

## PATTERNS AND RECIPROCAL

Multiply the fractions in set A and set B. Then, observe the patterns and answer the questions below.

SET A
$5 \cdot \frac{1}{4} = \underline{\hspace{2cm}}$
$5 \cdot \frac{2}{3} = \underline{\hspace{2cm}}$
$5 \cdot \frac{5}{8} = \underline{\hspace{2cm}}$

SET B
$5 \cdot \frac{5}{4} = \underline{\hspace{2cm}}$
$5 \cdot \frac{8}{5} = \underline{\hspace{2cm}}$
$5 \cdot \frac{7}{3} = \underline{\hspace{2cm}}$

SET C
$\frac{3}{4} \cdot \frac{4}{3} = \underline{\hspace{2cm}}$
$\frac{4}{5} \cdot \frac{5}{4} = \underline{\hspace{2cm}}$
$\frac{1}{6} \cdot \frac{6}{1} = \underline{\hspace{2cm}}$

1. What do you notice about the problems in set A? What do you notice about the answers in set A? How do they compare to the value of 5?

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2. What do you notice about the problems in set B? What do you notice about the answers in set B? How do they compare to the value of 5?

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3. Multiply the fractions in set C. What do you notice about the fractions and answers in set C?

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# RECIPROCAL OF A FRACTION

- A fraction multiplied by its reciprocal has a product of \_\_\_\_\_.
- Also called the \_\_\_\_\_ inverse.
- Examples:

$$\frac{5}{8} \cdot \frac{8}{5} = 1$$

$$\frac{9}{7} \cdot \frac{7}{9} = 1$$

$$\frac{2}{11} \cdot \frac{11}{2} = 1$$

For 4-9, determine the reciprocal of each fraction.

4. $\frac{1}{4}$	5. $\frac{13}{6}$	6. $\frac{8}{3}$
7. $\frac{9}{3}$	8. 7	9. 8

Use your understanding of patterns and reciprocals to answer the questions below.

10. If each of the numbers below is multiplied by three, then determine if the product is greater than or less than three.

$$\frac{4}{3} \text{ _____} \quad \frac{6}{5} \text{ _____}$$

$$\frac{2}{1} \text{ _____} \quad \frac{1}{2} \text{ _____}$$

11. Circle the following rational numbers that you could multiply by two and result in a number greater than two.

$$\frac{2}{3} \quad \frac{7}{5} \quad \frac{4}{3} \quad \frac{11}{9} \quad \frac{8}{11}$$

12. Ms. Stilwell asked her students to multiply various whole numbers by  $\frac{3}{2}$ . Which of the statements below is incorrect? Explain your reasoning.

**EZRA**

"The product is always larger than the whole number."

**DON**

"Multiplying a whole number by  $\frac{3}{2}$  always gives you a bigger number."

**JOSIE**

"Anytime a whole number is multiplied by a fraction, the product is a smaller number."

Summarize today's lesson: