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Multiplying fractions and whole numbers by fractions

When multiplying two fractions, multiply the two numerators and the two denominators.
For example,

$$\textcircled{1} \quad \frac{1}{2} \begin{array}{c} \xrightarrow{x} \\ \xrightarrow{\quad} \end{array} \frac{3}{4} = \frac{3}{8} \quad \textcircled{2} \quad \frac{2}{3} \begin{array}{c} \xrightarrow{x} \\ \xrightarrow{\quad} \end{array} \frac{4}{7} = \frac{8}{21} \quad \textcircled{3} \quad \frac{1}{5} \begin{array}{c} \xrightarrow{x} \\ \xrightarrow{\quad} \end{array} \frac{1}{6} = \frac{1}{30}$$

Write in the fractions given in words, then solve the problem.

two-thirds
times
one-sixth

$\textcircled{4}$

one-thirds
times
three-fifths

$\textcircled{5}$

one-half
times
one-half

$\textcircled{6}$

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Multiplying fractions and whole numbers by fractions

When multiplying two fractions, multiply the two numerators and the two denominators.
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Write in the fractions given in words, then solve the problem.

two-thirds
times
one-sixth

$$\textcircled{4} \quad \frac{2}{3} \times \frac{1}{6} =$$

one-thirds
times
three-fifths

$$\textcircled{5} \quad \frac{1}{3} \times \frac{3}{5} =$$

one-half
times
one-half

$$\textcircled{6} \quad \frac{1}{2} \times \frac{1}{2} =$$

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Multiplying fractions and whole numbers by fractions

When multiplying two fractions, multiply the two numerators and the two denominators.
For example,

$$\textcircled{1} \quad \frac{1}{2} \begin{array}{c} \xrightarrow{\quad} \\ \xrightarrow{\quad} \end{array} \frac{3}{4} = \frac{3}{8} \quad \textcircled{2} \quad \frac{2}{3} \begin{array}{c} \xrightarrow{\quad} \\ \xrightarrow{\quad} \end{array} \frac{4}{7} = \frac{8}{21} \quad \textcircled{3} \quad \frac{1}{5} \begin{array}{c} \xrightarrow{\quad} \\ \xrightarrow{\quad} \end{array} \frac{1}{6} = \frac{1}{30}$$

Write in the fractions given in words, then solve the problem.

two-thirds
times
one-sixth

$$\textcircled{4} \quad \frac{2}{3} \times \frac{1}{6} = \frac{2}{18}$$

one-thirds
times
three-fifths

$$\textcircled{5} \quad \frac{1}{3} \times \frac{3}{5} = \frac{3}{15}$$

one-half
times
one-half

$$\textcircled{6} \quad \frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$$

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Multiplying fractions and whole numbers by fractions

$$\textcircled{7} \quad \frac{3}{8} \times \frac{1}{2} =$$

$$\textcircled{8} \quad \frac{2}{3} \times \frac{3}{5} =$$

$$\textcircled{9} \quad \frac{3}{4} \times \frac{2}{3} =$$

$$\textcircled{10} \quad \frac{1}{8} \times \frac{1}{3} =$$

$$\textcircled{11} \quad \frac{5}{7} \times \frac{1}{4} =$$

$$\textcircled{12} \quad \frac{4}{6} \times \frac{1}{2} =$$

$$\textcircled{13} \quad \frac{1}{3} \times \frac{2}{3} =$$

$$\textcircled{14} \quad \frac{5}{8} \times \frac{3}{4} =$$

$$\textcircled{15} \quad \frac{5}{10} \times \frac{1}{2} =$$

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Multiplying fractions and whole numbers by fractions

$$\textcircled{7} \quad \frac{3}{8} \times \frac{1}{2} = \frac{3}{16}$$

$$\textcircled{8} \quad \frac{2}{3} \times \frac{3}{5} = \frac{6}{15}$$

$$\textcircled{9} \quad \frac{3}{4} \times \frac{2}{3} = \frac{6}{12}$$

$$\textcircled{10} \quad \frac{1}{8} \times \frac{1}{3} = \frac{1}{24}$$

$$\textcircled{11} \quad \frac{5}{7} \times \frac{1}{4} = \frac{5}{28}$$

$$\textcircled{12} \quad \frac{4}{6} \times \frac{1}{2} = \frac{4}{12}$$

$$\textcircled{13} \quad \frac{1}{3} \times \frac{2}{3} = \frac{2}{9}$$

$$\textcircled{14} \quad \frac{5}{8} \times \frac{3}{4} = \frac{15}{32}$$

$$\textcircled{15} \quad \frac{5}{10} \times \frac{1}{2} = \frac{5}{20}$$

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Multiplying fractions and whole numbers by fractions

When multiplying a fraction by a whole number, first convert the whole number to an improper fraction.

