Simple Interest Questions

Questions

1. Maria borrowed $500 from a friend and agreed to pay simple interest at an annual rate of 4%. If she pays a total of $60 in interest, how long was the loan outstanding?

2. A savings account offers a simple interest rate of 5% per year. If John deposits $1,000, how much interest will he have earned after 3 years?

3. A bond with a face value of $1,000 is issued with a simple interest rate of 6% per year. After 5 years, the bond has earned $300 in interest. Was the bond sold at face value, at a discount, or at a premium, and by how much?

4. A car loan for $20,000 is taken out at a simple interest rate of 7.5% per year. If the total interest paid over the life of the loan was $7,500, how many years did it take to pay off the loan?

5. Sally wants to have $2,500 in her savings account after 4 years by earning simple interest at an annual rate of 3%. How much should she deposit now to achieve this goal?

6. A local bank is offering a simple interest rate of 2.5% per year on a new savings account. If Tom deposits $800, how much total interest will he have earned after 18 months?

7. Sarah invested a certain amount of money at a simple interest rate of 4% per year. After 6 months, she earned $48 in interest. How much did she initially invest?

8. An investment offers a 5% simple interest rate per month. If an investor wants to earn $600 in interest in 4 months, what amount does he need to invest?

Answers

1. Using the simple interest formula $I = P \times r \times t$:

$$60 = 500 \times 0.04 \times t$$
$$t = \frac{60}{500 \times 0.04}$$
$$t = 3 \text{ years}$$

2. $I = P \times r \times t$:

$$I = 1000 \times 0.05 \times 3$$
$$I = 150 \text{ dollars}$$

3. $I = P \times r \times t$:

$$300 = 1000 \times 0.06 \times 5$$

The bond was sold at face value.

4. $I = P \times r \times t$:

$$7500 = 20000 \times 0.075 \times t$$
$$t = \frac{7500}{20000 \times 0.075}$$
$$t = 5 \text{ years}$$

5. $A = P + I$:

$$2500 = P + P \times 0.03 \times 4$$
$$2500 = P(1 + 0.03 \times 4)$$
$$P = \frac{2500}{1 + 0.12}$$
$$P \approx 2232.14 \text{ dollars}$$

6. $I = P \times r \times t$ (note t in years):

$$I = 800 \times 0.025 \times 1.5$$
$$I = 30 \text{ dollars}$$

7. $I = P \times r \times t$ (note t in years):

$$48 = P \times 0.04 \times 0.5$$
$$P = \frac{48}{0.02}$$
$$P = 2400 \text{ dollars}$$

8. $I = P \times r \times t$:

$$600 = P \times 0.05 \times 4$$
$$P = \frac{600}{0.2}$$
$$P = 3000 \text{ dollars}$$