JP Maths Revision

ALGEBRAIC FRACTIONS

HIGHER TIER

Attempt the paper before watching the solutions!

https://www.youtube.com/@JPMathsRevision

Name: _____ **Date:** _____

1. Simplify fully $\frac{2x+6}{x^2+8x+15}$

$\frac{2}{x+3}$ **(2)**

2. Simplify fully $\frac{x+3}{x^2-9}$

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

3. Simplify fully $\frac{2x-10}{x^2-2x-15}$

$\frac{2}{x+3}$ **(2)**

4. Simplify fully $\frac{x^2+5x+6}{x^2+7x+10}$

$\frac{x+2}{x+5}$ **(3)**

5. Simplify fully $\frac{x^2-16}{x^2-5x+4}$

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

6. Simplify fully $\frac{x^2-7x+12}{x^2-8x+12}$

$\frac{(x-3)(x-4)}{(x-2)(x-6)}$ **(3)**

7. Simplify fully $\frac{4x+2}{2x^2+7x+3}$

$\frac{2}{x+3}$ **(3)**

8. Simplify fully $\frac{2x^2-5x-3}{2x^2+x-3}$

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

9. Simplify fully $\frac{3x^2+8x+5}{6x^2+11x-10}$

$\frac{3x+5}{6x-5}$ **(3)**

10. Show that $\frac{2}{x-1}+\frac{3}{x+1}$ can be written in the form $\frac{ax+b}{x^2-1}$ where a and b are integers.

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

11. Show that $\frac{4}{x}+\frac{3}{x+2}$ can be written in the form $\frac{ax+b}{x^2+2x}$ where a and b are integers.

$\frac{7x+8}{x^2+2x}$ **(3)**

12. Show that $\frac{2}{x-1}+\frac{5}{x+1}$ can be written in the form $\frac{ax+b}{x^2-1}$

$\frac{7x+3}{x^2-1}$ **(3)**

13. Show that $\frac{3}{x-2}-\frac{4}{x^2-4}$ can be written in the form $\frac{ax+b}{(x+2)(x-2)}$ where a and b are integers.

$\frac{3x-10}{(x+2)(x-2)}$ **(3)**

14. Show that $\frac{4}{2x+6}+\frac{1}{x-2}$ can be written in the form $\frac{ax+b}{(x-3)(x-2)}$ where a and b are integers.

$\frac{6x-5}{(x-3)(x-2)}$ **(3)**

15. Show that $\frac{x+1}{x-2}+\frac{2x-5}{x+2}+1$ can be written in the form $\frac{ax^2+bx+c}{x^2-4}$ where a, b and c are integers.

$\frac{4x^2-2x-3}{x^2-4}$ **(3)**

16. Write $\frac{x^2-9}{x}-\frac{x}{x+3}$ as a single fraction in its simplest form.

$\frac{x^2-6x-9}{x(x+3)}$ **(3)**

17. Write $\frac{x^2+2x-15}{x-3}\times\frac{3}{x+5}$ as a single fraction in its simplest form.

3 **(3)**

18. Write $\frac{2x^2+5x+2}{2x+1}\times\frac{3}{x+2}$ as a single fraction in its simplest form.

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

19. Write $\frac{x^2+5x+6}{x+3}\div\frac{x+2}{4}$ as a single fraction in its simplest form.

$4(x+2)$ **(3)**

20. Write $\frac{3x^2-27}{6x}\div\frac{x-3}{2}$ as a single fraction in its simplest form.

$x+3$ **(3)**

21. Write $\frac{6x^2-7x-3}{3x^2+8x+5}\div\frac{2x-1}{3x+5}$ as a single fraction in its simplest form.

3 **(3)**

22. Show that $\frac{8}{x-2}+\left(\frac{x+1}{2}\div\frac{x^2-4}{3x}\right)$ can be written in the form $\frac{ax+b}{cx+d}$ where a, b, c and d are integers.

$\frac{5x+16}{x-2}$