A* A B C D

Fractions

1 Adding or subtracting fractions

Add or subtract the whole numbers

↓

Write the fractions as fractions with the same denominator

↓

Add or subtract the fractions

↓

If you have an improper fraction then convert to a mixed number and add

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

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

$= 3 + \frac{4}{6} + \frac{3}{6}$

$= 3 + \frac{7}{6}$

$= 3 + 1\frac{1}{6}$

$= 4\frac{1}{6}$

2 Dividing fractions

Convert any mixed numbers to improper fractions

↓

Turn the second fraction 'upside down' and change ÷ to ×

↓

Multiply the numerators and multiply the denominators, cancelling where possible

↓

Convert any improper fractions to mixed numbers

$6\frac{1}{4} \div 1\frac{7}{8}$

$= \frac{25}{4} \div \frac{15}{8}$

$= \frac{{}^{5}\cancel{25}}{{}_{1}\cancel{4}} \times \frac{\cancel{8}^{2}}{\cancel{15}_{3}}$

$= \frac{10}{3}$

$= 3\frac{1}{3}$

3 Multiplying fractions

Convert any mixed numbers to improper fractions

↓

Simplify if possible

↓

Multiply the numerators and multiply the denominators

Converting between recurring decimals and fractions is covered on page 5.

Fractions and decimals

To convert a fraction into a decimal you divide the numerator by the denominator. Remember these common fraction-to-decimal conversions:

$\frac{1}{100} = 0.01$ $\frac{1}{10} = 0.1$ $\frac{1}{2} = 0.5$

$\frac{1}{5} = 0.2$ $\frac{1}{4} = 0.25$ $\frac{3}{4} = 0.75$

Worked example

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

Give your answer in its simplest form.

$3\frac{1}{4} \times 2\frac{2}{3} = \frac{13}{4} \times \frac{8}{3}$

$= \frac{13 \times \cancel{8}^{2}}{{}_{1}\cancel{4} \times 3}$

$= \frac{26}{3}$

$= 8\frac{2}{3}$

EXAM ALERT!

Over 40% of students got 0 marks for this question.

Do **not** multiply the whole numbers and fractions separately. Always start by converting each mixed number into an improper fraction.

Do simplify calculations by 'cancelling' if possible.

Then multiply the numerators **and** the denominators.

Give your final answer as a mixed number.

This was a real exam question that caught students out – **be prepared!** ResultsPlus

Now try this

edexcel

(a) A machine tool is made from two parts.
One part has a length of $1\frac{3}{4}$ inches.
The other part has a length of $2\frac{2}{3}$ inches.
What is the total length, in inches, of the machine tool? **(3 marks)**

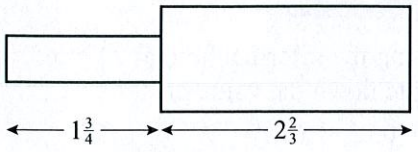

Diagram **NOT** accurately drawn

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(b) $3\frac{3}{4}$ is bigger than $1\frac{19}{21}$
How many times bigger? **(3 marks)**