Practice with Algebraic Fractions #1

1. Simplify $\frac{x}{4} \times \frac{x}{5}$

2. Simplify $\frac{x}{4} + \frac{x}{5}$

3. Simplify $\frac{x}{4} - \frac{x}{5}$

4. Simplify $\frac{x}{4} \div \frac{x}{5}$

5. Simplify $\frac{2}{x} + \frac{5}{y}$

6. Simplify $\frac{2}{x} + \frac{5}{x^2}$

7. Simplify $\frac{2}{x+1} - \frac{5}{x}$

8. Simplify $\frac{x^2+8x+12}{x+2}$

9. Solve $\frac{3}{x+1} = \frac{4}{x}$

10. Simplify $\frac{x}{4} \times \frac{5}{x^2}$

11. Solve $\frac{x}{x+4} = \frac{2}{x}$

12. Simplify $\frac{4}{x-1} - \frac{3}{x+2}$

13. Simplify $x \cdot \left(\frac{4}{x}\right)^2$

14. Simplify $\frac{x-12}{x^2-4x-96}$

15. Simplify $\frac{x^2+3x-10}{4x+20}$

16. Solve $\frac{3}{x+3} + \frac{10}{x} = 2$

Answers: Practice with Algebraic Fractions #1

1. $\frac{x}{4} \times \frac{x}{5} = \frac{x^2}{20}$

2. $\frac{x}{4} + \frac{x}{5} = \frac{5x}{20} + \frac{4x}{20} = \frac{9x}{20}$

3. $\frac{x}{4} - \frac{x}{5} = \frac{5x}{20} - \frac{4x}{20} = \frac{x}{20}$

4. $\frac{x}{4} \div \frac{x}{5} = \frac{x}{4} \times \frac{5}{x} = \frac{5x}{4x} = \frac{5}{4}$

5. $\frac{2}{x} + \frac{5}{y} = \frac{2y}{xy} + \frac{5x}{yx} = \frac{2y + 5x}{xy}$

6. $\frac{2}{x} + \frac{5}{x^2} = \frac{2x}{x^2} + \frac{5}{x^2} = \frac{2x + 5}{x^2}$

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

8. $\frac{x^2 + 8x + 12}{x + 2} = \frac{(x+2)(x+6)}{x+2} = x + 6$

9. $\frac{3}{x+1} = \frac{4}{x} \Rightarrow 3(x) = 4(x+1) \Rightarrow 3x = 4x + 4 \Rightarrow x = {}^{-}4$

10. $\frac{x}{4} \times \frac{5}{x^2} = \frac{5x}{4x^2} = \frac{5}{4x}$

11. $\frac{x}{x+4} = \frac{2}{x} \Rightarrow x(x) = 2(x+4) \Rightarrow x^2 - 2x - 8 = 0 \Rightarrow x = 4 \text{ or } {}^{-}2$

12. $\frac{4}{x-1} - \frac{3}{x+2} = \frac{4(x+2)}{(x-1)(x+2)} + \frac{-3(x-1)}{(x-1)(x+2)} = \frac{x+11}{(x-1)(x+2)}$ Note double –

13. $x\,.\left(\frac{4}{x}\right)^2 = \frac{x\,.\,4^2}{x^2} = \frac{16}{x}$

14. $\frac{x-12}{x^2 - 4x - 96} = \frac{x-12}{(x-12)(x+8)} = \frac{1}{x+8}$

15. $\frac{x^2 + 3x - 10}{4x + 20} = \frac{(x-2)(x+5)}{4(x+5)} = \frac{x-2}{4}$

16. $\frac{3}{x+3} + \frac{10}{x} = 2 \Rightarrow \frac{3\,x + 10(x+3)}{x(x+3)} = 2 \Rightarrow 3x + 10x + 30 = 2(x)(x+3)$

$\Rightarrow 13x + 30 = 2x^2 + 6x \Rightarrow 0 = 2x^2 - 7x - 30 \Rightarrow x = 6 \text{ or } {}^{-}2.5$

*Note: Qs 9, 11 and 16 are "solve" so we multiply across the = sign. We **cannot** for the others.*