

Product Size Detectives

Compare products without multiplying.

GRADE 5 • 5.NF.B.5a

CCSS.Math.Content.5.NF.B.5a "Comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication."

NAME _____

DATE _____

USE THE OTHER FACTOR

When you multiply a positive amount by a number less than 1, the product is smaller than that amount. Multiplying by 1 keeps the amount the same, and multiplying by a number greater than 1 makes the product larger.

WORKED EXAMPLE

Compare $\frac{3}{5} \times 14$ to 14 without multiplying.

1. $\frac{3}{5}$ is less than 1.
2. Multiplying 14 by a number less than 1 makes a smaller amount.
3. So, $\frac{3}{5} \times 14 < 14$.

Answer: $\frac{3}{5} \times 14$ is less than 14.

PRACTICE 6 problems

- 1** Without multiplying, compare $\frac{4}{7} \times 9$ to 9. Write greater than, less than, or equal to.

ANSWER _____

- 2** Without multiplying, compare $11 \times \frac{8}{7}$ to 11. Write greater than, less than, or equal to.

ANSWER _____

- 3** Without multiplying, compare $\frac{6}{13} \times 18$ to $\frac{6}{13}$. Write greater than, less than, or equal to.

ANSWER _____

- 4** Without multiplying, compare $1 \times \frac{12}{17}$ to $\frac{12}{17}$. Write greater than, less than, or equal to.

ANSWER _____

- 5** Without multiplying, compare $\frac{7}{6} \times 10$ to $\frac{7}{6}$. Write greater than, less than, or equal to.

ANSWER _____

- 6** Without multiplying, compare $\frac{8}{15} \times \frac{1}{2}$ to $\frac{1}{2}$. Write greater than, less than, or equal to.

ANSWER _____

APPLY IT Show your work

- 1** Jalen earns $\frac{2}{9}$ of the 27 possible points in a game round. Without multiplying, is Jalen's score greater than, less than, or equal to 27 points?

WORK SPACE

ANSWER _____

- 2** A video game bonus changes Priya's usual 24 coins to $\frac{13}{12} \times 24$ coins. Without multiplying, is her new number of coins greater than, less than, or equal to 24 coins?

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

A number x is greater than 0 and less than 1. Without multiplying, compare $\frac{7}{9} \times x$ to $\frac{7}{9}$. Explain your reasoning.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	Without multiplying, compare $\frac{4}{7} \times 9$ to 9. Write greater than, less than, or equal to.	less than
2	Without multiplying, compare $11 \times \frac{8}{7}$ to 11. Write greater than, less than, or equal to.	greater than
3	Without multiplying, compare $\frac{6}{13} \times 18$ to $\frac{6}{13}$. Write greater than, less than, or equal to.	greater than
4	Without multiplying, compare $1 \times \frac{12}{17}$ to $\frac{12}{17}$. Write greater than, less than, or equal to.	equal to
5	Without multiplying, compare $\frac{7}{6} \times 10$ to $\frac{7}{6}$. Write greater than, less than, or equal to.	greater than
6	Without multiplying, compare $\frac{8}{15} \times \frac{1}{2}$ to $\frac{1}{2}$. Write greater than, less than, or equal to.	less than

PART 2 • APPLY IT

- less than 27 points** Because $\frac{2}{9}$ is less than 1, $\frac{2}{9} \times 27$ is less than 27.
- greater than 24 coins** Because $\frac{13}{12}$ is greater than 1, $\frac{13}{12} \times 24$ is greater than 24.

CHALLENGE

$\frac{7}{9} \times x$ is less than $\frac{7}{9}$ because x is greater than 0 and less than 1, so multiplying by x makes the positive amount smaller.

Accept the words greater than, less than, and equal to, or correct inequality symbols. For the challenge, accept any explanation that identifies x as a number between 0 and 1 and states that the product becomes smaller.