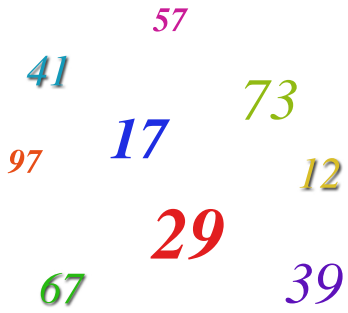
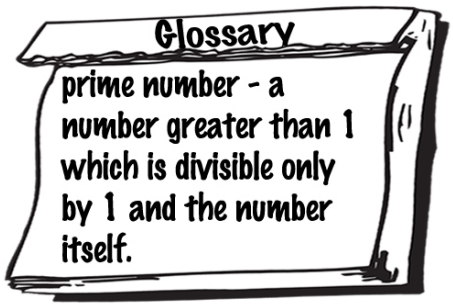
Problem



The number 17 is a prime number. When you reverse its digits, you get 71, which is also a prime number. How many two-digit prime numbers are still prime when you reverse their digits?



Hints

Hint 1 - If a prime has an even first digit, what kind of number will you get when you reverse the digits?

Hint 2 - If a prime has 5 as its first digit, will you get a prime number when you reverse the digits?

Suggestion: You may want to have the students use a 100s chart.

Solution

The two digit primes are: 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47, 53, 59, 61, 67, 71, 73, 79, 83, 89, and 97. Those with an even tens digit 2, 4, 6, or 8 will be even numbers when the digits are reversed, eliminating 23, 29, 41, 43, 47, 61, 67, 83. Those with tens digit 5 will be divisible by 5 when the digits are reversed, eliminating 53 and 59. This leaves 9 primes which are still prime when the digits are reversed: 11, 13, 17, 31, 37, 71, 73, 79, and 97.