Applications of Exponents - Working with Formulas

Simple Interest: $A = P(1 + r)^t$ (Used when interest compounded annually)

Compound Interest: $A = P\left(1 + \frac{r}{n}\right)^{nt}$ (Used when interest compounded other than annually)

Where: A = Ending Amount
P = Beginning Amount
r = interest rate (in decimal form)
n = number of compounding periods in a year
t = number of years

Simple Interest Examples:

If you invested \$1000 in an account earning 8% per year, compounded annually, how much will the account contain after 5 years?

If you invested \$500 in an account earning 4% per year, compounded annually, how much will the account contain after 8 years?

Compound Interest Examples:

If \$6,000 is deposited in an account paying 5% compounded quarterly, then what amount will be in the account after 10 years?

If \$7,000 is deposited in an account paying 8% interest, compounded monthly, then what amount will be in the account after 5 years?

Comparing Simple and Compound Interest:

Suppose you decided to loan \$1000 to a person and decided to charge them 4% interest. Calculate the amount in the account after 3 years if the interest is compounded in the following ways:

a) Compounded Yearly:

b) Compounded Quarterly:

c) Compounded Monthly:

d) Compounded Weekly:

e) Compounded Daily:

f) Which way would you choose to compound the interest? Why?