

E Summer Pre Trial Practice 2

1. Evaluate the following

(a) $4\frac{2}{3} \div 5\frac{1}{2}$.

$$\frac{28}{33}$$

(b) $6\frac{2}{7} - 4\frac{2}{3}$.

$$\frac{34}{21} = 1\frac{13}{21}$$

2. Simplify

(a) $\sqrt{500}$.

$$10\sqrt{5}$$

(b) $\frac{20}{\sqrt{5}}$.

$$4\sqrt{5}$$

(c) $\sqrt{12} - \sqrt{3} + \sqrt{27}$.

$$4\sqrt{3}$$

(d) $\frac{12}{\sqrt{7} + 1}$.

$$2\sqrt{7} - 2$$

3. Factorise fully

(a) $2u^3 - 8t^2u$.

$$2u(u - 2t)(u + 2t)$$

(b) $6\pi x^2 + 5\pi x - 4\pi$.

$$(2x - 1)(3x + 4)$$

4. Make x the subject (simplifying your answer)

(a) $5x^5 - t = k$.

$$x = \sqrt[5]{\frac{k+t}{5}}$$

(b) $3G = \frac{2\pi}{4x}$.

$$x = \frac{\pi}{6G}$$

(c) $\sqrt{\frac{x+y}{x-2y}} = T$.

$$x = \frac{2T^2y+y}{T^2-1}$$

(d) $\frac{2}{x} - \frac{3}{y} = \frac{a}{y}$.

$$x = \frac{2y}{a+3}$$

5. Solve the following

(a) $x^2 + 7x = 18$.

$$x = -9 \text{ or } x = 2$$

(b) $2x^2 = 8x$.

$$x = 0 \text{ or } x = 4$$

(c) $30x^2 + 10x = 300$.

$$x = 3 \text{ or } x = -\frac{10}{3}$$

(d) $\frac{2}{4x} = 18x$.

$$x = \frac{1}{6} \text{ or } x = -\frac{1}{6}$$

6. Simplify as fully as possible

(a) $\frac{3(x-5)}{4} - \frac{x-5}{5}$.

$$\frac{11x-53}{20}$$

(b) $\frac{2x^2 + 6x - 8}{4x^2 - 4}$.

$$\frac{x+4}{2(x+1)}$$

(c) $\frac{x^2 + 2x - 3}{6x^2 + 15x - 9} \div \frac{2x - 4}{12x - 6}$.

$$\frac{x-1}{x-2}$$

(d) $\frac{3 - \frac{2}{x-1}}{5 - \frac{3}{x-1}}$.

$$\frac{3x-5}{5x-8}$$

7. Solve the following

$$(a) \frac{12}{x+1} - \frac{10}{x+3} = 2.$$

$$x = -5 \text{ or } x = 2$$

$$(b) \frac{4x}{x+1} + \frac{x}{x+2} = \frac{7}{3}.$$

$$x = 1 \text{ or } x = -\frac{7}{4}$$

8. HARDER. Factorise fully

$$(a) (x+2y)^2 - (2x+y)^2.$$

$$3(y+x)(y-x)$$