

Quiz 3

Show all your work

Name: _____
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Score: ____/20

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

- a. Convert the fraction *two and seven tenths* into a percent.

$$2\frac{7}{10} = 2.7 = 270\%$$

270.0%

- b. Find 88% of 460.

$$0.88 \times 460 = 404.8$$

404.8

- c. Brian wants to share 6 popsicles out of a box of 15 with his brothers. What percentage of his box of popsicles does he want to share?

$$\frac{6}{15} = 0.40 = 40\%$$

40%

- d. If Janette finds in her closet 15% of her shoes are Toms slip-ons, and she counts 5 pairs of Toms, how many pairs of shoes does she have in her closet?

$$\text{If } 0.15x = 5, \text{ then } x = \frac{5}{0.15} = 33.333$$

33pairs

- e. David's family travelled to Montreal for the International Jazz Festival in July this year. For the family dinner before a Wynton Marsalis concert, David's father paid \$223 including local service tax and a 15% tip. What was the dollar amount for the tip? Hint: Québec has a 15% service tax.

$$\text{If the bill was } \$x, \text{ then the tax was } 0.15x \text{ and the tip was } 0.15x, \text{ so he paid } x + 0.15x + 0.15x = 1.30x = 223, \text{ so } x = \frac{\$223}{1.30} = \$171.54. \text{ Therefore the tip was } 0.15x = \$25.73.$$

\$25.73

Score: /6

Problem 2: Solve for the indicated variable.

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

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

- b. Solve for x in $(3.2)^x = 16$. Provide accuracy to two decimal places.

$$\text{If } (3.2)^x = 16, \text{ then } \log((3.2)^x) = \log(16), \text{ so } x \log(3.2) = \log(16), \text{ so } x = \frac{\log(16)}{\log(3.2)} \approx 2.38.$$

- c. Solve for r in $A = P(1+r)^{10}$

$$\text{If } A = P(1+r)^{10}, \text{ then } A/P = (1+r)^{10}, \text{ so } (A/P)^{1/10} = 1+r, \text{ so}$$

$$r = (A/P)^{1/10} - 1$$

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. 4.75% 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 0.0475 = \285.00

c. $\$6000\left(1 + \frac{0.0433}{52}\right)^{52} = \6265.39 , so the interest is \$265.39.

Hence the 4.75% compounded annually (option b) is best.

Score: /5

Problem 4: Janette's friend, Annika, purchased a bakery and financed \$85 000 at \$1137.28 per month for 7 years. Assuming the add-on interest method, what was the amount of interest paid over 7 years?

Annika paid a total of $7 \times 12 \times \$1137.28 = \$95\,531.52$. Since she borrowed \$85 000, the total interest paid was \$10 531.52.

Score: /2

Problem 5: If *Canadian Express* credit card charges 22% on unpaid balance, how much would it cost in finance charge to leave \$757 unpaid past the due date for 60 days? Hint: Credit card companies use 365 days a year. For the sake of simplicity, use simple interest.

$$\$757 \times \frac{0.22}{365} \times 60 \approx \$27.38$$

Score: /2