

Multiplying fractions

Multiply fractions by fractions or whole numbers, and simplify the product where you can.



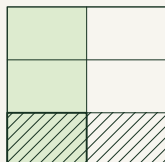
Name _____

Date _____

Straight across

To multiply two fractions, multiply the numerators together and multiply the denominators together: $\frac{a}{b} \times \frac{c}{d} = \frac{ac}{bd}$. To multiply a whole number by a fraction, write the whole number over 1 first. Simplify the product if the numerator and denominator share a common factor.

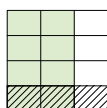
Worked example Find $\frac{1}{2} \times \frac{1}{3}$ using the grid.



1 of 2 columns shaded, 1 of 3 rows hatched.

$$\frac{1}{2} \times \frac{1}{3} = \frac{1}{6}.$$

1. Use the grid to find $\frac{2}{3} \times \frac{1}{4}$.

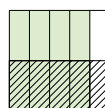


Solution

$$2 \times 1 = 2, 3 \times 4 = 12.$$

$$\frac{2}{3} \times \frac{1}{4} = \frac{2}{12} = \frac{1}{6}.$$

2. Use the grid to find $\frac{4}{5} \times \frac{1}{2}$.



Solution

$$4 \times 1 = 4, 5 \times 2 = 10.$$

$$\frac{4}{5} \times \frac{1}{2} = \frac{4}{10} = \frac{2}{5}.$$

3. $\frac{3}{5} \times \frac{1}{2}$.

Solution

$$3 \times 1 = 3, 5 \times 2 = 10.$$

$$\frac{3}{5} \times \frac{1}{2} = \frac{3}{10}.$$

4. $\frac{1}{4} \times \frac{2}{7}$.

Solution

$$1 \times 2 = 2, 4 \times 7 = 28.$$

$$\frac{1}{4} \times \frac{2}{7} = \frac{2}{28} = \frac{1}{14}.$$

5. $\frac{3}{4} \times \frac{2}{3}$.

Solution

$$3 \times 2 = 6, 4 \times 3 = 12.$$

$$\frac{3}{4} \times \frac{2}{3} = \frac{6}{12} = \frac{1}{2}.$$

6. $\frac{2}{5} \times \frac{3}{4}$.

Solution

$$2 \times 3 = 6, 5 \times 4 = 20.$$

$$\frac{2}{5} \times \frac{3}{4} = \frac{6}{20} = \frac{3}{10}.$$

7. $2 \times \frac{1}{5}$.

Solution

$$\frac{2}{1} \times \frac{1}{5} = \frac{2}{5}.$$

8. $3 \times \frac{2}{7}$.

Solution

$$\frac{3}{1} \times \frac{2}{7} = \frac{6}{7}.$$

Multiplying fractions (continued)

Multiply fractions by fractions or whole numbers, and simplify the product where you can.



Name _____

Date _____

9. $\frac{5}{8} \times \frac{4}{9}$.

Solution

$$5 \times 4 = 20, 8 \times 9 = 72.$$

$$\frac{5}{8} \times \frac{4}{9} = \frac{20}{72} = \frac{5}{18}.$$

10. $6 \times \frac{5}{12}$.

Solution

$$\frac{6}{1} \times \frac{5}{12} = \frac{30}{12} = \frac{5}{2} = 2\frac{1}{2}.$$

11. Fill in the blank: $\frac{2}{3} \times \frac{\square}{5} = \frac{8}{15}$.

Solution

$$\frac{2 \times \square}{15} = \frac{8}{15}, \text{ so } 2 \times \square = 8 \text{ and } \square = 4.$$

12. Is $\frac{2}{5} \times \frac{3}{4} = \frac{6}{20}$ correct?

Solution

$$\text{Yes: } 2 \times 3 = 6, 5 \times 4 = 20.$$

(Simplifies to $\frac{3}{10}$.)

13. Which is greater: $\frac{2}{3} \times \frac{3}{5}$ or $\frac{3}{4} \times \frac{2}{5}$?

Solution

$$\frac{2}{3} \times \frac{3}{5} = \frac{6}{15} = \frac{2}{5}. \quad \frac{3}{4} \times \frac{2}{5} = \frac{6}{20} = \frac{3}{10}.$$

$\frac{2}{5}$ is greater.

14. $\frac{7}{12} \times \frac{6}{7}$.

Solution

$$7 \times 6 = 42, 12 \times 7 = 84.$$

$$\frac{7}{12} \times \frac{6}{7} = \frac{42}{84} = \frac{1}{2}.$$

15. Explain in one short sentence why multiplying by $\frac{1}{2}$ makes a positive number smaller.

Solution

Because $\frac{1}{2}$ is less than 1, so it halves the number.

16. A recipe uses $\frac{3}{4}$ of a cup of milk per batch. You make $\frac{2}{3}$ of a batch. How much milk is needed?

Solution

$$\frac{3}{4} \times \frac{2}{3} = \frac{6}{12} = \frac{1}{2} \text{ cup.}$$

17. $1\frac{1}{2} \times \frac{2}{3}$.

Solution

$$1\frac{1}{2} = \frac{3}{2}.$$

$$\frac{3}{2} \times \frac{2}{3} = \frac{6}{6} = 1.$$