Digit Chains

ACTIVITY

1. Amanda uses this rule to make a digit chain:

   > Double the tens digit and add 1 to the ones digit.
   > Add the two totals.

   She starts her chain with 68.

   > 68 is 6 tens and
   > 8 ones.
   > So 68 becomes
   > (2 x 6) + (8 + 1)
   > = 12 + 9
   > = 21.

   68 → 21 → 6 → 7 → ?

   a. Copy and continue the digit chain as far as it can go.
   b. i. Using Amanda's rule, make a digit chain with a starting number of 53.
      ii. See if you can combine your digit chain with Amanda's.
   c. i. Using Amanda's rule, make separate digit chains starting with the numbers 37, 48, 63, 75, 83, and 90.
      ii. See if you can combine these digit chains with Amanda's.
   d. Explain what happens with the digit chain.
   e. Find out how 0, 1, and 2 fit into the digit chain.

   134 =
   13 tens and 4 ones

2. a. Amanda decides to use 134 as a 3-digit starting number.
      She writes 134 = 13 tens and 4 ones.
      Show how she gets 31 from 134 using her digit rule.
   b. Show how 134 fits into the digit chain.
   c. Show how 100, 256, and 751 fit into Amanda's digit chain.
   d. Figure out a way to use Amanda's rule for the 4-digit number 2 138.
      Show how it fits into Amanda's digit chain.
   e. Choose your own 4-digit starting number.
      Show how it fits into Amanda's digit chain.