Sample Problem Four.  Solution

Show your work to receive full credit.

Assume the following:

Riskless borrowing & lending rate is 5%.

\[
\begin{array}{ccc}
\text{E[R]} & \sigma \text{ (std deviation)} \\
\hline
\text{Asset A} & 10\% & 20\% \\
\text{Asset B} & 15\% & 30\% \\
\text{Asset C} & 8\% & 10\% \\
\end{array}
\]

a) which Asset has the highest reward to variability ratio (Sharpe ratio)?

Answer: B, as shown below

A: \((10\% - 5\%)/20\% = 0.25\)

B: \((15\% - 5\%)/30\% = 0.333\)

C: \((8\% - 5\%)/10\% = 0.30\)

b) Your client wants a maximum standard deviation of 20%, but would like the highest possible return subject to that constraint. What would you recommend?

Allocate 66.6\% of wealth to portfolio B, 33.3\% to the riskless asset:

Expected return = \((1/3)5\% + (2/3)15\% = 11.66\%\)

Standard deviation = \((2/3) 30\% = 20\%\)