Division of Fractions

To divide a fraction by a whole number or another fraction, take the reciprocal of the divisor and multiply it with the original fraction.

Division of a Fraction by a Whole Number

Example: Divide $\frac{1}{9}$ by 3.

Solution: $\frac{1}{9} \div 3$

Multiply $\frac{1}{9}$ by the reciprocal of the divisor (here the divisor is 3 and its reciprocal) is $\frac{1}{3}$.

$$= \frac{1}{9} \times \frac{1}{3} = \frac{1}{27}$$

Division of a Whole Number by a Fraction

Example: Divide 10 by $\frac{1}{5}$

Solution: $10 \div \frac{1}{5}$

Multiply 10 by the reciprocal of the divisor (here the divisor is $\frac{1}{5}$ and its reciprocal is 5)

$= 10 \times 5 = 50$

Division of a Fraction by another Fraction

Example: Divide $\frac{1}{5}$ by $\frac{1}{6}$

Solution: $\frac{1}{5} \div \frac{1}{6}$

$$= \frac{1}{5} \times 6 \qquad \text{(Reciprocal of } \frac{1}{6} \text{ is 6)}$$

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

Division of Fractions

Properties of Division of Fractions

Property 1: Any fraction divided by 1 gives the same fraction.

Property 2: Any fraction divided by itself gives 1.

Property 3: One divided by any fraction gives the reciprocal of the fraction.

Property 4: 0 divided by any fraction gives 0.