Rationals, Place Values, extensions

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Recall the problem: A five digit number has the strange property that putting a 1 after it gives you a number 3 times as large as putting a 1 in front of it. What is the number?

Find a) a fifth grade solution b) an Algebra I solution.

What could you change to give a new problem?

We want to find ways of extending this problem.

1.What happens if you change the 3 to some other number less than 10?

2. Look up or work out the algorithm for changing a repeating decimal to a fraction.

3. The following byway will inform your solution to question 4. Find integers a and b such that $a/b =$:

1. $.\overline{9}$
2. $.\overline{4}$
3. $.\overline{45}$
4. $.\overline{142857}$
5. Use calculators and also paper.
   (a) What is 7×142857?
   (b) What is $1 \div 7$?

4. Now let's try to find for what lengths of x we can find solutions to: A k-digit number has the strange property that putting a 1 after it gives you a number 3 times as large as putting a 1 in front of it. What is the number?