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 *two fifteenths* into a percent.

$\boxed{13.33\,\%}$

$\frac{2}{15} \approx 0.1333 = 13.33\,\%$

b. Find $210\,\%$ of 70.

$\boxed{147}$

$2.10 \times 70 = 147$

c. What fraction of 160 is 40? Simplify to lowest terms.

$\boxed{1/4}$

$\frac{40}{160} = \frac{4}{16} = \frac{1}{4}$

d. 15 is $3\,\%$ of what number?

$\boxed{500}$

If $0.03x = 15$, then $x = \frac{15}{0.03} = 500$

e. When you pay a 105-dollar monthly internet package, how much in total do you need to pay? Hint: We have a $5\,\%$ GST and $7\,\%$ PST.

$\boxed{\$117.60}$

$12\,\%$ of \$105 is $0.12 \times \$105 = \$12.60$, so you have to pay $\$105 + \$12.60 = \$117.60$.

f. Suppose in 2018, Canadians spent 4.6 billion dollars on cookies of which 660 million dollars were for Oreo cookies. What percentage of the cookies revenue in Canada that year was occupied by Oreo cookies?

$\boxed{14.35\,\%}$

$\frac{660\,000\,000}{4\,600\,000\,000} = 0.1435 = 14.35\,\%$

Score: /6

Problem 2: Brian needs to decide which of the following two investment options is better: an annual interest rate of $9.9\,\%$ compounded monthly or an annual interest rate of $11\,\%$ compounded quarterly. Show all calculation which leads to your conclusion.

With the first investment, after one year you would have multiplied the principal by $\left(1 + \frac{0.099}{12}\right)^{12} = 1.1036$, so the effective rate is $10.36\,\%$.
With the second investment, you get $\left(1 + \frac{0.11}{4}\right)^{4} = 1.1146$, so the effective rate is $11.46\,\%$.
Therefore the second option is better.

Score: /2

Problem 3: Janette's grandmother invests $\$20\,000$ at a rate of $5\,\%$ compounded annually. Find the time in years that it takes her investment to double.

If $20\,000(1.05)^n = 2 \times 20\,000$, then $(1.05)^n = 2$. A bit of guess-and-check quickly yields that $n = 14.2$ years.

Score: /2