

National 5: Algebraic Fractions

Q1 Simplify:

a) $\frac{6x}{8}$

b) $\frac{x^3}{x}$

c) $\frac{xy}{x}$

d) $\frac{12x^2}{15x}$

e) $\frac{6ab}{9a}$

f) $\frac{8}{12x}$

g) $\frac{2x^2y}{3xy}$

h) $\frac{18p^3}{6p}$

i) $\frac{2n}{10n^3}$

Q2 Fully factorise the numerator and denominator, and then simplify:

a) $\frac{2a-10}{3a-15}$

b) $\frac{x^2-9}{x+3}$

c) $\frac{4c+1}{12c+3}$

d) $\frac{x^2+5x+4}{x^2+2x+1}$

e) $\frac{x^3+5x^2+4x}{x^2+2x+1}$

f) $\frac{5q+5}{q^2-6q-7}$

Q3 Express the answer to each addition or subtraction as a single fraction, fully simplified:

a) $\frac{4x}{9} + \frac{5x}{6}$

b) $\frac{4}{5x} + \frac{2x}{3}$ ($x \neq 0$)

c) $\frac{1}{x-2} + \frac{3}{x+3}$ ($x \neq 2, x \neq -3$)

d) $\frac{4}{n+1} - \frac{2}{n-3}$ ($n \neq -1, n \neq 3$)

e) $\frac{a-1}{3} - \frac{a}{6}$

f) $\frac{3}{x^2} - \frac{x+2}{5x}$ ($x \neq 0$)

Q4 Multiply, giving your answers in their lowest terms:

a) $\frac{2x}{3} \times \frac{9}{4x}$ ($x \neq 0$)

b) $\frac{5x^2}{7} \times \frac{21}{10x}$ ($x \neq 0$)

c) $\frac{7}{n^3} \times \frac{2n}{35}$ ($n \neq 0$)

d) $\frac{6y^3}{y-1} \times \frac{1}{4y}$ ($y \neq 0, y \neq 1$)

Q5 Divide, giving each answer in its simplest form:

a) $\frac{2}{x} \div \frac{3}{x}$ ($x \neq 0$)

b) $\frac{3}{a-5} \div \frac{6a}{5}$ ($a \neq 5$)

c) $\frac{28}{xy} \div \frac{7}{3y^2}$ ($x \neq 0, y \neq 0$)

d) $\frac{49x}{4y^2} \div \frac{35y}{28x^2}$ ($x \neq 0, y \neq 0$)