Simple interest

Pre-requisites:

- ✓ **Money operations**
- ✓ **Fraction Operations**
- ✓ **Percentages**

Topics:

- **What are loans and investments? (Discussion)**
- **Understanding is Simple Interest, Amount and Principle**
- **Calculating Simple interest, given amount and principle**
- **Calculating Simple interest over one (1) year**
- **Calculating Simple interest over multiple years**
- **Calculating Simple interest over a fraction of a year**

SPRINT

1.	1 × 9 =		2.	7 × 4 =	
3.	9 × 1 =		4.	4 × 7 =	
5.	2 × 9 =		6.	8 × 4 =	
7.	9 × 2 =		8.	4 × 8 =	
9.	3 × 9 =		10.	9 × 4 =	
11.	9 × 3 =		12.	4 × 9 =	
13.	9 × 9 =		14.	10 × 8 =	
15.	5 × 9 =		16.	4 × 8 =	
17.	9 × 5 =		18.	8 × 3 =	
19.	6 × 9 =		20.	1 × 8 =	
21.	9 × 6 =		22.	2 × 8 =	
23.	10 × 9 =		24.	4 × 8 =	
25	9 × 9 =		26.	4 × 4 =	
27	4 × 4 =		28.	4 × 3 =	
29	8 × 9 =		30.	4 × 2 =	
31	9 × 3 =		32.	4 × 7 =	
33	7 × 9 =		34.	4 × 8 =	
35	6 × 9 =		36.	11 × 4 =	
37	9 × 10 =		38.	4 × 11 =	
39	9 × 5 =		40.	12 × 9 =	
41	9 × 6 =		42.	8 × 12 =	
43	9 × 1 =		44.	12 × 4 =	

Practice 1: Evaluate to simple form.

a. $\frac{3}{4} \times \frac{1}{2} \times \frac{8}{9} =$

b. $\frac{1}{3} \times \frac{4}{5} \times \frac{3}{8} =$

c. $\frac{\mathbf{7}}{\mathbf{10}} \times \frac{4}{5} \times \frac{8}{12} =$

d. $\frac{6}{10} \times \frac{1}{2} \times \frac{3}{4} =$

Practice 2: Calculating the same problem in using fractions decimals and percentages.

T – Write "6 months = _____ years"

T – Says "What fraction of a year is 6 months?"

S – Reply "half year" or write "$\frac{1}{2}$

Reverse Questioning

T – Write "one third or $\frac{1}{3}$ year = _____ months"

T – Says "one-third of a year is how many months?

Repeat this activity for the following problems

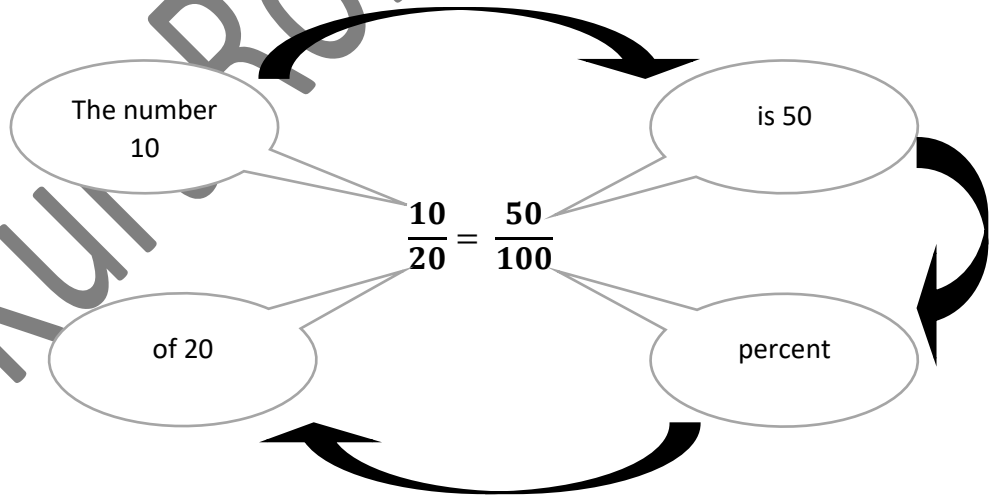
9 months	$\frac{2}{3} year$
15 months	$1\frac{1}{2}$ years
18 months	$3\frac{3}{4}$ *years*

Practice 3: Write the following numbers in value form.

T – Say "recall the 4 parts to each percentage problem."

- The part = 10
- The total = 20
- The percentage = 50
- The % means 100.

We can write our sentence "10 is 50% of 20" as



S.E.A. Application Problems – You have eight (8) minutes to do the next three (5) questions**. TIME YOURSELF**

1. 40% of a number, P is 10. What is 25% of P?

2. Mr. Ali pays $1000 deposit on a furniture set and is charged $375 monthly for the next year. How much did Mr. Ali pay for the furniture altogether?

3. Martin is playing darts. His scores from his first five throws are given in the box below.

40	**25**	**20**	**15**	**10**

   a. Find his mean score?

   b. After a sixth throw, Martin's mean score is now 25. What is his sixth score?

4. Jerod is making chocolate chip cookies. The recipe uses $\frac{3}{4}$ cup of sugar. He wants to make one-half of a batch. How many cups of sugar does he need?

5. Mr. Gupta's watch shows that he took 35 minutes to travel from Tunapuna to Couva. He arrives at Couva at 9:18 am.
   a. At what time did he leave Tunapuna?

   b. If it is 9:18pm, how many degrees does the minute hand on his watch need to move before his watch shows 10:00 am?

Understanding is Simple Interest , the Amount and the Principle

There are three (3) main parts to a **loan** or **investment**.

1. **Principal**: The money which we deposit in the bank or the money loaned from the bank.

2. **Simple Interest**: You can think of simple interest in two ways.

   a. If you put money into a bank or financial institution **they will pay you interest each year** on this money.
   b. If you have borrowed money, from a bank for a mortgage or other loan, **you must pay them interest each year.**

3. **Amount**: The Principal is added to the interest; it is called the amount. The amount is sometimes called the "**new balance**"

Things to think about:

- Why is the money that you put into the bank not the same as what you take out of the bank?

- Why do you think a person who takes a loan always pays bank more than was borrowed at first?

- Why do you think we call it **SIMPLE** interest?

MATH FACT #:

$$\boldsymbol{S.I.} = Amount - Principle$$

$$\boldsymbol{Amount} = Principle + S.I.$$

$$\boldsymbol{Principle} = Amount - S.I.$$

Example

Robert deposited $3000 in Scotia Bank. After a year he withdrew $3300.

a. How much interest did he receive from Soctia Bank.
b. What is the percentage of interest he received or (rate of interest)

Simple Interest – _____

Amount – _____

Principle – _____

Find the simple interest (SI)

- SI = $3300 - $3000

  = $_____

Now we find the **percentage** of interet

- Recall the 4 part formular for calculating percentage.
- $percentage = \frac{part}{total} \times \frac{100}{1}$

Try These:

1. Mr. Pitt borrows $400 from his credit union. He must repay the credit union $443.40. Calculate the interest he has to pay? What is rate of interest?

Simple Interest – _____

Amount – _____

Principle – _____

2. Ms.Valere saves $2745 in her a bank account. The bank rewards her with $58.60. What is the amount of money in Ms. Valere's account?

Simple Interest – _____

Amount – _____

Principle – _____

3. Peter withdrew $3200 from his account; much more than he had put in. If the bank paid Peter $400 simple interest, how much was Peter's principle? What is the rate of interest paid by the bank?

Simple Interest – _____

Amount – _____

Principle – _____

4. Seth invested a certain amount of money and got back an amount of $ 8400. If the bank paid an interest of $ 700, find the amount Sam invested.

Simple Interest – _____

Amount – _____

Principle – _____

Often, **the amount,** and **simple interest** is not known at first. Only the principle is given. A person can use percent or rates to help calculate the Simple Interest.

Calculating Simple interest over one year

MATH FACT #: To calculate the simple interest over one (1) year, we need to calculate the "part" of a percentage problem

Recall that to calculate **PART** we say

$$Part = \frac{Percent}{100} \times \frac{Total}{1}$$

$$Part\ (S.I.) = \frac{Percent\ (rate)}{100} \times \frac{Total\ (Principle)}{1}$$

Example

Sally deposits $600.00 into an account with an interest rate of 5% per year.

a. Calculate the interest that Sally receives in one year
b. Find how much money she has in the account after one year.

