Maddie and Joe each have several colorful stones. If Maddie were to give Joe six stones, they would have an equal number of stones. If instead Joe were to give Maddie six stones, then Maddie would have three times as many stones as Joe. How many stones does each have?

Solution:

This problem is easily solved by setting up a system of equations. Let $M$ equal the number of stones that Maddie has and $J$ the number of stones that Joe has. Then, we can set up the following two equations:

\[
M - 6 = J + 63(J - 6) = M + 6
\]

With our equations in place, we can perform substitution by letting equation become $M = J + 12$. Then we find that $3J - 18 = J + 18$. Solving for $J$, we see that $J = 18$ and that $M = 18 + 12 = 30$. 