2.2 14. a) Suppose a small country only has three and ten cent stamps show that all postage above a certain amount can be paid using these stamps.

There exists \( S_n : n \geq x \) with \( a \) and \( b \) contained in the set of natural numbers such that \( n = 3a + 10b \).
Suppose \( x = 18 \), then \( S_n : \{18, 19, 20, 21, \ldots \} \).
First we must prove the base cases.
\[ S_{18} : 18 = 3a + 10b, \] is true for \( a = 6 \) and \( b = 0 \), so \( 18 = 3(6) + 10(0) \).
\[ S_{19} : 19 = 3a + 10b, \] is true for \( a = 3 \) and \( b = 1 \), so \( 19 = 3(3) + 10(1) \).
\[ S_{18} : 20 = 3a + 10b, \] is true for \( a = 0 \) and \( b = 2 \), so \( 20 = 3(0) + 10(2) \).
Next we assume the induction hypothesis.
This is, assume \( k \geq 20 \) and \( S_{18}, S_{19}, S_{20}, \ldots, S_k, \) are true.
Prove \( S_{k+1} \) is true.
Since \( S_{k+2} : k-2 = 3a + 10b \) and you can add a three cent stamp you obtain:
\[ k+1 = 3a + 10b + 3 = 3(a+1) + 10b. \] This proves that you can write the \( k+1 \)th stamp in terms of three and ten cent stamps, and by induction we conclude \( S_n \) is true for \( n \geq 18 \).