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38) Question: Julie's friend Kristin opened an account at another bank. Kristin was informed that her account would grow at 6% interest compounded annually. Julie's bank offered her 5% interest compounded annually. If Julie and Kristin both deposit \$1000 in their accounts on day 1. They let the money grow in their respective accounts, and do not withdraw anything from their accounts, how much more will Kristin have after 15 years?

For speed, while solving something similar, only THINK the words in blue; WRITE only the words in other COLORS.

- Given:
- 1) Kristin's bank offered her 6% interest compounded annually.
 - 2) Julie's bank offered her 5% interest compounded annually.
 - 2) Julie and Kristin both deposit \$1000 in their accounts on day 1.
 - 3) They let the money grow in their respective accounts, and do not withdraw anything from their accounts.

Solve: How much more will Kristin have after 15 years?

Road Map of Solution:

Using the compound interest formula used in the previous question.

First Step: Find amount in Kristin's account after 15 years.

Second Step: Find amount in Julie's account after 15 years.

Third Step: Subtract to find, how much more will Kristin have after 15 years?

First Step: Find amount in Kristin's account after 15 years.

Using the compound interest formula used on the previous page. (Please see equation #s 4, 4b & 4c on previous page),

$$\begin{aligned}
 \text{amount in Kristin's account after 15 years} &= [(1 + 6\%)^{15} \times \$1000] \\
 &= \left[\left(1 + 6 \times \frac{1}{100} \right)^{15} \times \$1000 \right] \\
 &= \left[\left(1 + \frac{6}{100} \right)^{15} \times \$1000 \right] \\
 &= [(1 + 0.06)^{15} \times \$1000] \\
 &= [(1.06)^{15} \times \$1000] \\
 &= [(2.396558) \times \$1000] \\
 &= [\$2396.558] \\
 &= [\$2396.56] \text{ Rounding off to the nearest cent.}
 \end{aligned}$$

Second Step: Find amount in Julie's account after 15 years.

Using the compound interest formula used on the previous page. (Please see equation #s 4, 4b & 4c on previous page),

$$\begin{aligned}
 \text{amount in Julie's account after 15 years} &= [(1 + 5\%)^{15} \times \$1000] \\
 &= \left[\left(1 + 5 \times \frac{1}{100} \right)^{15} \times \$1000 \right] \\
 &= \left[\left(1 + \frac{5}{100} \right)^{15} \times \$1000 \right] \\
 &= [(1 + 0.05)^{15} \times \$1000] \\
 &= [(1.05)^{15} \times \$1000] \\
 &= [(2.078928) \times \$1000] \\
 &= [\$2078.928] \\
 &= [\$2078.93] \text{ Rounding off to the nearest cent.}
 \end{aligned}$$

Third Step: Subtract to find,

$$\text{how much more will Kristin have after 15 years?} = \$2396.56 - \$2078.93$$

$$\text{how much more will Kristin have after 15 years?} = \$317.63 \dots\dots\dots \text{Answer}$$