The Math Mastery Blueprint

Grade 9 Math HW

Simple and Compound Interest

Part 1. Find A, or the amount of money in the account

Simple Interest Rate

Formulas: $I = P*r*t$

$A = P + I$

Show all the steps of your work

1. P = $1,800
   Interest rate, or r, = 8%
   Time = 10 years

2. P = $5,600
   Interest rate, or r, = 12.5%
   Time = 15 years

3. P = $10,700
   Interest rate, or r, = 7.5%
   Time = 9 years

Part 2. Find I, or the amount of interest earned for money in the account

Compound Interest

Formulas: $A = P\left(1 + \frac{r}{n}\right)^{nt}$

A = I + P, therefore **I = A - P**

n = number of compounding periods

A = amount in the account

P = principal

t = time in years

r = interest rate

4. P = $3,600
   Compounded annually
   r = 6.5%
   t = 12 years

5. P = $7,640
   Compounded semianually (n = 2)
   r = 4.5%
   t = 11 years

6. P = $21,500
   Compounded quarterly (n = 4)
   r = 8%
   t = 13 years

Part 3. Word Problems

7. Nitin wants to deposit his $12,000 in an account that earns compound interest at an annual interest rate of 8% per year. The bank officer told Nitin that interest compounds semi-annually in this special account.

   How much money will Nitin have in the bank account after 5 years?

   How much interest would Nitin have made in that 5-year period?

8. Sarah wants to take advantage of a special offer on a bank account that offers her a 5% annual rate of interest, with the account compounding quarterly. Sarah plans to keep the money locked in for 12 years.

   a.) If Sarah were to deposit $8,000 as her principal, how much would she have after 12 years?

   b.) If Sarah were to deposit $14,000 as her principal, how much would she have after 12 years?

9. A bank is guaranteeing an annual interest rate of 6.5% on a savings account. Robert wants to deposit $20,000 in it. The bank says it will only compound annually.

    a.) What is the amount of money that Robert will have in the account after 18 years?

    b.) If the bank were to now promise Robert that under the same rate (6.5%), the compounding would be semi-annual, how much would he have in his account after 18 years?

10. If you were a depositor, would you rather have your account have simple interest or compound interest? Why? (Explain using concepts learned today)