

Prime Numbers on 100-Grid

STRAND: Number and Number Sense

STRAND CONCEPT: Number Sets and Characteristics

SOL: 5.3a

Remediation Plan Summary

Students will identify and describe prime and composite numbers.

Common Misconceptions

- Students may still have difficulty with their multiplication facts and division facts and may not know what numbers are factors of composite numbers.
- Students may not understand that zero and one are neither prime nor composite.

Materials

- “Where are the Prime numbers?” worksheet
- Cubes or square tiles
- Grid paper and markers

Introductory Activity

- Students will discover all of the factors for a given number by making arrays using cubes or square tiles. Discuss with students what an array is and how you can find all the factors of a number with an array. As a class use cubes to find all the arrays for the number 6. Have students work independently to find all the factors of the number 11. *How many did you find? How are the arrays for 6 and 11 the same? How are they different?* Work on finding all factors using arrays for several more numbers. Have the students make a list of the numbers from the arrays they made and how many factors the number had.

Plan for Instruction

1. Explain to students that they will be investigating characteristics of certain types of numbers. Distribute the “Where Are the Prime Numbers?” worksheet. Define the term *divisible* for the class.
2. Ask students to circle the 2 in the first row. Then, ask them to go through the rest of the chart and cross out each number that is divisible by 2. Remind them to keep in mind the meaning of the term *divisible*.
3. Tell students to circle the 3 in the first row and cross out all numbers that are divisible by 3 if they are not already crossed out. You may wish to allow students to use a calculator to determine divisibility.

4. Continue this same procedure, having students circle 5 and cross out all numbers divisible by 5, circle 7 and cross out all numbers divisible by 7, circle 11 and cross out all numbers divisible by 11, etc. This will take most of the class period.
5. When the exercise is complete, ask the students to examine the numbers that are circled and decide what these numbers have in common. Once students realize that each circled number has exactly two factors—1 and the number itself—define *prime number*. Note that the definition of a prime number does not allow 1 to be a prime number because 1 has only one factor—namely, 1.
6. Ask the students what all of the numbers that are crossed out have in common. Define *composite number*.
7. Have students make a list of all the prime numbers less than 100. Tell them that they have just completed the Sieve of Eratosthenes, and explain that Eratosthenes was one of the ancient Greek mathematicians who figured out this method for identifying prime numbers. Ask students whether this method works for finding prime numbers between 100 and 200. Why, or why not?
8. Distribute the “Prime and Composite Numbers” worksheet, and have the students complete it.

Pulling It All Together (Reflection)

Select one or both of the options below to summarize the lesson.

Exit Slip: Look back at the list of numbers from the Introductory Activity. Classify each number as either prime or composite and explain how you know.

Students can complete the “Exit Slip- Prime and Composite Numbers”.

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

Name: _____

Where Are the Prime Numbers?

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

AR Remediation Plan – Number Sets and Characteristics

Name: _____

Exit Slip: Prime and Composite Numbers

Select the correct answer for each of the following SOL-related questions. Underline your answer.

1. Which of the following statements best explains why 13 is a prime number?
 - A It has more than two factors.
 - B It cannot be divided.
 - C It has exactly two different factors.
 - D It is odd.

2. How many factors does a prime number have?
 - F 0
 - G 1
 - H 2
 - J 3

3. Which of the following statements best explains why 24 is a composite number?
 - A All even numbers are composite numbers.
 - B All odd numbers are prime numbers.
 - C All composite numbers have exactly two factors.
 - D All composite numbers have more than two factors.

4. Which of the following numbers is *not* prime?
 - F 11
 - G 19
 - H 21
 - J 31