Simple Interest – _____

Amount – _____

Principle – _____

Rate per year - _____

Time - _____

Simple Interest = 5% of $600

- $\frac{5}{100} \times \frac{60000}{1} =$
- = _____

Amount = Principle + simple interest

- Amount = $_____ + $_____
- =_____

Try These:

Georgina puts $45 into an account which pays interest at a rate of 5% per annum How much money would she have after a year?

Simple Interest – _____

Amount – _____

Principle – _____

Rate per year - _____

Time - _____

Delphine has $6200 in her Royal Bank account. Royal Bank pays interest at 15% per annum. Republic Bank pays interest at 20% per annum. How much more money would Delphine get in interest if she moved her $6200 to the Republic Bank for one year?

Simple Interest – _____

Amount – _____

Principle – _____

Rate per year - _____

Time - _____

Richard deposits $ 5400 and got back 4 percent rate after a year. Calculate Richard's new balance.

Simple Interest – _____

Amount – _____

Principle – _____

Rate per year - _____

Time - _____

Calculating Simple interest over multiple years

If money is left in a bank for more than one year, then the amount of interest earned has to increase. We can multiply the simple interest for one year by the number of years that the money has been left at the bank.

MATH FACT #: To calculate the simple interest over many years, we need to multiply the simple interest for one year by the number of years.

$$S.I\ (many\ years) = S.I.\ (for\ 1\ year) \times number\ of\ years$$

OR

$$S.I.many\ years = \frac{Percent\ (rate)}{100} \times \frac{Total\ (Principle)}{1} \times time$$

Example
Darren leaves $350 in his Bank account for 3 years. The account paid interest at a rate of 8% per annum. How much does he have in his account after 3 years?

Interest for one year = 8% of $350.00

- $= \frac{8}{100} \times \frac{35000}{1} =$
- = $_____

Interest for three years = $S.I.\ (for\ 1\ year) \times number\ of\ years$

- = $____×____
- = $_____

Amount = Principle + simple interest

- Amount = $_____ + $_____
- =_____

Try These:

Robert deposits $3000 in Bank of Grande for 3 year which earn him an interest of 8%. What is the amount he gets after 1 year, 2 years and 3 years?

Simple Interest – _____

Amount – _____

Principle – _____

Rate per year - _____

Time - _____

Tom saves $2430 and deposits it in the same high interest account which pays interest at a rate of 10% per annum. How much interest does Tom get if he leaves his money in the account for three years?

Simple Interest – _____

Amount – _____

Principle – _____

Rate per year - _____

Time - _____

Mr. Schneider invests $1500 at 8% per annum. Eight months later he decides to lift out his interest to help pay for a night out. How much will he draw out?

Simple Interest – _____

Amount – _____

Principle – _____

Rate per year - _____

Time - _____

Diego deposited $ 10000 for 4 years at a rate of 6% p.a. Find the interest and amount Diego got.

Simple Interest – _____

Amount – _____

Principle – _____

Rate per year - _____

Time - _____

Calculating Simple interest over a fraction of a year

If money is not left in a bank account for an entire year then only a fraction of the interest gets paid.

MATH FACT #: To calculate the simple interest over a fraction of a year, you must convert the months into a fraction of a year.

$$S.I\ (many\ years) = S.I.\ (for\ 1\ year) \times number\ of\ years$$

OR

$$S.I.many\ years = \frac{Percent\ (rate)}{100} \times \frac{Total\ (Principle)}{1} \times time$$

Example

Find the interest that Damon earns on $40.00 if he keeps it in the bank, paying 8% interest p.a., for 6 months.

Interest for one year = 8% of $40.00

$= \frac{8}{100} \times \frac{4000}{1}$

= £3.40

Interest for 6 months = $\frac{6}{12}$ *or* $\frac{1}{2}$ of $_____

= $_____

Amount = $_____+ $_____ = $_____

Try These:

Eliza has $560. She deposits it in a bank account that pays 25% interest per annum. She leaves it in the bank for 2 months. How much money does Eliza have now?

Simple Interest – _____

Amount – _____

Principle – _____

Rate per year - _____

Time - _____

Lindy puts $78 into an account which pays interest at a rate of 5% per annum. How much money would she have after two months?

Simple Interest – _____

Amount – _____

Principle – _____

Rate per year - _____

Time - _____

Mr. Gosling invests $3200 at 6% per annum. Five months later he decides to draw out his interest to help pay for a new camera. How much does he draw out?

Simple Interest – _____

Amount – _____

Principle – _____

Rate per year - _____

Time - _____