

National 5 Final Exam Practice	
Algebraic Skills	Algebraic Fractions with Factors
Average Score	2 / 3 Marks

1. Simplify each of these algebraic fractions:

a) $\frac{(x+3)(x-1)}{(x+2)(x+3)}$ b) $\frac{(x-1)(x+4)}{(x+5)(x+4)}$ c) $\frac{(2x+1)(3x+1)}{(3x+1)(3x-4)}$ d) $\frac{(x+3)(x+4)}{(x+4)(x-8)}$ e) $\frac{(2x-1)(4x-1)}{(3x-1)(2x-1)}$

2. Factorise then simplify each algebraic fraction:

a) $\frac{x^2-9}{(x+2)(x+3)}$ b) $\frac{(x-4)(x+5)}{5x-20}$ c) $\frac{(x+1)(2x-5)}{4x^2-25}$ d) $\frac{7x-35}{x^2-6x+5}$ e) $\frac{(x+7)(x-2)}{x^2+x-6}$
f) $\frac{(x-4)}{x^2-16}$ g) $\frac{x^2-2x+1}{x-1}$ h) $\frac{(2x+5)(2x-3)}{10x-15}$ i) $\frac{3x^2-27}{x-3}$ j) $\frac{5x^2-20}{x^2+5x+4}$
k) $\frac{x^2-x-42}{x^2-36}$ l) $\frac{3x^2-12}{x^2+7x+10}$ m) $\frac{x^2+8x+15}{2x^2+13x+15}$ n) $\frac{9a^2-36}{a^2-4}$ o) $\frac{3a+15}{3a^2-75}$
p) $\frac{x^2-3x}{x^2+x-12}$ q) $\frac{4x^2-2x}{4x^2+12x-7}$ r) $\frac{12-3n}{16-n^2}$ s) $\frac{3n^2+17n+20}{n+4}$ t) $\frac{3a^2-12}{a^2-3a-28}$

3. Simplify each of these algebraic fractions:

a) $\frac{(x+4)}{(x-1)} \times \frac{(x-1)}{(x+6)}$ b) $\frac{(2x-1)}{(2x+3)} \times \frac{(x+6)}{(2x-1)}$ c) $\frac{(3p-2)}{(4p+1)} \times \frac{(4p+1)}{(3p-5)}$ d) $\frac{(1-3x)}{(2x+5)} \times \frac{(2x+5)}{(3x-2)}$
e) $\frac{3(a-1)}{(a-5)} \times \frac{2(a-5)}{4(a+3)}$ f) $\frac{2(2x+3)}{5(1-2x)} \times \frac{3(1-2x)}{4(x+2)}$ g) $\frac{5(3x-1)}{4(2-3x)} \times \frac{2(2-3x)}{3(x+2)}$ h) $\frac{2(1-3p)}{3(2p+1)} \times \frac{3(5-p)}{4(1-3p)}$

4. Simplify each of these algebraic fractions:

a) $\frac{2x-8}{(x+2)(4-x)}$ b) $\frac{3t-15}{(5-t)(2t+3)}$ c) $\frac{3a-6}{(3a+4)(2-a)}$ d) $\frac{9x-12}{(4-3x)(x+2)}$ e) $\frac{2a-16}{a(8-a)}$
e) $\frac{12x-16}{(4-3x)(x+1)}$ f) $\frac{6t-9}{(t-1)(3-2t)}$ g) $\frac{p-5}{(10-2p)(p-3)}$ h) $\frac{6a-14}{21-9a}$ i) $\frac{x^2-4}{4-2x}$

5. Factorise and simplify each of the following:

a) $\frac{x^2-1}{x-1}$ b) $\frac{x^2-3x-18}{2x-12}$ c) $\frac{2x+6}{2x^2-18}$ d) $\frac{5a^2-45}{a^2-3a-18}$ e) $\frac{2x^2-x-1}{4x+2}$
f) $\frac{p^2-7p}{p^2-49}$ g) $\frac{10t-15}{4t^2-9}$ h) $\frac{4p-16}{p^2-16}$ i) $\frac{x^2-5x-24}{16+6x-x^2}$ j) $\frac{9-x^2}{x^2-4x+3}$
k) $\frac{3x^2+12x}{6x^3+15x}$ l) $\frac{4x^2+8x-5}{10x-5}$ m) $\frac{3t^2-8t-16}{t^2-16}$ n) $\frac{25-9p^2}{10+p-3p^2}$ o) $\frac{a^4-1}{2a+2}$