

Name: \_\_\_\_\_

Show work needed to justify your answer.

Date: \_\_\_\_\_

HW: # 20: Math IBSL - Standard 20 - Applications of Arithmetic and Geometric Patterns

5 points

1. A teacher makes a one time investment of \$90000 in a retirement account for five years. The annual interest rate is 2.25 %, compounded monthly. What will the final balance of the account be?

$$A = P \left( 1 + \frac{r}{n} \right)^{nt}$$
$$A = 90000 \left( 1 + \frac{0.0225}{12} \right)^{(12)(5)}$$

$$A = \$100705.89$$

2. After five years of making quarterly payments on her car loan, Riley has paid off her loan. She has paid a total of \$32456. If the per annum compound rate was 4.2 %, how much was the loan for?

$$A = P \left( 1 + \frac{r}{n} \right)^{nt}$$
$$32456 = P \left( 1 + \frac{0.042}{4} \right)^{(4)(5)}$$
$$32456 = 1.23238 P$$
$$P = 26337.14$$

3. Oliver and Harry were each given \$400 for their birthday. Oliver puts his in a savings account that pays 1.25 % interest, compounded monthly. Harry chooses to invest in a mutual fund paying 1.75 % interest, compounded annually. If each brother does not touch the money for five years, who will have earned more?

Oliver

$$A = 400 \left( 1 + \frac{0.0125}{12} \right)^{(12)(5)}$$
$$A = 425.78$$

HARRY

$$A = 400 \left( 1 + \frac{0.0175}{1} \right)^5$$
$$A = 436.25$$

HARRY wins!