FRACTIONS

Key Concepts

$$\frac{x}{y} \longrightarrow \frac{\text{Numerator}}{\text{Denominator}}$$

Equivalent fractions have the same value as one another.

Eg. $\frac{1}{4} = \frac{2}{8} = \frac{3}{12}$

Examples

Calculate $\frac{4}{5}$ of 65:

$65 \div 5 = 13$ → Divide by the denominator

$13 \times 4 = 52$ → Multiply this by the numerator

$\frac{4}{5}$ of a number is 52, what is the original number?

$52 \div 4 = 13$ → Divide by the numerator

$13 \times 5 = 65$ → Multiply this by the denominator

Order these fractions in ascending order:

$\frac{2}{5}$	$\frac{1}{2}$	$\frac{5}{6}$	$\frac{7}{15}$
↓×6	↓×15	↓×5	↓×2
$\frac{12}{30}$	$\frac{15}{30}$	$\frac{25}{30}$	$\frac{14}{30}$
①	③	④	②

To be able to compare fractions we must have a **common denominator**

1) Calculate $\frac{2}{7}$ of 56.

2) $\frac{3}{8}$ of a number is 36, what is the original number?

3) Order the following in ascending order: $\frac{2}{3}$ $\frac{5}{6}$ $\frac{3}{8}$ $\frac{7}{12}$

ANSWERS A 1) 16 2) 96 3) $\frac{3}{8}$ $\frac{7}{12}$ $\frac{2}{3}$ $\frac{5}{6}$

4 OPERATIONS WITH FRACTIONS

Key Concepts

An **improper fraction** is when the numerator is larger than the denominator e.g. $\frac{20}{12}$

Converting from a mixed number into an improper fraction:

$$2\frac{3}{5} = \frac{(2\times 5)+3}{5} = \frac{13}{5}$$

A **reciprocal** is the value that when multiplied by another gives the answer of 1.

Eg. $\frac{1}{8}$ is the reciprocal of 8.

$\frac{2}{5}$ is the reciprocal of $\frac{5}{2}$

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Examples

$$1\frac{2}{3} + 2\frac{1}{4}$$

$= \frac{5}{3} + \frac{9}{4}$ ← Convert into an improper fraction →

$= \frac{20}{12} + \frac{27}{12}$ ← Find a common denominator →

$= \frac{47}{12}$

$= 3\frac{11}{12}$ ← Convert back into a mixed number →

$$2\frac{2}{3} - 1\frac{1}{4}$$

$= \frac{8}{3} - \frac{5}{4}$

$= \frac{32}{12} - \frac{15}{12}$

$= \frac{17}{12}$

$= 1\frac{5}{12}$

$$1\frac{1}{3} \times 2\frac{3}{4}$$

$= \frac{4}{3} \times \frac{11}{4}$

$= \frac{44}{12}$

$= 3\frac{8}{12}$

$$2\frac{1}{3} \div 1\frac{3}{5}$$

$= \frac{7}{3} \div \frac{8}{5}$ Find the reciprocal of the second fraction....

$= \frac{7}{3} \times \frac{5}{8}$ ...and multiply

$= \frac{35}{24}$

$= 1\frac{11}{24}$

Calculate:

1) $1\frac{2}{3} + 2\frac{3}{4}$

2) $3\frac{3}{4} - 1\frac{1}{3}$

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

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

What is the reciprocal of:

5) $\frac{2}{3}$

6) 9

7) 0.75

ANSWERS A 1) $4\frac{5}{12}$ 2) $2\frac{5}{12}$ 3) $5\frac{1}{3}$ 4) $\frac{16}{27}$ 5) $\frac{3}{2}$ 6) $\frac{1}{9}$ 7) $\frac{4}{3}$