

Notes- Simple Interest (completed)

Simple Interest

Vocabulary

Interest: The extra money you pay back if you take out a loan (in addition to the amount borrowed)

Principal: The original amount of money that you put into an account or the amount you borrowed.

Rate: The percent that is earned on your amount (calculated as a decimal)

Time: the length in years that the money is being paid back

Interest

$$I = PRT$$

$$\text{Interest} = \text{Principal} \cdot \text{Rate} \cdot \text{Time}$$

1) Find the amount of interest that is earned.

Interest = ?

Principal = \$800

Rate = 6%

Time = 2 years

$$I = 800 \cdot 0.06 \cdot 2$$

$$I = \$96$$

2) Find the interest rate.

Interest = \$20

Principal = \$250

Rate = ?

Time = 1 year

$$20 = 250 \cdot r \cdot 1$$

$$\frac{20}{250} = \frac{250r}{250}$$

$$0.08 = r$$

$$8\% = r$$

3) Find the principal.

Interest = \$100

Principal = ?

Rate = 5%

Time = 9 months

$$100 = p \cdot 0.05 \cdot 0.75$$

$$\frac{100}{0.0375} = \frac{0.0375p}{0.0375}$$

$$p = \$2666.67$$

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Example 4

Anna invested \$2,500 at a rate of 5%. How long will it take her to earn \$1,125 in interest?

$$\begin{aligned} I &= 1125 \\ P &= 2500 \\ r &= 5\% \\ t &= ? \end{aligned}$$
$$1125 = 2500 \cdot 0.05 \cdot t$$
$$\frac{1125}{125} = \frac{125t}{125}$$

$9 = t$
9 years

Example 5

Ryan deposited \$2,000 in an account at a rate of 4%. How much money will he have in the account in 5 years?

$$\begin{aligned} I &= ? \\ P &= 2000 \\ r &= 4\% \\ t &= 5 \end{aligned}$$
$$I = 2000 \cdot 0.04 \cdot 5$$
$$I = \$400$$
$$2000 + 400 = \$2400$$

Example 6

Mr. Johnson borrowed \$8000 for 4 years to make home improvements. If he repaid a total of \$10,320, at what interest rate did he borrow the money?

$$\begin{aligned} I &= 2320 \\ P &= 8000 \\ r &= ? \\ t &= 4 \end{aligned}$$
$$I = 10320 - 8000 = \$2320$$
$$2320 = 8000 \cdot r \cdot 4$$
$$\frac{2320}{32000} = \frac{32000r}{32000}$$

$0.0725 = r$
7.25% = r

Example 7

Teddy borrows \$4,890 on 8% interest rate for 18 months. What is the interest that Teddy pays?

$$\begin{aligned} I &= ? \\ P &= 4890 \\ r &= 8\% \\ t &= 1.5 \end{aligned}$$
$$I = 4890 \cdot 0.08 \cdot 1.5$$
$$I = \$586.80$$

After 18 months, what will be the total amount that Teddy will have to pay?

$$4890 + 586.80 =$$
$$\$5476.80$$

Example 8

Mr. James borrows money from the bank for a new car. He borrows \$10,000 and accumulates \$1,500 in interest. How long will it take Mr. James to pay back his loan at a 3% interest rate?

$$\begin{aligned} I &= 1500 \\ P &= 10000 \\ r &= 3\% \\ t &= ? \end{aligned}$$
$$1500 = 10000 \cdot 0.03 \cdot t$$
$$\frac{1500}{300} = \frac{300t}{300}$$

5 years = t