# Algebraic Fractions (Operations)

SCAN ME

REVISE THIS TOPIC

**1** Write $\frac{5y}{6} + \frac{y}{4}$ as a single fraction in its simplest form. **[2 marks]**

$\frac{10y}{12} + \frac{3y}{12}$

Answer $\frac{13y}{12}$

**2** Write $\frac{x}{2} - \frac{2x}{5}$ as a single fraction in its simplest form. **[2 marks]**

$\frac{5x}{10} - \frac{4x}{10}$

Answer $\frac{x}{10}$

**3** Write $\frac{1}{3a} + \frac{4}{a}$ as a single fraction in its simplest form. **[2 marks]**

$\frac{1}{3a} + \frac{12}{3a}$

Answer $\frac{13}{3a}$

$\frac{\quad}{6}$

**4** Write $\frac{4b}{5} \times \frac{b}{6}$ as a single fraction in its simplest form. **[2 marks]**

$\frac{4b^2}{30}$

Answer $\frac{2b^2}{15}$

**5** Write $\frac{4c}{9} \div \frac{8}{3c^2}$ as a single fraction in its simplest form. **[2 marks]**

$\frac{4c}{9} \times \frac{3c^2}{8} = \frac{12c^3}{72}$

Answer $\frac{c^3}{6}$

**6** Write $\frac{3xy}{4} \times \frac{y}{6x}$ as a single fraction in its simplest form. **[2 marks]**

$\frac{3xy^2}{24x}$

Answer $\frac{y^2}{8}$

**7** Write $\frac{4}{a} + \frac{3}{b} - \frac{7}{ab}$ as a single fraction in its simplest form. **[3 marks]**

$\frac{4b}{ab} + \frac{3a}{ab} - \frac{7}{ab}$

Answer $\frac{4b+3a-7}{ab}$

**8** Write $\frac{2x}{y} \times \frac{5}{3x^2} \times \frac{y^6}{20}$ as a single fraction in its simplest form. **[3 marks]**

$\frac{10xy^6}{60x^2y}$

Answer $\frac{y^5}{6x}$

**9** Write $\frac{2}{xy} + \frac{y}{x} + \frac{6}{x^2}$ as a single fraction in its simplest form. **[3 marks]**

$\frac{2x}{x^2y} + \frac{xy^2}{x^2y} + \frac{6y}{x^2y}$

Answer $\frac{2x+xy^2+6y}{x^2y}$

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**10** Write $\frac{5}{2x^2y} - \frac{3}{8xy^3}$ as a single fraction in its simplest form. **[3 marks]**

$\frac{20y^2}{8x^2y^3} - \frac{3x}{8x^2y^3}$

Answer $\frac{20y^2 - 3x}{8x^2y^3}$

**11** Write $\frac{10xy}{6m^2n^2} \div \frac{5x^2y^2}{9mn^5}$ as a single fraction in its simplest form. **[3 marks]**

$\frac{10xy}{6m^2n^2} \times \frac{9mn^5}{5x^2y^2} = \frac{90mn^5xy}{30m^2n^2x^2y^2}$

