

Assignment 4

Show all your work

Name: _____
Number: _____
Signature: _____
Score: ____/10

Problem 1: Answer each question to two decimal place accuracy when appropriate. Write out steps for each.

- a. Convert the fraction *five thirds* into a percent.

$$\frac{5}{3} \approx 166.7\%$$

166.7%

- b. Find 30% of 190.

$$0.3 \times 190 = 57$$

57

- c. What percent of 20 is 7?

$$\frac{7}{20} = \frac{35}{100}$$

35%

- d. 14 is 2% of what number?

$$\text{If } 0.02x = 14, \text{ then } x = \frac{14}{0.02} = 700$$

700

- e. When you pay a 55-dollar monthly cellphone/data package, how much do you need to pay in total including taxes every month? Hint: We have a 5% GST and 7% PST.

\$61.60

$$112\% \text{ of } \$55 \text{ is } 1.12 \times \$55 = \$61.6,$$

- f. A 2019 study showed that \$10.6 billion was spent on plastic surgery-related diseases in Canada. Almost 10.1% of this cost was the treatment of melanoma (skin cancer).

How much in dollars was the cost of treating melanoma patients? \$ 1.07 billion

$$0.101 \times 10.6 \times 10^9 = 1.0706 \times 10^9$$

Score: /6

Problem 2: David's grandmother needs to decide which of the following two investment options is better: an annual interest rate of 2.9% compounded daily or an annual interest rate of 3.1% compounded quarterly. Show all calculation which leads to your conclusion.

With the first investment, after one year you would have multiplied the principal by

$$\left(1 + \frac{0.029}{365}\right)^{365} \approx 1.0294, \text{ so the effective rate is } 2.94\%.$$

With the second investment, you get $\left(1 + \frac{0.031}{4}\right)^4 = 1.0314$, so the effective rate is 3.14%. Therefore the second option is better.

Score: /2

Problem 3: Janette's mother invests \$50 000 at a rate of 2.75% compounded monthly. How long will it take to double her investment?

If $50\,000\left(1 + \frac{0.0275}{12}\right)^{12t} = 2 \times 50\,000$, for t in years, then $(1.002291667)^{12t} = 2$. Taking log on both sides, then dividing by 12 yields that $t \approx 25.23$ years.

Score: /2