Multiply fractions: (How to multiply fractions)

To multiply a whole number with a fraction, again write the whole number as an improper fraction using 1 as its denominator then cut with any common factors if possible and finally multiply both the fractions. For example;

To multiply **8** and $\dfrac{5}{12}$, you start the solution as $\dfrac{^2\cancel{8}}{1} \times \dfrac{5}{\cancel{12}_3}$

> Cut 8 and 12 by 4 (gcf) to get 2 and 3 respectively. Multiply 2 and 5 to get 10 as new numerator and multiply 1 and 3 to get 3 as new denominators.
>
> Your answer is an improper fraction, convert it into a mixed number.

$= \dfrac{10}{3} = 3\dfrac{1}{3}$

To multiply a fraction with a mixed number, always convert the mixed number into an improper fraction, cut numerators and denominators if possible and then multiply the numerators together and multiply denominators together to get your answer. Let's do the following examples to learn how to multiply a fraction and a mixed number or how to multiply two mixed numbers.

Example 2:

a.

$$\dfrac{2}{5} \times 2\dfrac{1}{2} = \dfrac{^1\cancel{2}}{\cancel{5}_1} \times \dfrac{^1\cancel{5}}{\cancel{2}_1} = \dfrac{1}{1} = 1$$

> Step 1: Convert $2\dfrac{1}{2}$ into $\dfrac{5}{2}$
>
> Step 2: Cancel numerator (2) of first fraction with the denominator (2) of the second fraction by dividing both of them by 2 (gcf) and get 1 as numerator and denominator. Cut both 5's same way.

b.

$$6\dfrac{2}{3} \times 3\dfrac{3}{10}$$

> *Always, always convert mixed numbers into improper fractions before multiply them.* So, change both mixed numbers into improper fractions.

$$= \dfrac{^2\cancel{20}}{\cancel{3}_1} \times \dfrac{\cancel{33}^{11}}{\cancel{10}_1}$$

> 20 and 10 have gcf 10, so divide (cut) both with 10 to get 2 and 1 respectively. 33 and 3 have gcf 3, so cut them with 3 to get 11 and 1 respectively.

$$= \dfrac{22}{1} = 22$$

> Once the cutting is done, multiply new numerator 2 and 11 to get answering numerator as 22 and multiply denominators 1 and 1 to get 1 as answering denominator. But, if the denominator is 1, just write the numerator as your answer. Our answer is 22.

c.

$$3\dfrac{13}{24} \times 2\dfrac{14}{17} = \dfrac{^5\cancel{85}}{\cancel{24}_1} \times \dfrac{\cancel{48}^2}{\cancel{17}_1} = \dfrac{5\times2}{1\times1} = \dfrac{10}{1} = 10$$