LESSON MAKER PRO

Product Size Detectives

Predict whether a fraction makes a number shrink or grow.

GRADE 5 · MA.5.FR.2.3

MA.5.FR.2.3 "When multiplying a given number by a fraction less than 1 or a fraction greater than 1, predict and explain the relative size of the product to the given number without calculating."

NAME _____ DATE _____

LOOK AT THE FRACTION

First, compare the fraction to 1. Multiplying by a fraction less than 1 makes the product smaller than the starting number, and multiplying by a fraction greater than 1 makes the product larger.

WORKED EXAMPLE

Without multiplying, predict: Is 29 x 15/14 greater than or less than 29?

1. 15/14 is greater than 1.
2. Multiplying by a fraction greater than 1 makes the starting number larger.
3. So the product is greater than 29.

Answer: 29 x 15/14 is greater than 29.

PRACTICE 6 problems

1 Without multiplying, predict: Is 16 x 3/4 greater than or less than 16? Explain.

ANSWER _____

2 Without multiplying, predict: Is 27 x 5/3 greater than or less than 27? Explain.

ANSWER _____

3 Without multiplying, predict: Is 12 x 2/7 greater than or less than 12? Explain.

ANSWER _____

4 Without multiplying, predict: Is 35 x 11/9 greater than or less than 35? Explain.

ANSWER _____

5 Without multiplying, predict: Is 48 x 1/2 greater than or less than 48? Explain.

ANSWER _____

6 Without multiplying, predict: Is 44 x 10/11 greater than or less than 44? Explain.

ANSWER _____

APPLY IT Show your work

1 A music app has a playlist with 30 songs. A remix playlist has 4/5 as many songs as the first playlist. Without calculating, will the remix playlist have more or fewer than 30 songs? Explain.

WORK SPACE

ANSWER _____

2 An online game gives Jalen 21 coins after one level. A special round gives him 8/7 times the 21 coins. Without calculating, will the special round give more or fewer than 21 coins? Explain.

WORK SPACE

ANSWER _____

CHALLENGE One step up

Without multiplying, order these products from least to greatest: 60 x 3/5, 60 x 1, 60 x 7/6. Explain how you know.

WORK SPACE AND ANSWER

ANSWER KEY

Product Size Detectives

GRADE 5 · MA.5.FR.2.3

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Without multiplying, predict: Is 16 x 3/4 greater than or less than 16? Explain.	**Less than 16, because 3/4 is less than 1.**
2	Without multiplying, predict: Is 27 x 5/3 greater than or less than 27? Explain.	**Greater than 27, because 5/3 is greater than 1.**
3	Without multiplying, predict: Is 12 x 2/7 greater than or less than 12? Explain.	**Less than 12, because 2/7 is less than 1.**
4	Without multiplying, predict: Is 35 x 11/9 greater than or less than 35? Explain.	**Greater than 35, because 11/9 is greater than 1.**
5	Without multiplying, predict: Is 48 x 1/2 greater than or less than 48? Explain.	**Less than 48, because 1/2 is less than 1.**
6	Without multiplying, predict: Is 44 x 10/11 greater than or less than 44? Explain.	**Less than 44, because 10/11 is less than 1.**

PART 2 · APPLY IT

1. **The remix playlist will have fewer than 30 songs because 4/5 is less than 1.** Compare 4/5 to 1. Since it is less than 1, multiplying 30 by 4/5 gives a product less than 30.
2. **The special round will give more than 21 coins because 8/7 is greater than 1.** Compare 8/7 to 1. Since it is greater than 1, multiplying 21 by 8/7 gives a product greater than 21.

CHALLENGE

60 x 3/5, 60 x 1, 60 x 7/6. Since 3/5 is less than 1, its product is less than 60. Multiplying by 1 keeps 60 the same, and 7/6 is greater than 1, so its product is greater than 60.

Accept equivalent comparison language such as smaller or fewer for less than, and larger or more for greater than. Explanations should correctly compare the fraction to 1.