

Fractions

1. Evaluate the following (don't forget BIDMAS):

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|---|------------------|---|-------------------|
| (a) $3\frac{1}{3} + 2\frac{1}{9}$. | $\frac{49}{9}$ | (l) $(\frac{2}{3})^2 + 2\frac{1}{3}$. | $\frac{25}{9}$ |
| (b) $2\frac{3}{8} - 1\frac{2}{5}$. | $\frac{39}{40}$ | (m) $(1\frac{2}{3})^2 - (2\frac{1}{2})^2$. | $-\frac{125}{36}$ |
| (c) $5 \times 4\frac{1}{3}$. | $\frac{65}{3}$ | (n) $\frac{1}{2\frac{1}{3} - 1\frac{3}{7}}$. | $\frac{21}{19}$ |
| (d) $4\frac{2}{3} \div 3\frac{3}{5}$. | $\frac{35}{27}$ | (o) $4 - \frac{3}{1\frac{3}{4}}$. | $\frac{16}{7}$ |
| (e) $3\frac{6}{7} \times 1\frac{3}{4}$. | $\frac{27}{4}$ | (p) $\frac{4}{7} + \frac{2\frac{1}{2}}{5\frac{1}{4}}$. | $\frac{22}{21}$ |
| (f) $\frac{3}{4} \div 2$. | $-\frac{7}{4}$ | (q) $\frac{\frac{3}{4} \times \frac{2}{3}}{\frac{2}{3} \div \frac{4}{5}} - \frac{1}{7}$. | $\frac{16}{35}$ |
| (g) $1\frac{3}{10} - 3\frac{1}{20}$. | $\frac{9}{5}$ | (r) $\frac{\frac{1}{2} + \frac{2}{3}}{2\frac{3}{5} - 1\frac{1}{7}} - \frac{1}{1\frac{4}{5} - \frac{1}{10}}$. | $\frac{65}{306}$ |
| (h) $5 \div 2\frac{7}{9}$. | $\frac{35^2}{7}$ | (s) $2017\frac{3}{4} - 2015\frac{1}{6}$. | \square |
| (i) $6\frac{2}{7} \times 8$. | $\frac{171}{20}$ | | |
| (j) $4\frac{3}{4} + 2\frac{1}{9} \times 1\frac{4}{5}$. | $\frac{115}{9}$ | | |
| (k) $5 + 3\frac{1}{3} \div \frac{3}{7}$. | | | |

2. Evaluate the following algebraic fractions. Just remember to think about what you would do with a given number and do the same with the letter. For example

$$2\frac{1}{3} = \frac{2 \times 3 + 1}{3} = \frac{7}{3},$$

$$a\frac{3}{4} = \frac{a \times 4 + 3}{4} = \frac{4a + 3}{4}.$$

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|---|---------------------|---|-------------------------------|
| (a) $\frac{1}{a} + \frac{2}{3}$. | $\frac{3+2a}{3a}$ | (h) $a\frac{1}{a} \div \frac{4}{5}$. | $\frac{5a^2+5}{4a}$ |
| (b) $\frac{a}{3} - \frac{4}{5}$. | $\frac{5a-12}{15}$ | (i) $1\frac{3}{a} \times 4\frac{1}{a}$. | $\frac{4a^2+13a+3}{a^2}$ |
| (c) $a \times 1\frac{4}{5}$. | $\frac{9a}{5}$ | (j) $1 + \frac{a}{2} + \frac{a}{a}$. | $\frac{a^2+2a+4}{2a}$ |
| (d) $3\frac{1}{a} \times \frac{a}{7}$. | $\frac{3a+1}{7}$ | (k) $\frac{a}{2} \times \frac{1}{3} + \frac{2}{a} \div \frac{3}{a}$. | $\frac{a+4}{6}$ |
| (e) $\frac{6}{7} \div \frac{a}{2}$. | $\frac{12}{7a}$ | (l) $\frac{a}{b} + \frac{b}{a} \times \frac{b}{c}$. | $\frac{a^2c+b^3}{abc}$ |
| (f) $a\frac{1}{2} + \frac{1}{3}$. | $\frac{6a+5}{6}$ | (m) $a\frac{b}{c} + d\frac{e}{f}$. | $\frac{acdf+ace+bdfe+be}{cf}$ |
| (g) $3\frac{1}{3} - a\frac{1}{4}$. | $\frac{37-12a}{12}$ | (n) $\frac{\frac{2}{3}}{2\frac{1}{a}} + \frac{1}{a}$. | $\frac{2a^2+6a+3}{6a^2+3a}$ |

3. Find $(1 + \frac{1}{2})(1 + \frac{1}{3})(1 + \frac{1}{4})(1 + \frac{1}{5}) \cdots (1 + \frac{1}{1000})$.