Example

Suppose that you have $10000 to invest. Which investment yields a greater return over 11 years: 7.23% compounded monthly or 7.3% compounded quarterly?

1. The accumulated value of the 7.23% investment is

   ANSWER: $22098.26

   Here we use the formula $A = P \left(1 + \frac{r}{n}\right)^{nt}$, where $P = 10000$, $t = 11$, and $r = 0.0723$. Also, since we compound monthly (12 times per year), then $n = 12$. Then the accumulated value is

   \[
   A = P \left(1 + \frac{r}{n}\right)^{nt} = 10000 \left(1 + \frac{0.0723}{12}\right)^{12 \cdot 11} = 22098.2591
   \]

   Since we round to the nearest cent and include the dollar sign ($), the answer is $22098.26.

2. The accumulated value of the 7.3% investment is

   ANSWER: $22161.26

   Here we use the formula $A = P \left(1 + \frac{r}{n}\right)^{nt}$, where $P = 10000$, $t = 11$, and $r = 0.073$. Also, since we compound quarterly (4 times per year), then $n = 4$. Then the accumulated value is

   \[
   A = P \left(1 + \frac{r}{n}\right)^{nt} = 10000 \left(1 + \frac{0.073}{4}\right)^{4 \cdot 11} = 22161.2588
   \]

   Since we round to the nearest cent and include the dollar sign ($), the answer is $22161.26.
3. CONCLUSION:

The investment at _____% compounded ______ yields a greater return.

ANSWER:

Since 22161.26 > 22098.26, then the investment at 7.3% yields a greater return. Then the answer is:

The investment at \[7.3\]% compounded \[\text{quarterly}\] yields a greater return.