

For each problem, show your work, including the formulas or arithmetic procedures which you used to get your answer.

1. **(15 points)** For an autumn bake sale, you're making apple-intensive baked goods. Each package of apple muffins you make uses 3 apples, a cup of sugar, and 2 cups of flour, and earns a profit of \$1.50. Each apple pie uses 10 apples, 2 cups of sugar, and 3 cups of flour, and earns a profit of \$3. Finally, each packet of apple cookies uses an apple, 3 cups of sugar, and a cup of flour and earns \$1 in profit. Your available supplies are 840 apples, 630 cups of sugar, and 450 cups of flour.
 - (a) **(8 points)** Formulate a mathematical representation of the problem of maximizing profit in this scenario.
 - (b) Is it *feasible* to make 70 muffin-packs, 50 pies, and 120 cookie-packets? If so, what is the resulting profit, and what is the slack in each constraint? Make sure to show work or explain.
 - (c) Is it *feasible* to make 100 muffin-packs, 35 pies, and 180 cookie-packets? If so, what is the resulting profit, and what is the slack in each constraint? Make sure to show work or explain.