Prime or Composite?

STRAND: Number and Number Sense

STRAND CONCEPT: Number Sets and Characteristics

SOL 5.3a

Remediation Plan Summary

Students will practice finding factors and identifying prime and composite numbers.

Common Misconceptions

- Students may think all odd numbers are prime when in fact several are composite for example 9, 15 and 21.
- Students may think 1 is prime number when a prime number must have 2 factors, 1 and itself. Since 1 only has one factor it is neither prime nor composite.

Materials

- Hundreds chart
- Reflection handout

Introductory Activity

Ask students what the term *factor* means. Discuss, and have students agree on a class definition.

Play a game that requires students to discover factors. Put two columns on the board: "Examples of My Idea," and "Non-examples of My Idea." Let your first idea be "Factors of 24," but do not reveal this to the students. Tell them that you are going to give them examples and non-examples of your idea as clues that can lead them to guess your idea. When they think they know your idea, they should raise their hand and help you give more examples and non-examples. Begin by listing 2 and 12 as examples of your idea and 5 and 14 as non-examples. Continue adding examples and non-examples of factors slowly until you have listed all factors of 24. At that point, ask a student to reveal your idea. If another round is needed to reinforce the concept of factors, play the game again with factors of 100.

Plan for Instruction

1. Play the Factors Game with the class. In the first game, you will play against the class. Display a hundreds chart. Select a number on the chart, and cross it out. List on the board all the factors of that number. Add all the factors to get the number of points you receive. Finally, cross out on the chart all the factors of your selected number.
2. Have the students, as a class, then take their turn by selecting a number that is not already crossed out, crossing it out, listing all the factors of that number, and adding all

the factors to get their score. If a factor is already crossed out because it was used previously, it may not be included in the sum.

3. Continue taking turns until all of the numbers on the chart are crossed out. Total the points to find the winner. Play the Factors Game again if students need more practice finding factors.

4. Discuss strategy for the game, asking questions such as, "How did you decide which number to select? Are some numbers better to select than others? If so, why? Are some numbers not good to pick? If so, which ones are they?"

5. After playing the game several times, focus on the "worst" numbers to pick. Ask students which numbers they should try to avoid in the Factors Game. Lead them to discover that a number that has only 1 and itself as factors does not yield many points. This is called a *prime number*. Highlight the prime numbers from 1 to 100 on the chart, noting that the definition of a prime number does not allow 1 to be a prime number because 1 has only one factor, namely, 1. Discuss the meaning of the term *composite numbers*.

6. Give each pair of students a hundreds chart, and allow them to play the Factors Game.

Pulling It All Together

Have students complete the "Reflection" worksheet.

Note: The following pages are intended for classroom use for students as a visual aid to learning.

Hundreds 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

Name:

Reflection

Dave is trying to decide which numbers to pick for the Factors Game. He is considering picking the numbers listed below. Make a list of all factors of each of these numbers to help Dave win the game!

6	12	16	20	25	45	50

Of all the numbers that Dave is considering, which one should he pick first?_____

Why?

_____

_____

_____