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 *three quarters* into a percent.

$\frac{3}{4} = 75\%$

$\boxed{75\,\%}$

b. Find 125% of 80.

$1.25 \times 80 = 100$

$\boxed{100}$

c. What fraction of 350 is 280? Simplify to lowest terms.

$\frac{280}{350} = \frac{4}{5}$

$\boxed{4/5}$

d. 12 is 6% of what number?

If $0.06x = 12$, then $x = \frac{12}{0.06} = 200$

$\boxed{200}$

e. When you pay a 35-dollar monthly cellphone/data package, how much in taxes do you need to pay? Hint: We have a 5% GST and 7% PST.

12% of \$35 is $0.12 \times \$35 = \$4.20,$

$\boxed{\$4.20}$

f. The following is a quote from *Entertainment Software Association of Canada*.

> In 2021, the global industry will generate over US\$176 billion in revenue, a 21% increase from 2019. The Canadian video game industry has followed a similar trajectory over the same period. In 2021, the industry generated an estimated US\$3.4 billion in revenue, having grown by 20% since 2019.

What was the revenue in the Canadian video game industry from 2019?

US\$ $\boxed{2.83}$ billion

If Global, then $176 \times 10^9 = 1.2 \times x$, so $x = 176 \times 10^9/1.2 \approx 146.67 \times 10^9$ dollars. Let x in dollars represent the revenue in Canadian video game industry from 2019. Then $3.4 \times 10^9 = 1.2 \times x$ so $x = 3.4 \times 10^9/1.2 \approx 2.83 \times 10^9$

Score: ___/6

Problem 2: Brian's grandmother invests \$50 000 at a rate of 4.55% compounded monthly. Find the time in years that it takes her investment to double.

If $50\,000(1 + \frac{0.0455}{12})^{12t} = 2 \times 50\,000$, for t in years, then $(1.0037916667)^{12t} = 2$. Taking log on both sides, then dividing by 12 yields that $t \approx 15.26$ years.

Score: ___/2

Problem 3: David needs to decide which of the following two investment options is better: an annual interest rate of 4.35% compounded daily or an annual interest rate of 4.4% compounded semi-annually. Show all calculation which leads to your conclusion.

With the first investment, after one year you would have multiplied the principal by $\left(1 + \frac{0.0435}{365}\right)^{365} = 1.0445$, so the effective rate is 4.45%.
With the second investment, you get $\left(1 + \frac{0.044}{2}\right)^2 = 1.0445$, so the effective rate is 4.45%.
Therefore the second option is slightly better.

Score: ___/2