Creating Number Tricks Using Algebra

How can you model number tricks?

A. Try this trick. Get the picture. Here’s the algebra!
   Think of a one-digit number. $n$
   Multiply by 6. $6n$
   Add 10. $6n + 10$
   Divide by 2. $3n + 5$
   Subtract 5. $3n$
   Divide by 3. $n$
   What’s the answer? Always your starting number!

B. Try this trick. Get the picture. Here’s the algebra!
   Think of a one-digit number. $a$
   Multiply by 6. $6a$
   Add 10. $6a + 10$
   Subtract the original number. $5a + 10$
   Divide by 5. $a + 2$
   Subtract the original number. $2$
   What’s the answer? Always 2!

1. Finish the trick below so that the answer is always the original number.
   Try this trick. Get the picture. Here’s the algebra!
   Think of a one-digit number. $y$
   Multiply by 10. $10y$
   Subtract 10. $10y + 10$
   Divide by 5.
   Subtract 2.

2. Make up a trick of your own. Use pictures and algebra to show how it works.
   Try it with a classmate.