Which of the two rates would yield the larger amount in one year?

\[ F = P \left(1 + \frac{r}{n}\right)^{nt} \]

11% Semi-annually

\[ F = (1.1)^2 \]
\[ P = 1 \]
\[ r = 11\% = 0.11 \]
\[ n = 2 \]
\[ t = 1 \]
\[ F = 1 \left(1 + \frac{0.11}{2}\right)^2 \]
\[ = 1.113025 \]

10.6% Daily

\[ F = (1.0.06) \]
\[ P = 1 \]
\[ r = 10.6\% = 0.106 \]
\[ n = 365 \]
\[ b = 1 \]
\[ F = 1 \left(1 + \frac{0.106}{365}\right)^{365.1} \]
\[ = 1.111804767 \]

1.113025 (left)

1.111804767 (right)

1.113025 \( \pm \) P
Which of the two rates would yield the larger amount in one year?

11% semiannually

\[ F = P \left(1 + \frac{r}{2}\right)^{2t} \]

\[ P = 1 \]

\[ r = 11\% = 11(0.01) = 0.11 \]

\[ n = 2 \]

\[ t = 1 \]

\[ F = 1 \left(1 + \frac{0.11}{2}\right)^2 = 1.113025 \]

10.6% annually

\[ F = P \left(1 + \frac{r}{n}\right)^{nt} \]

\[ P = 1 \]

\[ r = 10.6\% = 10.6(0.01) = 0.106 \]

\[ n = 365 \]

\[ t = 1 \]

\[ F = 1 \left(1 + \frac{0.106}{365}\right)^{365} = 1.011804767 \]

\[ F = 1 \left(1 + \frac{0.106}{365}\right)^{365} \]

\[ 1.113025 \text{ (left)} \]

\[ 1.111804767 \text{ (right)} \]

\[ 1.111804767 \cdot 1 \]

\[ 1.1113025 \text{ (left)} \]

\[ 1.1113025 \]
8.7 System of Inequalities  

Graph inequalities

\[
\begin{align*}
3x + 5y &\leq 15 \\
5x - 3y &\leq 0
\end{align*}
\]

* To graph an inequality

Step 1. Solve for \( y \) if possible, if not, solve for \( x \).

1. \( 3x + 5y \leq 15 \)
   
   \[
   y \leq \frac{-3x + 5}{5}
   \]

   \[
   y \leq -\frac{3}{5}x + \frac{15}{5}
   \]

   Step 2. Shade

   \[
   y = \frac{5}{3}x + 10
   \]

   \[
   \frac{\text{rise}}{\text{run}} = \frac{5}{3}
   \]

   \[
   \text{y-intercept} = 0, 10
   \]

   \[
   y \leq \text{shade up}
   \]

2. \( 5x - 3y \leq 0 \)

Step 1. Solve for \( y \)

\[
\begin{align*}
5x - 3y &\leq 0 \\
-3y &\leq -5x \\
\frac{-3y}{-3} &\leq \frac{-5x}{-3} \\
y &\geq \frac{5}{3}x + 0
\end{align*}
\]

Step 2. Pretend to draw

\[
\frac{\text{rise}}{\text{run}} = \frac{5}{3}
\]

Step 3. Shade

\[
\frac{\text{rise}}{\text{run}} = 0, 0
\]

\[
\frac{\text{rise}}{\text{run}} = 0, 0
\]

\[
\text{y-intercept} = \text{shade up}
\]
\[
\begin{align*}
\{ & \quad x \geq 0 \quad \{ \text{quad} \\
       & \quad y \leq 0 \quad \} \\
       & \quad x+y \geq 2 \\
       & \quad x+2y \leq 10 \\
       & \quad 2x+y \leq 10 \\
\end{align*}
\]

\[x+y \geq 2\]
\[y \geq -x+2\]
\[y \geq -x+2\]
\[y \geq -\frac{1}{2}x+2\]
\[\text{solid up}\]

\[x+2y \leq 10\]
\[\frac{2y}{a} \leq \frac{-x+10}{2}\]
\[y \leq \frac{-1}{2}x + \frac{10}{a}\]
\[y \leq \frac{-1}{2}x + 5\]
\[\text{solid down}\]

\[2x+y \leq 10\]
\[-2x \leq -2x\]
\[y \leq -2x + 10\]
\[\text{solid down}\]