If the product is an improper fraction, it should be changed to a mixed number.

$$\textcircled{16} \quad \frac{1}{3} \times 6 \text{ becomes } \frac{1}{3} \times \frac{6}{1} = \frac{6}{3} = 2$$

$$\textcircled{17} \quad 5 \times \frac{2}{3} \text{ becomes } \frac{5}{1} \times \frac{2}{3} = \frac{10}{3} = 3 \frac{1}{3}$$

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Multiplying fractions and whole numbers by fractions

⑱ $\frac{3}{4} \times \frac{3}{1} =$

⑲ $\frac{5}{1} \times \frac{1}{8} =$

⑳ $\frac{1}{2} \times \frac{7}{1} =$

㉑ $\frac{4}{1} \times \frac{2}{5} =$

㉒ $\frac{4}{9} \times \frac{2}{1} =$

㉓ $\frac{5}{6} \times \frac{1}{3} =$

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Multiplying fractions and whole numbers by fractions

$$\textcircled{18} \quad \frac{3}{4} \times \frac{3}{1} = \frac{9}{4} = 2 \frac{1}{4}$$

$$\textcircled{19} \quad \frac{5}{1} \times \frac{1}{8} = \frac{5}{8}$$

$$\textcircled{20} \quad \frac{1}{2} \times \frac{7}{1} = \frac{7}{2} = 3 \frac{1}{2}$$

$$\textcircled{21} \quad \frac{4}{1} \times \frac{2}{5} = \frac{8}{5} = 1 \frac{3}{5}$$

$$\textcircled{22} \quad \frac{4}{9} \times \frac{2}{1} = \frac{8}{9}$$

$$\textcircled{23} \quad \frac{5}{6} \times \frac{1}{3} = \frac{5}{18}$$

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Multiplying fractions and whole numbers by fractions

$$\frac{1}{3} \times \frac{1}{4} =$$

$$\frac{1}{2} \times \frac{5}{6} =$$

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

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Multiplying fractions and whole numbers by fractions

$$\frac{1}{3} \times \frac{1}{4} = \frac{1}{12} \quad \frac{1}{2} \times \frac{5}{6} = \frac{5}{12} \quad \frac{1}{6} \times \frac{1}{2} = \frac{1}{12}$$

$$\begin{array}{r} 1 \frac{7}{12} \\ \frac{1}{12} \\ \frac{5}{12} \\ + \frac{1}{12} \\ \hline \frac{7}{12} \end{array}$$

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Multiplying fractions and whole numbers by fractions



Think of $\frac{6}{3} \times 4$ as $\frac{6}{3} \times \frac{4}{1}$ or $\frac{6 \times 4}{3 \times 1}$ or
6 times 4 divided by 3 or
 $6 \times 4 \div 3$

Write the missing number on the blank line.

A. $\frac{4}{6} \times 3 = 4 \times \underline{\hspace{1cm}} \div 6$

B. $\frac{5}{2} \times 4 = 5 \times 4 \div \underline{\hspace{1cm}}$

So $\frac{5}{8} \times \frac{2}{4} = \frac{5 \times 2}{8 \times 4} = \frac{10}{32}$ Fill in the missing numbers.

C. $\frac{2}{3} \times \frac{6}{8} = \frac{x}{x} = \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$

D. $\frac{5}{7} \times \frac{9}{5} = \frac{x}{x} = \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$

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Multiplying fractions and whole numbers by fractions

Think of $\frac{6}{3} \times 4$ as $\frac{6}{3} \times \frac{4}{1}$ or $\frac{6 \times 4}{3 \times 1}$ or
6 times 4 divided by 3 or
 $6 \times 4 \div 3$

Write the missing number on the blank line.

A. $\frac{4}{6} \times 3 = 4 \times \underline{3} \div 6$

B. $\frac{5}{2} \times 4 = 5 \times 4 \div \underline{2}$

So $\frac{5}{8} \times \frac{2}{4} = \frac{5 \times 2}{8 \times 4} = \frac{10}{32}$ Fill in the missing numbers.

C. $\frac{2}{3} \times \frac{6}{8} = \frac{2 \times 6}{3 \times 8} = \frac{12}{24} = \underline{\frac{1}{2}}$ D. $\frac{5}{7} \times \frac{9}{5} = \frac{5 \times 9}{7 \times 5} = \frac{45}{35} = 1 \frac{\underline{2}}{\underline{9}}$

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Multiplying fractions and whole numbers by fractions

$$\frac{1}{6} \times 12 =$$

$$\frac{3}{4} \times 5 =$$

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

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

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Multiplying fractions and whole numbers by fractions

$$\frac{1}{6} \times 12 = \frac{12}{6} = 2$$

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

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

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

$$\begin{array}{r} 2 \\ 5 \\ 3 \frac{3}{4} \\ \quad \frac{1}{4} \\ + \frac{1}{4} \\ \hline 10 \frac{4}{4} \\ = 11 \end{array}$$