

MAT 540 – SUMMER 2015

Ray Brown owns Ray's Speed, a bicycle shop. Most of Ray's bicycle sales are customer orders; however, he also stocks bicycle for walk-in customers. He stocks three types of bicycles – road-racing, cross-country, and mountain. A road-racing bike costs \$1200, a cross-country bike costs \$1,700, and a mountain bike costs \$900. He sells road-racing bikes for \$1800, cross-country bikes for \$2,100, and mountain bikes for \$1,200. He has \$12,000 available this month to purchase bikes. Each bike must be assembled; a road –racing bike requires 8 hours to assemble, a cross-country bike requires 12 hours, and a mountain bike requires 16 hours. He estimates that he and his employees have 120 hours available to assemble bikes. He has enough space in his store to order 20 bikes this month. Based on past sales, he wants to stock at least twice as many mountain bikes as the other two combined because mountain bikes sell better.

- a. Solve this problem
- b. Should Ray try to increase his budget for purchasing bikes, increase space to stock bikes, or increase labor hours to assemble bikes? Why?
- c. If Ray hired an additional worker for 30 hours at \$10 per hour, how much additional profit would he make, if any?
- d. If Ray purchased a cheaper cross-country bike for \$1,200 and sold it for \$1,900, would this affect the original solution?