FRACTIONS

Year 6

KNOWLEDGE ORGANISER

Overview

Fractions we learn:

-Equivalent Fractions and Simplifying -Compare and Order

-Equivalent Fractions on a Number Line -Add Mixed Numbers

-Add and Subtract Simple Fractions -Subtract Mixed Numbers

-Fraction of Amount -Add Mixed Numbers

-Subtract Mixed Numbers -Multiply Fractions by Integer

-Dive Fractions by Integer -Multi-Step Problems

This learning is important because...

it helps us to understand the parts that can make up a whole amount. This is needed in lots of areas of life (e.g. sharing, cooking, making). Fractions are the building blocks of other learning in maths.

Mixed Numbers and Improper Fractions

Mixed numbers include a whole number and a fraction.

Whole number → $3\frac{4}{5}$ ← Fraction

Improper Fractions have a numerator that is greater than or equal to the denominator.

Numerator is greater than... → $\frac{13}{5}$ ← The denominator

To convert mixed numbers to improper fractions...

$2\frac{1}{4} \Rightarrow \frac{2 \times 4}{4} + \frac{1}{4} \Rightarrow \frac{8}{4} + \frac{1}{4} \Rightarrow \frac{9}{4}$

1.Multiply the whole number by the denominator.

2. Add the fractions together!

To convert improper fractions to mixed numbers...

$\frac{5}{3} = 5 \div 3 = 1\ R2 \rightarrow 1\frac{2}{3}$

1.Divide the numerator by the denominator.

2.The quotient shows the whole number and the fraction.

Adding Mixed Numbers

-Convert the mixed number to improper fraction, then make the denominators the same. Add the fractions and then convert back to mixed number.

$1\frac{2}{3} + \frac{2}{3} = \frac{5}{3} + \frac{2}{3} = \frac{7}{3} = 2\frac{1}{3}$

Subtracting Two Mixed Numbers

$9\frac{1}{2} - 5\frac{1}{4}$

$= \frac{19}{2} - \frac{21}{4}$ Change to improper fractions

$= \frac{19 \times 2}{2 \times 2} - \frac{21}{4}$ Change to common denominator

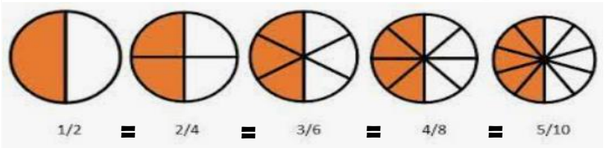
$= \frac{38}{4} - \frac{21}{4}$ Subtract the numerators

$= \frac{17}{4} = 4\frac{1}{4}$ Change to mixed numbers

Equivalent Fractions, Simplifying and Ordering Fractions

Equivalent Fractions

-Equivalent fractions have different numerators and denominators, but have the same value, e.g. 1/2 = 2/4.



To find equivalent fractions, multiply or divide the numerator and denominator by the same number.

Fractions of Quantities

To find the fraction of a number, divide by the denominator and multiply by the numerator.

e.g. for 1/6 of 30, calculation is 30 ÷ 6 = 5

for 4/6 of 30. calculation is 30 ÷ 6 = 5. 5 x 4 = 20

Simplifying Fractions

Look for the common factors. 2 is a factor of both 4 and 10. We can divide both the numerator and denominator by 2 to simplify.

$\frac{4}{10} \overset{\div 2}{\div 2} = \frac{2}{5}$

Ordering Fractions

Find the common multiple.

$\frac{3}{4}$	$\frac{4}{5}$	$\frac{1}{2}$	$\frac{7}{10}$
X5 $\frac{15}{20}$	X4 $\frac{16}{20}$	X10 $\frac{10}{20}$	X2 $\frac{14}{20}$

20 is a multiple of all denominators. Make common denominators and then order.

$\frac{1}{2}$ $\frac{7}{10}$ $\frac{3}{4}$ $\frac{4}{5}$

Four Operations and Proper Fractions

Adding Proper Fractions

-With same denominators, simply add numerators.
-If different denominators, find the common denominator first. Simplify if possible.

Step 1 $\frac{3}{7} + \frac{2}{5}$ Step 2 $\frac{3}{7} = \frac{15}{35}$ Step 3 $\frac{2}{5} = \frac{14}{35}$ Step 4 $\frac{15}{35} + \frac{14}{35} = \frac{29}{35}$

Subtracting Proper Fractions

-With same denominators, subtract numerators. If different denominators, find the common denominator first. Simplify if possible.

Step 1 $\frac{7}{8} - \frac{1}{3}$ Step 2 $\frac{7}{8} = \frac{21}{24}$ Step 3 $\frac{1}{3} = \frac{8}{24}$ Step 4 $\frac{21}{24} - \frac{8}{24} = \frac{13}{24}$

Multiplying Proper Fractions

Step 1

numerator x numerator

$\frac{2}{3} \times \frac{2}{5} = \frac{4}{}$ (2 x 2)

denominator x denominator (3 x 5)

Step 2

$\frac{2}{3} \times \frac{2}{5} = \frac{4}{15}$

Dividing Fractions by Whole Numbers

-Divide the numerator by the whole number and the denominator stays the same.

$\frac{2}{3} \div 2 = \frac{2}{3} \div \frac{2}{1} = \frac{\cancel{2}^{1}}{3} \times \frac{1}{\cancel{2}_{1}} = \frac{1}{3}$

Key Vocabulary

Proper Fraction | Improper Fraction | Highest Common Multiple | Lowest Common Multiple | Common Numerator | Common Denominator | Decimal Equivalent | Mixed Number | Factor