

8.1 Multiplying Fractions

There are two ways to multiply fractions:

Method #1

1. Multiply the numerators. Then multiply the denominators.
2. Divide by the GCF of the numerator and denominator to write the product in simplest form.

Method #2

1. Simplify using the GCF of any numerator and any denominator where possible.
2. Multiply the numerators. Multiply the denominators.

****Change mixed numbers to improper fractions before you multiply!****

$$\text{Ex: } 3\frac{1}{2} = \frac{3 \times 2 + 1}{2} = \frac{6+1}{2} = \frac{7}{2}$$

Example: Multiply.

$$1.) \frac{5}{12} \cdot \frac{3}{4}$$

Method #1:

$$\frac{5 \cdot 3}{12 \cdot 4} = \frac{15}{48} = \frac{5}{16}$$

Method #2:

$$\frac{5}{12} \cdot \frac{3}{4} = \frac{5}{4} \cdot \frac{1}{4} = \frac{5}{16}$$

$$2.) \frac{2}{5} \cdot 3\frac{1}{4}$$

$$\frac{2}{5} \cdot \frac{13}{4}$$

$$\frac{26}{20} = \frac{13}{10}$$

$$\frac{2}{5} \cdot \frac{13}{4}$$

$$\frac{1}{5} \cdot \frac{13}{2} = \frac{13}{10}$$

$$3.) 15 \cdot \frac{2}{3}$$

$$\frac{15}{1} \cdot \frac{2}{3}$$

$$\frac{30}{3} = \frac{10}{1} = 10$$

$$\frac{15}{1} \cdot \frac{2}{3}$$

$$\frac{5}{1} \cdot \frac{2}{1} = \frac{10}{1} = 10$$

Example: Multiply.

4.) $\frac{3}{7} \cdot \frac{2}{5}$

$$\boxed{\frac{6}{35}}$$

5.) $\frac{7}{18} \cdot \frac{3}{5}$

$$\frac{21 \div 3}{90 \div 3} = \boxed{\frac{7}{30}}$$

$$\frac{7}{18} \cdot \frac{3}{5} = \frac{7}{6} \cdot \frac{1}{5} = \boxed{\frac{7}{30}}$$

6.) $\frac{2}{3} \cdot 2\frac{1}{2}$

$$\frac{2}{3} \cdot \frac{5}{2}$$

$$\frac{10 \div 2}{6 \div 2} = \boxed{\frac{5}{3}}$$

$$\frac{2}{3} \cdot \frac{5}{2} = \frac{1}{3} \cdot \frac{5}{1} = \boxed{\frac{5}{3}}$$

Example: Multiply.

7.) $10 \cdot \frac{3}{5}$

$$\frac{10}{1} \cdot \frac{3}{5}$$

$$\frac{2}{1} \cdot \frac{3}{1} = \frac{6}{1}$$

$$\boxed{6}$$

8.) $\frac{5}{9} \cdot \frac{2}{3}$

$$\boxed{\frac{10}{27}}$$

9.) $3\frac{1}{7} \cdot 4\frac{2}{3}$

$$\frac{22}{7} \cdot \frac{14}{3}$$

$$\frac{22}{1} \cdot \frac{2}{3}$$

$$\boxed{\frac{44}{3}}$$

Example: Multiply.

$$10.) \frac{5}{6} \cdot 18$$

$$\frac{\cancel{5}^3}{\cancel{6}_2} \cdot \frac{18}{1}$$

$$\frac{5}{1} \cdot \frac{3}{1} = \frac{15}{1} = \boxed{15}$$

$$11.) \frac{7}{12} \cdot \frac{1}{7}$$

$$\frac{\cancel{7}^1}{84} \div \cancel{7}_7 = \frac{\boxed{1}}{\boxed{12}}$$

$$12.) 8\frac{1}{6} \cdot 3\frac{3}{7}$$

$$\frac{\cancel{49}^7}{6} \cdot \frac{24}{\cancel{7}_1}$$

$$\frac{7}{1} \cdot \frac{4}{1} = \frac{28}{1}$$

$$\frac{7}{1} \cdot \frac{4}{1}$$

$$\frac{28}{1} = \boxed{28}$$