

## MULTIPLYING FRACTIONS

**Multiplying fractions is the easiest of the four basic operations.**

It is because .....

The Rule of multiplication using the definition is ...

- ❖ If the fractions are **simple fractions** then
  - ✚ Multiply the numerators.
  - ✚ Multiply the denominators.
  - ✚ Simplify or reduce the resulting fraction, if possible.
- ❖ If the fractions are mixed numbers then change them to improper fractions and then follow the above steps.

In this operation there is **no need to worry about a common denominator** ...

Now let's check some examples



### Simple Fractions

Example 1.

$$\frac{2}{3}$$

X

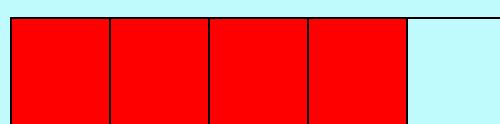
$$\frac{4}{5}$$

=

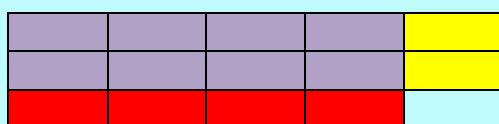
$$\frac{2 \times 4}{3 \times 5}$$



X



$$= \frac{8}{15}$$



Example 2.

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



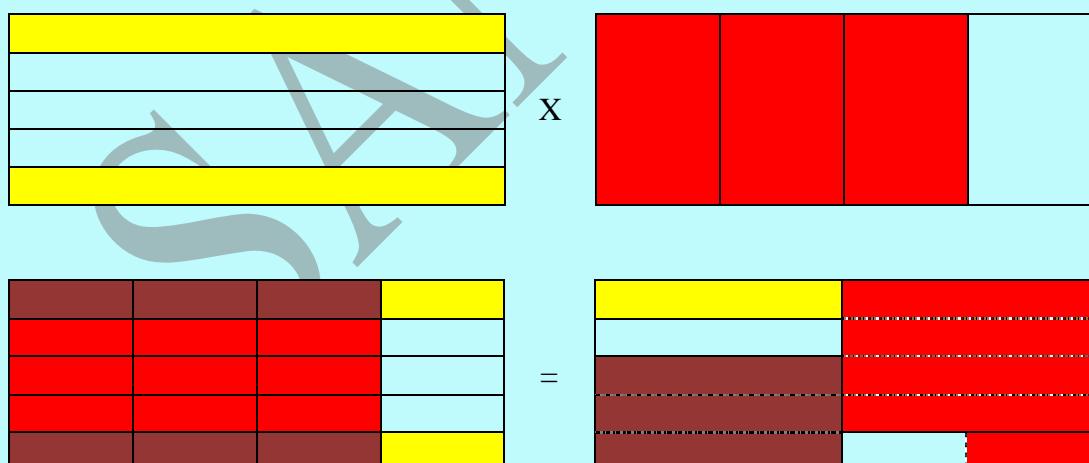
Or

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

A diagram showing the multiplication of two fractions using rectangles. On the left, a rectangle is divided into 3 equal horizontal bars, with 2 yellow ones shaded. This represents the fraction  $\frac{2}{3}$ . Below it is a multiplication sign 'X'. To its right is another rectangle divided into 2 equal horizontal bars, with 1 red one shaded. This represents the fraction  $\frac{1}{2}$ . Between the two rectangles is an equals sign. To the right of the equals sign is a rectangle divided into 6 equal horizontal bars (3 rows of 2). The first 5 bars are yellow, and the last bar is orange. This represents the fraction  $\frac{2}{6}$ . Another equals sign follows. To the right is a rectangle divided into 3 equal horizontal bars, with 1 orange one shaded. This represents the fraction  $\frac{1}{3}$ .

Example 3.

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



#### Example 4

##### Simple fractions

a)  $\frac{5}{8} \times \frac{3}{4} = \frac{5 \times 3}{8 \times 4} = \frac{15}{32}$

Multiply numbers on the Numerator

b)  $\frac{4}{9} \times \frac{2}{5} = \frac{4 \times 2}{9 \times 5} = \frac{8}{45}$

Multiply numbers on the Denominator

c)  $\frac{4}{5} \times \frac{1}{6} = \frac{4 \times 1}{5 \times 6} = \frac{4}{30} = \frac{2 \times 2}{2 \times 15} = \frac{2}{15}$

Reduce, if possible

d)  $\frac{4}{7} \times \frac{2}{3} = \frac{4 \times 2}{7 \times 3} = \frac{8}{21}$

e)  $\frac{8}{13} \times \frac{1}{2} = \frac{8 \times 1}{13 \times 2} = \frac{8}{26} = \frac{2 \times 4}{2 \times 13} = \frac{4}{13}$

f)  $\frac{8}{15} \times \frac{5}{6} = \frac{8 \times 5}{15 \times 6} = \frac{40}{90} = \frac{10 \times 4}{10 \times 9} = \frac{4}{9}$

### Improper fractions,

g)  $\frac{8}{5} \times \frac{15}{4} = \frac{8 \times 15}{5 \times 4} = \frac{120}{20} = \frac{20 \times 6}{20 \times 1} = \frac{6}{1} = 6$

h)  $\frac{7}{5} \times \frac{11}{6} = \frac{7 \times 11}{5 \times 6} = \frac{77}{30} = 2 \frac{17}{30}$

### Mixed fractions

i)  $1\frac{2}{3} \times 1\frac{3}{5} = \frac{5}{3} \times \frac{8}{5} = \frac{5 \times 8}{5 \times 3} = \frac{8}{3} = 2\frac{2}{3}$

j)  $2\frac{5}{6} \times 1\frac{2}{9} = \frac{17}{6} \times \frac{11}{9} = \frac{17 \times 11}{6 \times 9} = \frac{187}{54} = 3\frac{25}{54}$

k)  $3\frac{2}{4} \times 1\frac{5}{7} = \frac{14}{4} \times \frac{12}{7} = \frac{14 \times 12}{7 \times 4} = \frac{2 \times 3}{1 \times 1} = \frac{6}{1} = 6$

Now it is a good time to practice multiplying fractions [WORKSHEET](#)