Section 1.1

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Foundations of Math 12
Section 1.1

Simple Interest

Simple Interest is The amount of interest earned on an investment or paid on a loan

Based on a the original amount (principal) and the simple interest rate.

With a partner, work through *"Investigate the Math"* on page 6.

Ex. 1: Matty invested in a $2500 guaranteed investment certificate (GIC) at 2.5% simple interest, paind annually, with a term of 10 years.

a) How much interest will accumulate over the term of Matty's investment?

Interest Rate = 0.025

Principal = $2500

1 yr → 2500(0.025) = 62.50 × 10 = 625

$I = P(r)t$

Total Interest = $625

b) What is the future value of his investment at maturity?

Future Value = Principal + Interest

2500 + 625 = $3125

c) Use Matty's investment to write an Algebraic expression that could be used to determine the future value of any investment earning simple interest.

$A = P + Prt$

$A = P + Prt$

$A = P + I$

P → Principal
r → interest rate
t → time
A = future value

Ex. 2: Sunni invested $15 000in a savings account. Sunni earned a simple interest rate of 8%, pain semi-annually on her investment. She intends to hold the investment for 4.5 years, when she will withdraw all the money to buy a car. Determine the value of the investment at each half year until she withdraws the money.

Principal → $15000

Interest → 8% = 0.08
↳ semi-annually

Term → 4.5 yrs.
↳ time = 9

$A = P + Prt$

$= 15000 + 15000(0.08)(4.5)$

$= 15000 + 5400$

$A = 20400$

Interest earned 6 months = $\frac{\text{Interest}}{\#\text{ of payments}} = \frac{5400}{9}$

$= \$600$

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HW: 1-3 (A, B) 4, 5

Ex. 3: Ingrid invested her summer earnings of $5000 at 8% simple interest, paid annually. She intends to use the money in a few years to take a holiday with a girlfriend.

a) How long will it take for the future value if the investment to grow to $8000?

P=5000
r= 8% = 0.08
t= ?
A= 8000

$A = P + Prt$
$8000 = 5000 + 5000(0.08)t$
$8000 = 5000 + 400t$
$-5000 \quad -5000$
$\frac{3000}{400} = \frac{400t}{400}$
$7.5 = t$

Because the payment is annually, it would take 8yrs

b) What is Ingrid's rate of return?

$I = Prt$
$I = 5000(0.08)(8)$
$= 3200$

$\text{Rate of Return} = \frac{\text{Interest}}{\text{Principal}}$

$R = \frac{3200}{5000}$
$= 0.64$
64%

Ex. 4: Grant invested $25 000 in a simple interest Canada Savings Bond (CSB) that paid interest annually.

a) If the future value of the CSB is $29 375 at the end of 5 years, what interest rate does the CSB earn?

P = 25 000
A = 29 375
t = 5
r = ?

$A = P + Prt$
$29375 = 25000 + 25000r(5)$
$29375 = 25000 + 125000r$
$-25000 \quad -25000$
$\frac{4375}{125000} = \frac{125000r}{125000}$
$0.035 = r$

Interest Rate $= 3.5\%$

b) Grant cashed in the bond after 4.5 years because a house he had been admiring came up for sale and he needed a down payment. How much money did he have for the down payment?

4.5 yrs but it paid annually $t = 4$

P = 25000
r = 3.5%
t = 4

$A = P + Prt$
$= 25000 + 25000(0.035)(4)$
$= 25000 + 3500$
$= 28500$

Grant put down $28500

HW: PAGE 14 – 17 QUESTIONS 1 – 3(A, B), 4 – 12 (EVEN NUMBERS ONLY)