

1. **Explain** the difference between interest and final amount.

Interest is the extra money owed.

Final amount is the total at the end.

$$\text{Final amount} = \text{Principal} + \text{Interest}$$

2. Rita takes out a loan of \$5,000 for 4 years at 6.5%. How much interest does Rita have to pay back using simple interest?

$$\begin{aligned} I &= P \cdot r \cdot t = \$5000 \cdot 0.065 \cdot 4 \\ &= \boxed{\$1300} \end{aligned}$$

3. Yuri invests \$7,500 for 300 days at 10.2%. How much money will be in Yuri's account using simple interest?

$$\begin{aligned} I &= P \cdot r \cdot t = \$7500 \cdot 0.102 \cdot \frac{300}{365} \\ &= \$628.77 \end{aligned}$$

$$A = P + I = \$7500 + \$628.77 = \boxed{\$8128.77}$$

4. Tom borrows \$3675 for 19 months at 8.7% interest. How much does Tom have to pay back at the end using simple interest?

$$\begin{aligned} I &= P \cdot r \cdot t = \$3675 \cdot 0.087 \cdot \frac{19}{12} \\ &= \$506.23 \end{aligned}$$

$$A = P + I = \$3675 + \$506.23 = \boxed{\$4181.23}$$

5. Suyeon deposits \$3,000 in a savings account at 3% compounded annually. How much will be in the account 15 years later using compound interest?

$$A = P \left(1 + \frac{r}{n}\right)^{nt} = \$3000 \left(1 + \frac{0.03}{1}\right)^{15 \cdot 1}$$

$$= \$3000 (1 + 0.03)^{15} = \boxed{\$4673.90}$$

6. You are looking to take out a loan for \$10,000 from a bank for 8 years. They offer you an interest rate of 6.9% compounded quarterly. How much will you have to pay back at the end using compound interest?

$$A = P \left(1 + \frac{r}{n}\right)^{nt} = \$10,000 \left(1 + \frac{0.069}{4}\right)^{8 \cdot 4}$$

$$= \$10,000 (1 + 0.01725)^{32}$$

$$= \boxed{\$17285.68}$$

7. Lily invests \$5600 at 11.8% compounded monthly. How much interest does she earn after 10 years using compound interest?

$$A = \$5600 \left(1 + \frac{0.118}{12}\right)^{12 \cdot 10} = \$5600 (1 + 0.0098333\dots)^{120}$$

$$= \$18119.75$$

$$I = A - P = \$18119.75 - \$5600$$

$$= \boxed{\$12519.75}$$