LESSON MAKER PRO

Same Amount, New Parts

Use fraction bars to find and explain equivalent fractions.

GRADE 4 · 4.NF.1

4.NF.1 "Recognizing that the value of "n" cannot be 0, explain why a fraction a/b is equivalent to a fraction (n x a)/(n x b) by using visual fraction models..."

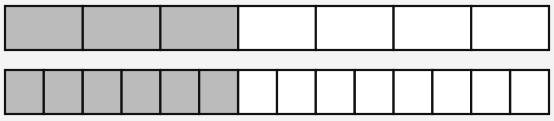
NAME _____ DATE _____

THE BIG IDEA

When you split every equal part into the same number of smaller parts, the number of shaded parts and the total number of parts both grow. Each new part is smaller, so the shaded amount stays the same. Multiply the top and bottom of a fraction by the same number other than 0 to make an equivalent fraction.

WORKED EXAMPLE

Use the bars to write 3/7 in fourteenths.

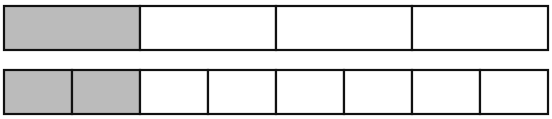


1. The first bar shows 3 of 7 equal parts shaded.
2. Split each seventh into 2 smaller parts.
3. Multiply the top and bottom by 2: (3 x 2)/(7 x 2) = 6/14.

Answer: 3/7 = 6/14. The new parts are half as big, so the shaded amount is unchanged.

PRACTICE 6 problems

1 Write the shaded fraction for each bar. Why do the bars show the same amount?



ANSWER _____

_____

2 Fill in the blank: 1/5 = ___/15.

ANSWER _____

3 Fill in the blank: 4/9 = 8/___.

ANSWER _____

4 Multiply the top and bottom of 5/8 by 2. Write the equivalent fraction.

ANSWER _____

5 Write the shaded fraction for each bar. Tell how the number and size of the parts changed.



ANSWER _____

_____

6 Is 5/8 equal to 5/16? Explain using the size of the parts.

ANSWER _____

_____

APPLY IT Show your work

1 At a class party, grapes cover 3/4 of a fruit tray. The tray is split into 12 equal sections instead of 4. How many sections have grapes? Write the fraction of the tray covered.



ANSWER _____

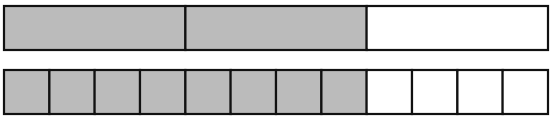
2 Lena has filled 4/5 of a sticker album page. The page has 20 equal spaces. How many spaces has she filled? Write the fraction of the page filled using 20 as the bottom number.

WORK SPACE

ANSWER _____

CHALLENGE One step up

A student says the lower bar shows more shaded space because it has 8 shaded parts instead of 2. Explain the mistake. Then write a multiplication statement that shows the fractions are equivalent.



WORK SPACE AND ANSWER

ANSWER KEY

Same Amount, New Parts

GRADE 4 · 4.NF.1

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Write the shaded fraction for each bar. Why do the bars show the same amount?	**1/4 and 2/8. The second bar has twice as many shaded parts, but each part is half as big.**
2	Fill in the blank: 1/5 = ___/15.	**3/15**
3	Fill in the blank: 4/9 = 8/___.	**18**
4	Multiply the top and bottom of 5/8 by 2. Write the equivalent fraction.	**10/16**
5	Write the shaded fraction for each bar. Tell how the number and size of the parts changed.	**2/5 and 6/15. The second bar has 3 times as many parts, and each part is one-third as big.**
6	Is 5/8 equal to 5/16? Explain using the size of the parts.	**No. Each sixteenth is half as big as an eighth, so 5/16 covers half as much as 5/8.**

PART 2 · APPLY IT

1. **9 sections; 9/12 of the tray** Each fourth becomes 3 sections. Multiply 3/4 by 3/3 to get 9/12.
2. **16 spaces; 16/20 of the page** Each fifth contains 4 spaces. Multiply 4/5 by 4/4 to get 16/20.

CHALLENGE

The lower bar has 4 times as many shaded parts, but each part is one-fourth as big. Both bars show the same shaded amount: 2/3 x 4/4 = 8/12.

Accept equivalent explanations that describe both the change in the number of parts and the change in their size. For the challenge, accept (2 x 4)/(3 x 4) = 8/12 as the multiplication statement.