

Daily Practice 9.2.2018

- Q1. Factorise fully $12x^2 - 3$
 Q2. Write with a rational denominator and fully simplify $\frac{4}{\sqrt{8}}$
 Q3. Multiply out and simplify $(x + 3)^2 + 2x$
 Q4. State the equation of the line joining $(-1, 3)$ and $(2, 5)$

① $\frac{12x^2 - 3}{3(4x^2 - 1)} = \frac{3(2x+1)(2x-1)}{3(2x+1)(2x-1)}$
 ② $\frac{4}{\sqrt{8}} = \frac{4\sqrt{8}}{\sqrt{8}\sqrt{8}} = \frac{4\sqrt{8}}{8} = \frac{\sqrt{8}}{2} = \frac{\sqrt{4 \cdot 2}}{2} = \frac{2\sqrt{2}}{2} = \sqrt{2}$
 ③ $(x+3)(x+3) + 2x = x^2 + 3x + 3x + 9 + 2x = x^2 + 8x + 9$
 ④ $(-1, 3)$ $(2, 5)$
 $m = \frac{5-3}{2-(-1)} = \frac{2}{3}$ $y = \frac{2}{3}x + c$
 $5 = \frac{2}{3}(2) + c$
 $5 = \frac{4}{3} + c$
 $c = \frac{11}{3}$
 $y = \frac{2}{3}x + \frac{11}{3}$

Today we will be starting to learn how to simplify algebraic fractions.

Simplifying Algebraic Fractions

How do you simplify a fraction?

$\frac{12}{15} \div 3 = \frac{4}{5}$ $\frac{5x \cdot y}{y} = \frac{5x}{1} = 5x$
 $\frac{5x^2 y^3}{xy} = 5xy^2$

How do you simplify a fraction in the form $\frac{12pq}{16p}$?

Simplifying Algebraic Fractions

Examples: Simplify the following

(a) $\frac{20ab}{15a^2b} \div 5ab = \frac{4}{3a}$
 (b) $\frac{6x-4}{18x} \div 2 = \frac{3x-2}{9x}$
 or $\frac{2(3x-2)}{9x} = \frac{3x-2}{9x}$

Express these fractions in their simplest form:

- | | | | |
|-----------------------------|-----------------------------|--------------------------------|-----------------------------|
| (a) $\frac{3}{6}$ | (b) $\frac{8}{12}$ | (c) $\frac{30}{16}$ | (d) $\frac{54}{72}$ |
| (e) $\frac{10a}{5}$ | (f) $\frac{9b}{6}$ | (g) $\frac{18}{12x}$ | (h) $\frac{25}{15y}$ |
| (i) $\frac{4c}{16c^2}$ | (j) $\frac{32a}{8a^3}$ | (k) $\frac{13p^2}{52p^3}$ | (l) $\frac{36ab}{6bc}$ |
| (m) $\frac{4a}{2a^2}$ | (n) $\frac{10x^2}{12xy}$ | (o) $\frac{3v^2t}{9vt^2}$ | (p) $\frac{10ab^3}{2a^2b}$ |
| (q) $\frac{30p^2q}{25pq^2}$ | (r) $\frac{81x^2y^2}{6y^2}$ | (s) $\frac{42mn^2}{56nm}$ | (t) $\frac{8def^2}{10e^2f}$ |
| (u) $\frac{3ab^2c}{4a^2c}$ | (v) $\frac{4k^2m}{28km^2}$ | (w) $\frac{5efg^2}{10e^2fg^3}$ | (x) $\frac{21xy^2}{36x^2}$ |

Simplify by first finding the common factor:

- (a) $\frac{3a+6b}{6}$ (b) $\frac{4x+12y}{2}$ (c) $\frac{3a+a^2}{ab}$ (d) $\frac{xy+y^2}{2y}$
- (e) $\frac{xy+x^2}{6x+xy}$ (f) $\frac{3ab+6b^2}{9b^2}$ (g) $\frac{25b^2+15b^3}{10b}$ (h) $\frac{14p+10q}{2s}$
- (i) $\frac{3a}{2ab-ac}$ (j) $\frac{6x}{9x+9y}$ (k) $\frac{2st}{6rs-2st}$ (l) $\frac{5c}{10ac+15bc}$
- (m) $\frac{14p+28p^2}{8+16p}$ (n) $\frac{8c+4d}{6ac+3ad}$ (o) $\frac{8m^2-2n}{12n-3}$ (p) $\frac{15x^2+6xy}{10x+4y}$

Today we will be using factorising to simplify algebraic fractions.

