Topic 4.4 Practice Problems

1. Three printers operate at different speeds:

   - Printer A prints 1,500 pages in 3 hours.
   - Printer B prints 600 pages per hour.
   - Printer C prints approximately 10,800 pages per day.

   (a) Write an equation for Printer A, where p is the number of pages printed per hour. Then solve for p.

   (b) Write equations to determine how long it takes Printer B to print 1,800 pages, 2,400 pages, and 2,700 pages. Let t represent time in hours. Give answers in hours and minutes if needed.

   (c) Convert Printer C's rate to pages per hour (let p be pages per hour). Then calculate how many pages it prints in 3 hours.

   (d) Which printer prints the greatest number of pages per hour? Justify your answer.

   (e) A new Printer D must be faster than all three printers above. If Printer D prints 1,000 pages, what is the greatest amount of time it may take? Write an equation using t for time and solve.

2. A rectangle has side lengths 15 meters and x meters. If the perimeter is 50 meters, find x. *(Write an equation, then solve.)*

3. A square has side length 2 meters, so its area is 4 square meters. If the side length is doubled to 4 meters, the area becomes 16 square meters.

   (a) What is the area if the side length is doubled again?

   (b) What is the area if the side length is doubled one more time?

   (c) Let p represent the *previous area* of the square. Write an equation for the new area A after the side length is doubled.

   $$A = \_\_p$$

4. There are s students going on a field trip. Each large bus holds 60 students.

   (a) Assume there are 3 large buses. Write a division equation to find the maximum number of students who can go on the trip.

   (b) If there are 121 students, how many large buses are needed?

(c) Small buses hold 30 students. The school pays \$100 per large bus and \$50 per small bus. For each group size below, determine the most cost-effective plan that also uses the fewest buses possible:

$$120, \quad 150, \quad 170, \quad 210.$$

Explain your reasoning for each case.

5. Omer can write 210 characters in 6 seconds and Ahmed can write 230 characters in 7 seconds. Assuming constant rates, how many characters can they write together in one minute? *(Write equations and show all work.)*