

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 \div to \times

Multiply the numerators and multiply the denominators, cancelling where possible

Convert any improper fractions to mixed numbers

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

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

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

$$= \frac{10}{3}$$

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

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:

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

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

Worked example

Work out $3\frac{1}{4} \times 2\frac{2}{3}$
Give your answer in its simplest form.

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

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

$$= \frac{26}{3}$$

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



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!**



Now try this

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

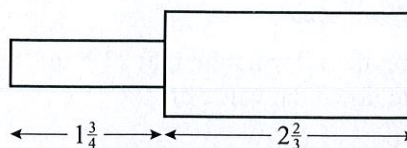


Diagram NOT accurately drawn

