Math 120 HW #2

Due: Sept. 27

Chapter 1.1

Solve the following word problems. Recall the steps we went through in class.

2. The perimeter of a rectangle is 300 m, and the length of the rectangle is twice the width. Find the dimensions of the rectangle.

4. A builder makes a certain type of concrete by mixing together 1 part portland cement, 3 parts sand, and 5 parts crushed stone. If 765 L of concrete are needed then how many L of sand are needed?

6. A lumber company owns a forest that is of rectangular shape, 1 km by 2 km. If the company cuts a uniform strip of trees along the outer edge of the forest, and the company wants to leave 3/4 of forest remaining, what is the width of the strip?

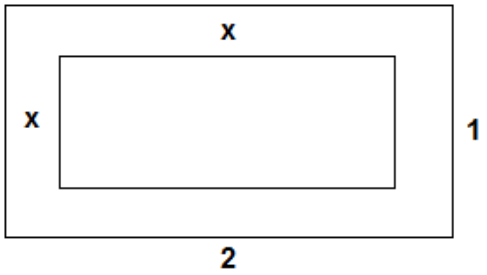

Figure 1: Problem 6

13. The cost of a product to a retailer is \$3.40. If the retailer wishes to make a profit of 20% on the selling price, at what price should the product be sold? (See example 4)

18. A group of people were polled and 700 said they prefer Coke over Pepsi. If those 700 people were 20% of the survey, how many total people were surveyed?

25. Suppose that consumers will purchase q units of a product when the price per unit is $\frac{1}{4}(80-q)$. How many units must be sold in order that sales revenue by \$400?

31. The monthly revenue of a certain company is given by $R = 800p - 7p^2$, where p is the price of their product. Suppose further that the company must charge at least \$350 per product to stay profitable. At what price will the revenue be \$10000?

Chapter 1.2

Solve the following inequalities. Make sure to give your answers in interval notation.

7. $5 - 7s > 3$

11. $x + 5 \leq 3 + 2x$

16. $4 - (x + 3) \leq 3(3 - x)$

20.
$$-\frac{2}{3}x > 6$$

21.
$$\frac{9y + 1}{4} \leq 2y - 1$$

31.

$$\frac{y}{2} + \frac{y}{3} > y + \frac{y}{5}$$

Chapter 1.3

1. The Davis Company manufactures a product that has a unit selling price of \$20 and a unit cost of \$15. If fixed costs are \$600000, determine the least number of units that must be sold for the company to have a profit. To rephrase, how many units must be sold to guarantee that profit, $P > 0$?

10. Suppose consumers will purchase q units of a product at a price of $\frac{100}{q} + 1$ dollars per unit. What is the minimum number of units that must be sold in order that sales revenue be greater than \$5000?

Chapter 1.4

Evaluate the absolute value expression.

2. $|2^{-1}|$
4. $|(-4-6)/2|$
5. $|2(-7/2)|$
9. $|2-\sqrt{5}|$

12. Use absolute value notation to indicate that f and L differ by less than ϵ.

Solve the following absolute value equations and inequalities.

21. $|5x-2| = 0$
24. $|5-3x| = 2$
28.

$$\left|\frac{x}{3}\right| > \frac{1}{2}$$

32. $|1-3x| > 2$
33. $|5-8x| \leq 1$

Chapter 1.5

Evaluate the sums.

3.

$$\sum_{i=1}^{7} 6i$$

6.

$$\sum_{n=7}^{11} (2n-3)$$

Express these sums using summation notation.

8. $1+4+9+16+25$ 9. $5^3+5^4+5^5+5^6+5^7+5^8$

Evaluate the sums.

13.

$$\sum_{k=1}^{43} 100$$

18.

$$\sum_{k=1}^{n} \frac{n}{n+1} k^2$$

21.

$$\sum_{k=51}^{100} k^2$$