

Assignment 4

Show all your work

Name: _____
Number: _____
Signature: _____
Score: ____/21

Problem 1: Answer the questions. Write out steps for each. One mark per part except two marks for the last part.

- a. Convert the fraction *three and nine tenths* into a percent.

$$3\frac{9}{10} = 3.9 = 390\%$$

390.0 %

- b. Find 0.8 % of 278.

$$0.008 \times 278 = 2.224$$

2.224

- c. Brian wants to share 6 mini-snack bars out of a box of 120 with his brothers. What percentage of his box of mini-snack bars does he want to share?

$$\frac{6}{120} = 0.05 = 5\%$$

5 %

- d. If Janette finds in her drawer 34 % of her pens are Muji pens, and she counts 17 Muji pens in total, how many pens does she have in her drawer?

$$\text{If } 0.34x = 17, \text{ then } x = \frac{17}{0.34} = 50$$

50 pens

- e. David's family attended *Love and Fate*, a concert by the Vancouver Brass Orchestra last fall. For the family dinner before the concert, David's grandmother paid \$279 including taxes and an 18 % tip. What was bill before taxes and tip? Assume a 12 % service tax.

$$\text{If the bill was } \$x, \text{ then the tax was } 0.12x \text{ and the tip was } 0.18x, \text{ so he paid } x + 0.12x + 0.18x = 1.30x = 279, \text{ so } x = \frac{\$279}{1.30} = \$214.615. \text{ Therefore the bill before taxes and tip was } \$214.62.$$

\$214.62

Score: /6

Problem 2: Solve for the indicated variable in each of the following.

- a. Solve for I in $m = \frac{P+I}{n}$

$$\text{If } m = \frac{P+I}{n}, \text{ then } mn = P + I, \text{ so } I = mn - P.$$

- b. Solve for x in $(1.24)^x = 10$. Provide accuracy to two decimal places.

$$\text{If } (1.24)^x = 10, \text{ then } \log((1.24)^x) = \log(10), \text{ so } x \log(1.24) = \log(10), \text{ so } x = \frac{\log(10)}{\log(1.24)} \approx 10.70.$$

- c. Solve for r in $A = P(1+r)^7$

$$\text{If } A = P(1+r)^7, \text{ then } A/P = (1+r)^7, \text{ so } (A/P)^{1/7} = 1+r, \text{ so}$$

$$r = (A/P)^{1/7} - 1$$

Score: /5

Problem 3: Janette's grandmother is offered by her bank three options for a \$6000 guaranteed investment certificate (GIC):

- a. 4.5 % compounded monthly;
- b. 4.55 % compounded annually; or
- c. 4.33 % compounded weekly. (Use 52 weeks per year.)

Compute the interest after one year in each case and decide which option earns Janette's grandmother the most.

- a. $\$6000\left(1 + \frac{0.045}{12}\right)^{12} = \6275.64 , so the interest is \$275.64.
- b. $\$6000 \times 0.0455 = \273.00
- c. $\$6000\left(1 + \frac{0.0433}{52}\right)^{52} = \6265.39 , so the interest is \$265.39.

Hence the 4.5 % compounded monthly (option a) is best.

Score: /5

Problem 4: Brian's cousin purchased a sailboat and financed \$8500 at \$650 per month for 18 months. Assuming the add-on interest method, what was the amount of interest paid over 18 months? Find the annual interest rate charged on the loan.

Brian's cousin paid a total of $18 \times \$650 = \$11\,700$. Since they borrowed \$8500, the total interest paid was \$3200.

To find the annual interest rate, $3200 \div 8500 \div 1.5 \approx 0.25098$, so around 25 %.

Score: /3

Problem 5: If *Chancellor's Choice Financial* master card charges 22 % on unpaid balance, how much would it cost in finance charge to leave \$757 unpaid past the due date for 30 days? Hint: Credit card companies use 365 days a year. For the sake of simplicity, use simple interest.

$$\$757 \times \frac{0.22}{365} \times 30 \approx \$13.69$$

Score: /2