SIMPLE INTEREST

INTEREST is a fee that someone pays in order to borrow money. Interest functions in two ways:

1. A bank may pay you interest if you put your money into a savings account. Depositing your money in the bank makes the bank stronger and allows them to lend money to other people, so they pay you interest for that service.

2. You may pay interest to a bank if you borrow money from them—it's a fee they charge so that you can use somebody else's money before you have your own.

You need to know three things to determine the amount of interest that must be paid (if you are the **BORROWER**) or earned (if you are the **LENDER**):

1. **PRINCIPAL**: The amount of money that is being borrowed or loaned

2. **INTEREST RATE**: The percentage that will be paid for every year the money is borrowed or loaned

3. **TIME**: The amount of time that money will be borrowed or loaned

> If you are given weeks, months, or days, write a fraction to calculate interest in terms of years.
>
> **EXAMPLES:**
>
> $9 \text{ months} = \dfrac{9}{12} \text{ year}$ $80 \text{ days} = \dfrac{80}{365} \text{ year}$ $10 \text{ weeks} = \dfrac{10}{52} \text{ year}$

Once you have determined the principal, rate, and time, you can use this **SIMPLE INTEREST FORMULA**:

interest = principal × interest rate × time

$$I = P \cdot R \cdot T$$

> **BALANCE** is the total amount when you add the interest and beginning principal together.

EXAMPLE: You deposit $200 into a savings account that offers a 5% interest rate. How much interest will you have earned at the end of 3 years?

Principal (P) = $200
Rate (R) = 5% = 0.05
Time (T) = 3 years

ALWAYS CHANGE A PERCENT TO A DECIMAL WHEN CALCULATING!

Simple interest can also be thought of like a ratio.

$$5\% \text{ interest} = \frac{5}{100}$$

So, for every $100 you deposit, the bank will pay you $5 each year. Then you multiply $5 by the number of years.

Now, substitute these numbers into the formula, and solve!

$$I = P \cdot R \cdot T$$
$$I = (\$200)(0.05)(3)$$
$$I = \$30$$

INTERESTING...

After 3 years, you would earn an extra $30. Not bad for just letting your money sit in a bank for a few years!

EXAMPLE: In order to purchase your first used car, you need to borrow **$11,000**. Your bank agrees to loan you the money for **5** years if you pay **3.25%** interest each year. How much interest will you have paid after the **5** years? What will be the total cost of the car?

P = $11,000
R = 3.25% = 0.0325
T = 5 years

$$I = P \cdot R \cdot T$$

$$I = (\$11,000)(0.0325)(5)$$

$$I = \$1,787.50$$

You'll have to pay **$1,787.50** in interest alone!

With this in mind, what will be the total price of the car?

$11,000 + $1,787.50 = $12,787.50

The car will cost **$12,787.50** in total.

EXAMPLE: Joey has $3,000. He deposits it in a bank that offers an annual interest rate of 4%. How long does he need to leave it in the bank in order to earn $600 in interest?

I = $600
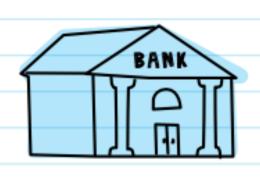P = $3,000
R = 4% (use .04)
T = x

(In this case, we know what the interest will be, but we don't know the length of time. We use x to represent time and fill in all the other information we know.)

$I = P \cdot R \cdot T$

$600 = $3,000(.04)T$

$600 = $120T$ ← (Divide both sides by 120 to get T by itself.)

$5 = T$

So, Joey will earn $600 after 5 years.

BANK

HAS IT BEEN 5 YEARS YET?

IT'S BEEN 2 HOURS.

CHECK YOUR KNOWLEDGE

For **1** through **5**: Enrique deposits **$750** into a savings account that pays **4.25%** annual interest. He plans to leave the money in the bank for **3** years.

1. What is the principal?

2. What is the interest rate? (Write your answer as a decimal.)

3. What is the time?

4. How much interest will Enrique earn after **3** years? (Round up to the nearest cent.)

5. What will be Enrique's balance after **3** years?

For **6** through **9**: Sabrina gets a car loan for **$7,500** at **6%** interest for **3** years.

6. How much interest will she pay over the **3** years?

7. Mario also gets a car loan for $7,500; however, his interest rate is 6% for 5 years. How much interest will Mario pay over the 5 years?

8. How much more interest does Mario pay than Sabrina in order to borrow the same amount of money at the same interest rate over 5 years instead of 3?

9. What does your answer for #8 tell you about borrowing money?

10. Complete the following chart:

INTEREST	PRINCIPAL	INTEREST RATE	TIME
	$2,574.50	5.5%	2 years
$2,976.00	$6,200.00	12%	

CHECK YOUR ANSWERS

1. $750

2. 0.0425

3. 3 years

4. $95.63

5. $845.63

6. $1,350

7. $2,250

8. $900

9. The longer you borrow money, the more interest you must pay.

10.

INTEREST	PRINCIPAL	INTEREST RATE	TIME
$283.20	$2,574.50	5.5%	2 years
$2,976.00	$6,200.00	12%	4 years