Name _____

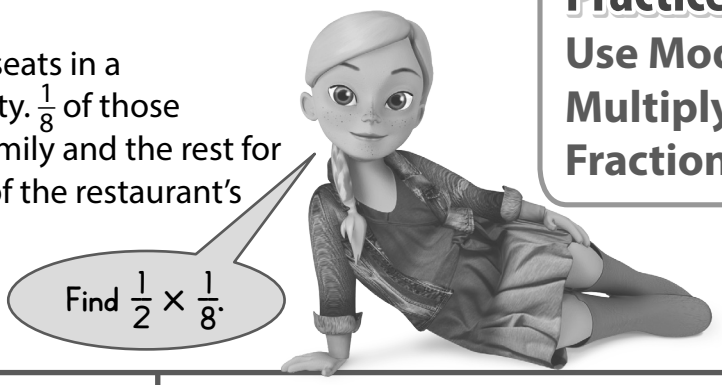
Practice Video Tools Games

Additional Practice 8-4

Use Models to Multiply Two Fractions

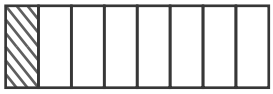
Another Look!

Graeme reserved $\frac{1}{2}$ of the seats in a restaurant for a dinner party. $\frac{1}{8}$ of those seats will be needed for family and the rest for his friends. What fraction of the restaurant's seats will be used by the family?



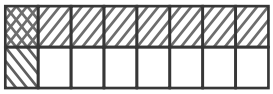
Step 1

Draw a picture to represent $\frac{1}{8}$. Draw a rectangle that has lines dividing it into 8 equal parts. Shade 1 of the 8 parts.



Step 2

Then draw a horizontal line to show $\frac{1}{2}$. Shade $\frac{1}{2}$ of the whole rectangle. The purple overlap is the answer.

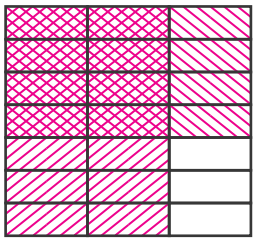


The two shadings overlap on $\frac{1}{16}$ of the whole rectangle.

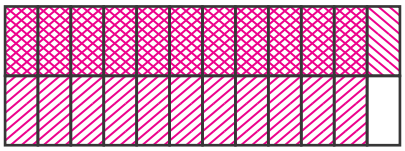
$\frac{1}{16}$ of the restaurant's seats will be used by Graeme's family.

In **1–3**, find each product. Shade the model to help solve.

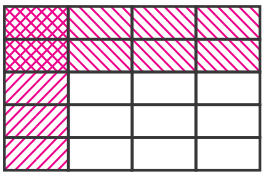
1. $\frac{4}{7} \times \frac{2}{3}$ $\frac{8}{21}$



2. $\frac{1}{2} \times \frac{11}{12}$ $\frac{11}{24}$



3. $\frac{2}{5}$ of $\frac{1}{4}$ $\frac{1}{10}$



In **4–11**, find each product. Use models to help you.

4. $\frac{3}{4} \times \frac{1}{8}$ $\frac{3}{32}$

5. $\frac{8}{9}$ of $\frac{9}{10}$ $\frac{4}{5}$

6. $\frac{3}{7} \times \frac{2}{3}$ $\frac{2}{7}$

7. $\frac{1}{5} \times \frac{5}{6}$ $\frac{1}{6}$

8. $\frac{1}{6}$ of $\frac{3}{4}$ $\frac{1}{8}$

9. $\frac{7}{8} \times \frac{1}{2}$ $\frac{7}{16}$

10. $\frac{1}{12} \times \frac{3}{5}$ $\frac{1}{20}$

11. $\frac{1}{2}$ of $\frac{5}{9}$ $\frac{5}{18}$

12. **Algebra** What value of n makes the equation $n \times \frac{3}{4} = \frac{3}{16}$ true?

$n = \frac{1}{4}$

13. **Use Structure** $\frac{4}{9} \times \frac{7}{8} = \frac{7}{18}$. What is $\frac{7}{8} \times \frac{4}{9}$? How do you know without multiplying?

$\frac{7}{8} \times \frac{4}{9} = \frac{7}{18}$. By the Commutative Property of Multiplication, the order of the factors does not change the product.

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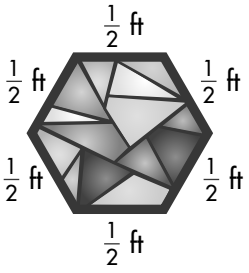
14. The stained glass shown here is a hexagon. How can you use multiplication to find its perimeter?

You can multiply 6 by $\frac{1}{2}$ because the hexagon has 6 equal sides. $6 \times \frac{1}{2}\text{ft} = 3\text{ft}$.



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15. Vincent found a recipe for banana macadamia nut bread that uses $\frac{3}{4}$ cup of macadamia nuts. If he only wants to make half the recipe, how many cups of macadamia nuts should he use?

$\frac{3}{8}$ cup

16. **Higher Order Thinking** If $\frac{1}{2}$ is multiplied by $\frac{1}{2}$, will the product be greater than $\frac{1}{2}$? Explain.

No; Sample explanation: When multiplying two fractions less than one, the product is always smaller than either factor

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17. In gym class, Matthew runs $\frac{3}{4}$ mile. His gym teacher runs 3 times that distance. How far does Matthew's gym teacher run?

$2\frac{1}{4}$ miles

18. Titus had $\frac{1}{2}$ of a can of paint. He used $\frac{2}{3}$ of the paint to cover a tabletop. What fraction of a full can of paint did Titus use?

$\frac{1}{3}$ can

Assessment Practice

19. Nola made the model to show multiplying a fraction by a fraction. Which multiplication sentence does the model show?

Ⓐ $\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$

Ⓑ $\frac{1}{3} \times \frac{4}{5} = \frac{4}{15}$

Ⓒ $\frac{1}{3} \times \frac{1}{5} = \frac{1}{15}$

Ⓓ $\frac{4}{9} \times \frac{4}{5} = \frac{16}{45}$