Multiply Fractions

To find the product of two fractions we multiply the numerator by the numerator and the denominator by the denominator

$$\frac{a}{b} \times \frac{c}{d} = \frac{a \times c}{b \times d} = \frac{ac}{bd}$$

The final product should be in simplest form or a mixed number.

Badr knows that $\frac{2}{3}$ of the students in his class play soccer. Of those students $\frac{1}{6}$ are in the school scouts. He wants to know what fraction of his class play soccer is in the school scouts.

STEP 1: Write a multiplication sentence.

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

STEP 2: Multiply the numerators. Multiply the denominators.

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

STEP 3: Divide the numerator and denominator by the GCF, 2.

$$\frac{2}{18} \bigg| \frac{2}{2}$$

STEP 4: Write the product in simplest form

So, $\frac{1}{9}$ of Badr's class soccer and are in the school scouts.

Examples:

A- Find the product.

1) $\dfrac{5}{2} \times \dfrac{3}{5}$

$\dfrac{5}{2} \times \dfrac{3}{5}$

$= \dfrac{\cancel{5} \times 3}{2 \times \cancel{5}}$

$= \dfrac{3}{2}$

2) $6 \times \dfrac{2}{4}$

$6 \times \dfrac{2}{4}$

$= \dfrac{\cancel{6}^{3} \times 2}{1 \times \cancel{4}^{2}}$

$= \dfrac{3 \times \cancel{2}}{\cancel{2}}$

$= 3$

3) $\dfrac{11}{7} \times \dfrac{4}{3}$

$\dfrac{11}{7} \times \dfrac{4}{3}$

$= \dfrac{11 \times 4}{7 \times 3}$

$= \dfrac{44}{21}$

B- Compare <, > or =

1) $\dfrac{3}{5} \times 2$ _____ $\dfrac{2}{4} \times 3$

$\dfrac{3}{5} \times 2 = \dfrac{3 \times 2}{5 \times 1} = \dfrac{6}{5}$

$\dfrac{2}{4} \times 3 = \dfrac{2 \times 3}{4 \times 1} = \dfrac{6}{4}$

$\dfrac{6}{5}$ **and** $\dfrac{6}{4}$ **have the same numerator but** $5 > 4 \Rightarrow \dfrac{6}{4} > \dfrac{6}{5}$

$\dfrac{3}{5} \times 2 < \dfrac{2}{4} \times 3$

2) $\dfrac{4}{8} \times 8$ _____ 4

$\dfrac{4}{8} \times 8 = \dfrac{4 \times \cancel{8}}{\cancel{8}} = 4$

So, the product is equal to 4

$$\frac{4}{8} \times 8 = 4$$

3) $\dfrac{1}{7} \times 2$ _____ $\dfrac{8}{5} \times 2$

$$\frac{1}{7} \times 2 = \frac{1 \times 2}{7} = \frac{2}{7}$$

$$\frac{8}{5} \times 2 = \frac{8 \times 2}{5} = \frac{16}{5}$$

To compare the two fractions we have to find the LCD and convert them

$$LCD(5,7) = 35$$

$$\frac{2}{7} = \frac{2 \times 5}{7 \times 5} = \frac{10}{35}$$

$$\frac{16}{5} = \frac{16 \times 7}{5 \times 7} = \frac{112}{35}$$

$$\frac{10}{35} < \frac{112}{35}$$

$$\frac{1}{7} \times 2 < \frac{8}{5} \times 2$$