Simplify the following by first factorising the numerator and/or denominator:

- (a) $\frac{b^2-4}{b+2}$ (b) $\frac{x^2-81}{x-9}$ (c) $\frac{a^2-25}{a+5}$ (d) $\frac{y^2-36}{y+6}$
- (e) $\frac{c^2-49}{2c-14}$ (f) $\frac{a^2-64}{2a+16}$ (g) $\frac{p^2-1}{5p-5}$ (h) $\frac{q^2-9}{3q+9}$
- (i) $\frac{a^2-b^2}{3a+3b}$ (j) $\frac{x^2-y^2}{5x-5y}$ (k) $\frac{2m^2-18}{2m+6}$ (l) $\frac{3d^2-48}{12d-48}$
- (m) $\frac{x^2+3x+2}{x+1}$ (n) $\frac{p-1}{p^2-2p+1}$ (o) $\frac{ax-5a}{x^2-25}$ (p) $\frac{a^2-1}{a^2+2a+1}$
- (q) $\frac{b^2+6p-9}{b^2-9}$ (r) $\frac{c^2+2c-15}{c^2-25}$ (s) $\frac{3x^2+5x-2}{x^2-4}$
- (t) $\frac{y^2+6y+8}{y^2+y-12}$ (u) $\frac{p^2-4p-5}{p^2+2p+1}$ (v) $\frac{c^2+4c-32}{c^2+c-56}$
- (w) $\frac{2x^2+13x+6}{x^2+9x+18}$ (x) $\frac{6a^2-13a-5}{3a^2-11a-4}$ (y) $\frac{10b^2-33b-7}{10b^2-37b+7}$

Daily Practice 19.2.2018

Q1. Multiply out and simplify $(2x+4)(x^2+3x-5)$

Q2. Factorise x^2+x-2

Q3. State the equation of the line that passes through (0, 4) and (3, 1)

Q4. Solve the equation $\frac{x}{5} - \frac{x+3}{2} = -3$

Handwritten solutions for Q2, Q3, and Q4:

Q2: $x^2+x-2 = (x+2)(x-1)$

Q3: $m = \frac{1-4}{3-0} = \frac{-3}{3} = -1$
 $y = -x + 4$

Q4: $\frac{x}{5} - \frac{x+3}{2} = -3$
 $2x - 5x - 15 = -30$
 $-3x = -45$
 $x = 15$

Simplifying Algebraic Fractions - Using Factorising

First factorise where possible, then simplify

Examples: Simplify the following

(i) $\frac{2x^2-12x}{x^2-4x-12} \div (x-6)$
 $\frac{2x(x-6)}{(x-6)(x+2)} \div (x-6)$
 $\frac{2x}{x+2}$

(ii) $\frac{x^2-49}{x^2-10x+21}$
 $\frac{(x+7)(x-7)}{(x-7)(x-3)}$
 $\frac{x+7}{x-3}$

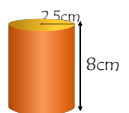
Daily Practice 21.2.2018

Q1. Calculate the volume of the cylinder shown to 3 s.f.

Q2. Multiply out and simplify $(3x+1)^2$

Q3. Factorise $3x^2-x-10$

Q4. Simplify $\frac{k^2 \times 3k^3}{k^5}$



Handwritten solutions for Q2, Q3, and Q4:

Q2: $(3x+1)(3x+1) = 9x^2+3x+3x+1 = 9x^2+6x+1$

Q3: $V = \pi r^2 h = \pi \times 2.5^2 \times 8 = 157.08 \rightarrow 157 \text{ cm}^3$ (3 s.f.)

