

Number and algebra

Money & Financial Mathematics: Compound Interest

Year 10

Q1. Learn with an example

question

Josie opened a savings account and deposited \$300.00 as principal. The account earns 15% interest, compounded annually. What is the balance after 3 years?

Use the formula $A = P\left(1 + \frac{r}{n}\right)^{nt}$, where A is the balance (final amount), P is the principal (starting amount), r is the interest rate expressed as a decimal, n is the number of times per year that the interest is compounded, and t is the time in years.

Round your answer to the nearest cent.

\$

key idea

Compound interest:

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

A is the balance (final amount).

P is the principal (starting amount).

r is the interest rate expressed as a decimal.

n is the number of times per year that the interest is compounded.

t is the time in years.

solution

You want to find the balance, A . First, list the other variables in the equation $A = P\left(1 + \frac{r}{n}\right)^{nt}$ and specify their given values.

$$P = \$300.00$$

$$r = 15\% = 0.15$$

$$n = \text{once per year (annually)}$$

$$t = 3 \text{ years}$$

Now plug these values into the equation and solve for A .

$$\begin{aligned} A &= P\left(1 + \frac{r}{n}\right)^{nt} \\ &= 300\left(1 + \frac{0.15}{1}\right)^{1 \cdot 3} && \text{Plug in } P = 300, r = 0.15, t = 3 \text{ and } n = 1 \\ &= 300\left(1 + \frac{0.15}{1}\right)^3 \\ &= 300(1 + 0.15)^3 \\ &= 300 \cdot 1.15^3 \\ &\approx 456.2625 \\ &\approx \$456.26 && \text{Round to the nearest cent} \end{aligned}$$

To the nearest cent, the balance is \$456.26.

Q2. Madison opened a savings account and deposited \$200.00 as principal. The account earns 14% interest, compounded annually. What is the balance after 9 years?

Use the formula $A = P\left(1 + \frac{r}{n}\right)^{nt}$, where A is the balance (final amount), P is the principal (starting amount), r is the interest rate expressed as a decimal, n is the number of times per year that the interest is compounded, and t is the time in years.

Round your answer to the nearest cent.

\$

Q3. Charlotte puts \$500.00 into an account to use for school expenses. The account earns 3% interest, compounded annually. How much will be in the account after 4 years?

Use the formula $A = P \left(1 + \frac{r}{n} \right)^{nt}$, where A is the balance (final amount), P is the principal (starting amount), r is the interest rate expressed as a decimal, n is the number of times per year that the interest is compounded, and t is the time in years.

Round your answer to the nearest cent.

\$



2: 650.39,
3: 562.75

For detailed working of this worksheet

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