = 134$ (rounding up) blouses</p>
<p>Direct Instruction (20 minutes approx.)</p>	<p>Fashion: If blouses sell for \$70.00 each and take 3 hours to make; and pants sell for \$60.00 each and take 2 hours to make; how many of each could a person make while only working 40 hours per week to make at least \$600.00 per week?</p> <p>Make a list of all the units of variables described in the problem: blouses, pants, dollars (money) and hours (time).</p> <p>Analyze the goal statement: look for key words (how many of each, each what?, limit on hours working, limit on money, both related to blouses and pants). Then start working on two inequalities to describe the goals.</p> <p>Hours worked inequality: $3B + 2P \leq 40$ (B for blouses; P for pants)</p> <p>Money made inequality: $70B + 60P \geq 600$</p> <p>Two inequalities to graph and analyze the solution, which will be shaded area.</p> <p>Step 1: Graph the lines of equations made by substituting the inequality with equal signs. Use solid lines for \geq or \leq; and dashed lines for $>$ or $<$.</p> <p>Step 2: Test a point in one region inside or outside the lines for shading. If the test point produces a true statement, then shade that. If not, shade other region.</p>  <p>Q. Why do the lines end on the 'x' and 'y' axis?</p> <p>A: Can't have negative blouses or pants.</p>
<p>Review and Practice (15 minutes approx.)</p>	<p>U-DO: Janice is a graphic designer. She has a set of customers that ask her to make advertisements and posters for their products. It pays \$20 per hour and takes her about 20 hours to complete each project. She also likes to create artwork that she sells at the swapmeets. The artwork takes 30 hours and she sells 2 a month for \$60.00 each. This averages to \$2.00 per hour over a month. She needs to make \$2000.00 per month to pay rent and bills and she only wants to work 160 hours per month. What are the combinations of projects that she can take on in order to satisfy her requirements? Let C be the variable for her commercial projects and F for her fine artwork projects.</p>

M²=Math Mediator Lesson 18: Systems of Inequalities

	<p>Equation #1 for hours: $C + F \leq 160$; $F \leq 160 - C$;</p> <p>Equation #2 for money: $20C + 2F \geq 2000$; $F \geq 1000 - 10C$</p>  <p>Notice that the lines are limited to the positive data.</p>
<p>Practice (10 minutes approx.)</p>	<p>U-DO: Graph the solutions to the following systems of inequalities:</p> <p>1. $y \geq (-3/4)x + 1$ and $y \leq -3x - 8$ separate regions, no solution</p>  <p>2. $y < 4$ and $y \geq x + 3$</p>
<p>Wrap-up (5 minutes approx.)</p>	<p>Wrap up closing comments and housekeeping.</p>