MATH 1030: Homework 5

due September 21, 2012

Instructions: Do the following problems on a separate sheet of paper. Show all of your work.

Problem 1: Pillaging Pirates

(a) The fearsome pirate Captain Bartolomeo needs to buy a new ship. He knows that a good ship these days (in the 16th century, that is) will cost him 125 Pirate Doubloons. Unfortunately, most of his money is in swindled Spanish Reales. Using the chart below, determine how many Spanish Reales a good ship will cost.

Currency	US Dollars per Foreign	Foreign per US Dollar
Pirate Doubloons	20	0.05
Spanish Reales	0.25	4

Bartolomeo has already pillaged 7,258 Spanish Reales. Does he have enough to buy his ship? If not, how much more does he need?

(b) Bartolomeo has obtained his ship, *Converter of the Seas*. The dimensions of the living quarters are 22 meters in length and 9 meters in width. Bartolomeo's crew is 77 pirates. What is the population density of the living quarters in pirates per square foot? How much space (in feet) is available per pirate?

(c) Salty Sam quickly drinks 6 ounces of rum, which contains 57 grams of alcohol. Given that Salty Sam weighs 200 pounds and has 6 liters of blood, what is his blood alcohol content in grams per 100 milliliters? Should Bartolomeo let Salty Sam drive *Converter of the Seas*?

(d) Salty Sam, still reeling from the rum, challenges Bartolomeo to a sword fight, which incidentally burns 408 calories per hour. How many watts of power is generated from an hour of sword fighting? Considering that Salty Sam just had 388 calories of rum, how long does he need to sword fight to burn off those calories?

(e) Bartolomeo orders Salty Sam to walk the plank. Salty Sam knows that it will take him 2 hours to swim to the closest shore, and that to survive for two hours the water temperature needs to be at least 60° F. "Arr, you'll never make it," says Bartolomeo, "the water is only 17° C." Salty Sam says, "I'll take my chances." Does Salty Sam survive?

Problem 2

Use scientific notation to compute:

(a) $(.0000000000000038234) \cdot (239,700,000,000,000,000,000,000)$

(b) $\dfrac{13,463,000,000,000,000}{.0000000000000000000000000334}$

Problem 3

The number of violent crimes in Twin Peaks has been on the rise. This year there were 16 violent crimes, 23% more than last year. How many violent crimes were there last year?

Problem 4

The Norwegians' investment offer for the Ghostwood Development Project was 12.5% less than the Icelanders' offer. If the Icelanders offered $27.2 million, how much did the Norwegians offer?

Problem 5

Special Agent Dale Cooper just finished two pieces of Norma's incredible huckleberry pie and a cup of coffee. Suppose the pie costs $3.49 per slice and the coffee costs $1.69. If Agent Cooper leaves $11.00, what percent tip did he leave?

Problem 6

Profits at the Great Northern Hotel have fluctuated greatly over the last few years. Three years ago profits increased by 6%, two years ago profits decreased by 13%, and last year profits increased by 9%. By what percent did profits increase over the last three years combined?(*Tip:* Don't just add/subtract these numbers.)

Book Exercises

§3B Exercises 21, 28, 29, 32