

ANSWERS TO PREVIOUS PUZZLES:

- 5. We are actually dividing by $33 \times 37 \times 91$ which is 111 111. Thus, dividing any six-digit number which has identical digits will result in that digit. For example, $777\ 777 \div (33 \times 37 \times 91) = 777\ 777 \div 111\ 111 = 7$.
- 6. We are actually dividing by $13 \times 21 \times 37$ which is 10 101. Thus, dividing any six-digit number which has the same pair of digits three times in will result in that pair of digits. For example, $464\ 646 \div (13 \times 21 \times 37) = 464\ 646 \div 10\ 101 = 46$.

Perplexing Puzzles Prime Time

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Choose a prime number greater than 3.

e.g.

5

Square the number.

$$5^2 = 25$$

Add 15.

$$25 + 15 = 40$$

Divide by 12 and note the remainder.

$$40 \div 12 = \underline{\quad}$$

Repeat several times for different prime numbers.

Write about what you notice.

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Write a 4-digit number where each digit is one less than the previous digit.

e.g. **7654**

Reverse this number: 4567.

Subtract the smaller number from the larger.

Record the answer.

Try some other 4-digit numbers where each digit is one less than the previous digit. Write about what you notice.

There are only a few numbers that match the description above.

9876 **8765** **6543**
5432 **4321** **3210**

Try the same procedure using 3-digit and 5-digit numbers and note what happens.

$$\begin{array}{r} 7654 \\ - 4567 \\ \hline \\ \hline \end{array}$$

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