RAFT IDEAS

**Topics:** Factors, Multiples, Prime Numbers

**Materials List**
- ✓ 100-Chart (see page 2)
- ✓ 100 tokens
- ✓ Scratch paper

This activity can be used to teach:
- Factors (Common Core Math Standards: Operations & Algebraic Thinking, Grade 4, 4; Grade 5, 2.1; Number System, Grade 6, 4)
- Problem Solving and Reasoning (Common Core Math Standards: Mathematical Practices, Grades 4-8)

raft resource area for teaching
www.raft.net

# Head to One Hundred!

Sift through Multiples & Factors up to 100


Find multiples & factors on a 100-grid board. See how the numbers relate to each other.

## Playing the Game (for 1-4 players)

1. Player 1 chooses any even number and puts a token on board for that number. Player 2 (or Player 1 for a single player game) chooses any number that is a multiple or a factor of Player 1's number, and puts a token on that number, stating how the two numbers are related. For example: Player 1 chooses 12. Player 2 could choose 1, 2, 3, 4, or 6 (each is a factor of 12). Alternately, Player 2 could choose 24, 36, 48, or any other number less than or equal to 100 that is a multiple of 12.
2. Each player takes a turn choosing a new number to cover and states the relationship to the number chosen on the previous turn. A player can choose any uncovered number, as long as the number is either a factor or a multiple of the number chosen in the last turn. (e.g., 3 is a factor of 24, 5 x 7 equals 35). The relationships can only involve whole numbers from 1 to 100.
3. Players work cooperatively to cover as many numbers as possible.
4. The game is over when no more numbers can be covered. Count the number of covered numbers to determine the score.
5. Play several times, thinking about strategies for reaching a higher score. Is there a maximum possible score?

## The Math Behind the Activity

This game strengthens understanding of multiples and factors of whole numbers and leads to thinking about choices. A multiple of a number occurs when a number is multiplied by another number (e.g., some multiples of 3 are 6; (3 x 2), 15; (3 x 5), and 33; (3 x 11)). Factors are whole numbers that can be multiplied together to obtain another number, (e.g., 3 and 5 are factors of 15). Multiples and factors are useful to know when working with fractions. This game is also a good way for students to start to explore prime numbers.

## Taking it Further

- Find prime numbers using Eratosthenes's Sieve: Cover the number 1. Place a token on all multiples of 2, but not on number 2. Place a token on all multiples of 3, but not on number 3. Continue placing a token on all multiples of an odd number; except for the odd number itself. The uncovered numbers are all the primes up to 100!

**Web Resources** (Visit www.raft.net/raft-idea?isid=610 for more resources!)
- Factors/Multiples -http://www.math.com/school/subject1/lessons/S1U3L1GL.html
- The Sieve of Eratosthenes - http://en.wikipedia.org/wiki/Sieve_of_Eratosthenes
- 100-chart ideas - http://letsplaymath.net/2008/09/22/things-to-do-hundred-chart/
- Khan Academy videos - www.khanacademy.org/math/arithmetic/factors-multiples

Written by Jeanne Lazzarini (RAFT)

# 100 Chart

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
| 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 |
| 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 |
| 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 |
| 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 |
| 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 |
| 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 |
| 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 |