Name _____ Date _____

Multiplication as Scaling: Bigger or Smaller?

Directions: Every number in this activity is greater than 0. To compare a product with one of its factors, look at the other factor: is it greater than 1, less than 1 or equal to 1? Most questions can be answered without multiplying.

1. Without multiplying, decide how $5/6 \times 24$ compares with 24.

A. It is equal to 24, because 24 is a whole number.

B. It is less than 24, because 5/6 is less than 1.

C. It is greater than 24, because multiplying makes a number bigger.

2. Compare each product with 15. Choose $<$, $=$ or $>$ for each blank. You do not need to multiply.

Word bank

$>$ • $<$ • $=$

First: $2/3 \times 15$ _____ 15. Second: $5/5 \times 15$ _____ 15.
Third: $9/8 \times 15$ _____ 15.

3. Which product is greater than 36?

A. $2/3 \times 36$ B. $5/3 \times 36$ C. $11/12 \times 36$ D. $8/8 \times 36$

4. Two students talk about $1/2 \times 8$.

• Kai says the product must be greater than 8, because multiplying always makes a number bigger.
• Zuri says the product is 4, because $1/2 \times 8$ is half of 8.

Who is right about this product?

A. Kai, because 8 times any number is more than 8.

B. Zuri, because multiplying 8 by a number less than 1 gives only part of 8.

C. Neither, because $1/2 \times 8$ is 16.

5. A photo is 12 inches wide. A copy of the photo is 3/4 as wide as the photo. How wide is the copy?

_____ inches

6. How does $4/5 \times 2/3$ compare with 2/3?

A. It is equal to 2/3, because 4/5 and 2/3 are both less than 1.

B. It is less than 2/3, because 4/5 is less than 1.

C. It is greater than 2/3, because two fractions are multiplied.

7. Which products are less than 3/5? Select the two that are less.

☐ A. $2 \times 3/5$ ☐ B. $5/4 \times 3/5$ ☐ C. $1/2 \times 3/5$

☐ D. $4/4 \times 3/5$ ☐ E. $7/8 \times 3/5$

8. The fractions 2/3 and 8/12 are equal. Which statement is true and explains why?

A. $2/3 \times 4/4 = 8/12$, and multiplying by 4/4 is the same as multiplying by 1.

B. Multiplying 2/3 by 4 gives 8/12, and multiplying by 4 keeps a fraction the same.

C. 8/12 is 4 times as much as 2/3, because both of its numbers were multiplied by 4.

9. Three products all have 30 as a factor: $5/6 \times 30$, $6/6 \times 30$ and $7/6 \times 30$. Which product is the greatest?

A. $6/6 \times 30$ B. $5/6 \times 30$

C. They are all equal. D. $7/6 \times 30$

10. A soup recipe makes 8 cups. Mara makes 3/2 of the recipe for a party. How many cups of soup does she make?

_____ cups