Answer $\frac{3n^3}{mxy}$

**12** Write $\frac{x+2}{8} + \frac{2x}{3}$ as a single fraction in its simplest form. **[2 marks]**

$\frac{3x+6}{24} + \frac{16x}{24}$

Answer $\frac{19x+6}{24}$

**13** Write $\frac{x+7}{6} + \frac{x+4}{9}$ as a single fraction in its simplest form. **[3 marks]**

$\frac{3(x+7)}{18} + \frac{2(x+4)}{18} = \frac{3x+21+2x+8}{18}$

Answer $\frac{5x+29}{18}$

**14** Write $\frac{x+3}{4} - \frac{x+1}{5}$ as a single fraction in its simplest form. **[3 marks]**

$\frac{5(x+3)}{20} - \frac{4(x+1)}{20} = \frac{5(x+3)-4(x+1)}{20}$

$= \frac{5x+15-4x-4}{20}$

Answer $\frac{x+11}{20}$

**15** Write $\frac{2x+3}{7} - \frac{x-4}{2}$ as a single fraction in its simplest form. **[3 marks]**

$\frac{2(2x+3)}{14} - \frac{7(x-4)}{14} = \frac{2(2x+3)-7(x-4)}{14}$

$= \frac{4x+6-7x+28}{14}$

Answer $\frac{34-3x}{14}$

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**16** Write $\frac{8}{x+2} + \frac{1}{2x}$ as a single fraction in its simplest form. **[2 marks]**

$\frac{8(2x)}{2x(x+2)} + \frac{1(x+2)}{2x(x+2)} = \frac{8(2x) + (x+2)}{2x(x+2)}$

$= \frac{16x + x + 2}{2x^2+4x}$

Answer $\frac{17x+2}{2x^2+4}$ [$\frac{17x+2}{2x(x+2)}$ is also ok!]

**17** Write $\frac{10}{x+4} + \frac{5}{x+5}$ as a single fraction in its simplest form. **[3 marks]**

$\frac{10(x+5)}{(x+4)(x+5)} + \frac{5(x+4)}{(x+4)(x+5)} = \frac{10(x+5) + 5(x+4)}{(x+4)(x+5)}$

$= \frac{10x+50+5x+20}{(x+4)(x+5)}$

Answer $\frac{15x+70}{x^2+9x+20}$ [$\frac{15x+70}{(x+4)(x+5)}$ also ok!]

**18** Write $\frac{9}{x+8} - \frac{5}{x-5}$ as a single fraction in its simplest form. **[3 marks]**

$\frac{9(x-5)}{(x+8)(x-5)} - \frac{5(x+8)}{(x+8)(x-5)} = \frac{9(x-5) - 5(x+8)}{(x+8)(x-5)}$

$= \frac{9x-45-5x-40}{(x+8)(x-5)}$

Answer $\frac{4x-85}{x^2+3x-40}$ [$\frac{4x-85}{(x+8)(x-5)}$ is ok!]

**19** Write $\frac{5}{x-3} - \frac{3}{x+3}$ as a single fraction in its simplest form. **[3 marks]**

$\frac{5(x+3)}{(x-3)(x+3)} - \frac{3(x-3)}{(x-3)(x+3)} = \frac{5(x+3)-3(x-3)}{(x-3)(x+3)}$

$= \frac{5x+15-3x+9}{(x-3)(x+3)}$

Answer $\frac{2x+24}{x^2-9}$ $\left[\frac{2x+24}{(x+3)(x-3}\text{ is ok!}\right]$

**20** Write $\frac{x}{x-1} - \frac{2}{x+3}$ as a single fraction in its simplest form. **[3 marks]**

$\frac{x(x+3)}{(x-1)(x+3)} - \frac{2(x-1)}{(x-1)(x+3)} = \frac{x(x+3)-2(x-1)}{(x-1)(x+3)}$

$= \frac{x^2+3x-2x+2}{(x-1)(x+3)}$

Answer $\frac{x^2+x+2}{x^2+2x-3}$ $\left[\frac{x^2+x+2}{(x-1)(x+3)}\text{ is ok!}\right]$

**21** Write $\frac{1}{2x-3} - \frac{x}{3x+5}$ as a single fraction in its simplest form. **[4 marks]**

$\frac{1(3x+5)}{(2x-3)(3x+5)} - \frac{x(2x-3)}{(2x-3)(3x+5)} = \frac{3x+5-x(2x-3)}{(2x-3)(3x+5)}$

$= \frac{3x+5-2x^2+3x}{(2x-3)(3x+5)}$

Answer $\frac{6x+5-2x^2}{6x^2+x-15}$ $\left[\frac{6x+5-2x^2}{(2x-3)(3x+5)}\text{ is ok!}\right]$

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