LESSON MAKER PRO

Smaller by a Fraction

Find a part of a number and show it with equivalent fractions.

GRADE 5 · 5.NF.B.13.c

5.NF.B.13.c "Explain why multiplying a given number by a fraction less than 1 results in a product smaller than the given number and relate the principle of fraction equivalence."

NAME _____ DATE _____

THE BIG IDEA

Multiplying a number by a fraction less than 1 finds only part of that number, so the product is smaller. Equivalent fractions name the same part in different ways.

WORKED EXAMPLE

Find 21 * 2/7. Use an equivalent fraction to show your answer.

1. 21 / 7 = 3, so one seventh of 21 is 3.
2. 3 * 2 = 6.
3. 2/7 = 6/21, so the product is 6 out of the original 21.

Answer: 6, and 6 < 21.

PRACTICE 6 problems

1 Find 10 * 3/5.

ANSWER _____

2 Find 16 * 1/4. Then write an equivalent fraction for 1/4 with a denominator of 16.

ANSWER _____

3 Find 12 * 5/6. Why is the product less than 12?

ANSWER _____

4 Find 24 * 3/4.

ANSWER _____

5 Fill in the blank: 3/5 = ___/20. Then find 20 * 3/5.

ANSWER _____

6 Find 30 * 2/3. Use an equivalent fraction with a denominator of 30 to explain why the product is less than 30.

ANSWER _____

APPLY IT Show your work

1 Maya has 28 stickers for her water bottle. She uses 3/4 of them. How many stickers does she use? Explain why she uses fewer than 28.

WORK SPACE

ANSWER _____

2 A class has 32 minutes of free time. They spend 5/8 of it playing a game. How many minutes do they play? Write an equivalent fraction with a denominator of 32 to show your answer.

WORK SPACE

ANSWER _____

CHALLENGE One step up

A game awards 36 points for a full round. In one round, a player earns 5/9 of the points. In another round, the player earns 10/18 of the points. Are the two round scores equal? Show an equivalent-fraction equation, find each score, and explain why each is less than 36.

WORK SPACE AND ANSWER

ANSWER KEY

Smaller by a Fraction

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Find 10 * 3/5.	**6**
2	Find 16 * 1/4. Then write an equivalent fraction for 1/4 with a denominator of 16.	**4; 1/4 = 4/16**
3	Find 12 * 5/6. Why is the product less than 12?	**10. Because 5/6 is less than 1, 5/6 of 12 is less than 12.**
4	Find 24 * 3/4.	**18**
5	Fill in the blank: 3/5 = ___/20. Then find 20 * 3/5.	**12/20; 12**
6	Find 30 * 2/3. Use an equivalent fraction with a denominator of 30 to explain why the product is less than 30.	**20. Since 2/3 = 20/30, the product is 20 out of 30, and 20 < 30.**

PART 2 · APPLY IT

1. **21 stickers. She uses fewer than 28 because 3/4 is less than 1.** 28 / 4 = 7, and 7 * 3 = 21. Equivalently, 3/4 = 21/28.
2. **20 minutes; 5/8 = 20/32** 32 / 8 = 4, and 4 * 5 = 20. Multiply the numerator and denominator of 5/8 by 4 to get 20/32.

CHALLENGE

Yes. Since 5/9 = 10/18, both scores are 36 * 5/9 = 20 points. Each score is less than 36 because both fractions are less than 1.

Accept equivalent fractions and explanations that correctly show the product is a part of the starting number. For problem 5, the blank is 12.