

Homework #3

Instructions: Answer the following questions on a **separate sheet of paper**.

1. Special Agent Dale Cooper just finished a fine cup of coffee that was “black as midnight on a moonless night” and two slices of Norma Jennings’ “incredible cherry pie” at the RR diner in Twin Peaks. At the RR, a cup of coffee costs \$1.59 and a slice of cherry pie costs \$2.29. In Twin Peaks, sales tax on food is 5%.

(a) Calculate the cost of Agent Cooper’s meal.

$$\$1.59 + 2(\$2.29) = \$6.17, \quad \$6.17(1.05) = \$6.48$$

so the meal cost \$6.48.

(b) If Agent Cooper leaves a total of \$8 for Norma, what percentage tip does he leave?

$$\frac{\$8.00}{\$6.48} = 1.2346$$

so Agent Cooper leaves a 23.46% tip.

2. Hang-glider sails are on the rise! Flexible wing gliders, rigid wing gliders, and even Class gliders are selling this year at an all time high. Suppose that hang-glider sales in Salt Lake City increased by 11% in 2005, by 12% in 2006, and by 18% in 2007.

(a) By what percent have sales increased over the last 3 years?

$$(1.11)(1.12)(1.18) = 1.467$$

so sales have increased a total of 46.7%.

(b) If there were 861 hang-gliders sold in 2005, how many were sold in 2004?

861 is 11% more than the 2004 sales, so

$$2004 \text{ sales} = 861 / 1.11 = 775.68$$

so there were about 776 sold in 2004.

(c) Use the number from (b) of hang-gliders sold in 2004 together with the percentage increase from (a) of sales over the last 3 years to find the number of hang-gliders that were sold in 2007. 2007 sales are 46.7% more than sales in 2004, so

$$2007 \text{ sales} = (1.467)(776) = 1138.39$$

so there were about 1138 sold in 2007.

3. Finland has a literacy rate of 100%, while El Salvador has a literacy rate of 79.7%. How many more people are literate in Finland than in El Salvador, in terms of percentages?

$$\frac{100\%}{79.7\%} = 1.2547,$$

so there are 25.47% more people in Finland that are literate than in El Salvador.

4. Breanna's best friend Richard asks Breanna how much her favorite dish at her favorite restaurant costs because he wants to go there tonight. Breanna tells Richard that she doesn't remember, but she'll check and get back to him. She checks her credit card statement and text messages him later saying, "last time I went, I paid a total of \$16.50 and I always leave a 20% tip. c u tomorrow."

(a) Assuming Breanna always calculates her tips accurately, how much should Richard expect the price of his meal (before tip) to be? \$16.50 is 20% more than the price of the meal, so the price of the meal is

$$\frac{\$16.50}{1.20} = \$13.75$$

(b) If Richard always leaves an 18% tip, how much total (with tip) will he spend on his meal? He will leave 18% more than the owed \$13.75, so he will spend

$$\$13.75(1.18) = \$16.23$$