Q4: $(3x+5)(x-2)$
 $\frac{3k^5}{k^5} = 3$

Today we will be continuing to practise simplifying algebraic fractions.

Simplify the following by first factorising the numerator and/or denominator:

- (a) $\frac{b^2 - 4}{b + 2}$ (b) $\frac{x^2 - 81}{x - 9}$ (c) $\frac{a^2 - 25}{a + 5}$ (d) $\frac{y^2 - 36}{y + 6}$
 (e) $\frac{c^2 - 49}{2c - 14}$ (f) $\frac{a^2 - 64}{2a + 16}$ (g) $\frac{p^2 - 1}{5p - 5}$ (h) $\frac{q^2 - 9}{3q + 9}$
 (i) $\frac{a^2 - b^2}{3a + 3b}$ (j) $\frac{x^2 - y^2}{5x - 5y}$ (k) $\frac{2m^2 - 18}{2m + 6}$ (l) $\frac{3d^2 - 48}{12d - 48}$
 (m) $\frac{x^2 + 3x + 2}{x + 1}$ (n) $\frac{p - 1}{p^2 - 2p + 1}$ (o) $\frac{ax - 5a}{x^2 - 25}$ (p) $\frac{a^2 - 1}{a^2 + 2a + 1}$
 (q) $\frac{b^2 + 6p - 9}{b^2 - 9}$ (r) $\frac{c^2 + 2c - 15}{c^2 - 25}$ (s) $\frac{3x^2 + 5x - 2}{x^2 - 4}$
 (t) $\frac{y^2 + 6y + 8}{y^2 + y - 12}$ (u) $\frac{p^2 - 4p - 5}{p^2 + 2p + 1}$ (v) $\frac{c^2 + 4c - 32}{c^2 + c - 56}$
 (w) $\frac{2x^2 + 13x + 6}{x^2 + 9x + 18}$ (x) $\frac{6a^2 - 13a - 5}{3a^2 - 11a - 4}$ (y) $\frac{10b^2 - 33b - 7}{10b^2 - 37b + 7}$

- (a) $b - 2$ (b) $x + 9$ (c) $a - 5$ (d) $y - 6$ (e) $\frac{c + 7}{2}$ (f) $\frac{a - 8}{2}$
 (g) $\frac{p + 1}{5}$ (h) $\frac{q - 3}{3}$ (i) $\frac{a - b}{3}$ (j) $\frac{x + y}{5}$ (k) $m - 3$ (l) $\frac{d + 4}{4}$
 (m) $x + 2$ (n) $\frac{1}{p - 1}$ (o) $\frac{a}{x + 5}$ (p) $\frac{a - 1}{a + 1}$ (q) $\frac{b - 3}{b + 3}$ (r) $\frac{c - 3}{c - 5}$
 (s) $\frac{3x - 1}{x - 2}$ (t) $\frac{y + 2}{y - 3}$ (u) $\frac{p - 5}{p + 1}$ (v) $\frac{c - 4}{c - 7}$ (w) $\frac{2x + 1}{x + 3}$ (x) $\frac{2a - 5}{a - 4}$
 (y) $\frac{5b + 1}{5b - 1}$

Simplify $\frac{2x + 2}{(x + 1)^2}$.

Simplify

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

Hence express $\frac{3y^2 - 6y}{y^2 + y - 6}$ in its simplest form.

simplify $\frac{4x^2 - 25}{2x^2 - x - 10}$.

Daily Practice

22.2.2018

Q1. Simplify $\frac{x^2 - 4x}{x^2 + x - 20} = \frac{x(x-4)}{(x-4)(x+5)} = \frac{x}{x+5}$

Q2. State the equation of the line joining (0, 5) and (4, -8)
 $m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-8 - 5}{4 - 0} = \frac{-13}{4}$ $y = mx + c$ $y = \frac{-13}{4}x + 5$

Q3. Simplify $\sqrt{160} = \sqrt{16 \cdot 10} = 4\sqrt{10}$

Q4. Simplify $\frac{5j^2 \times 4j}{2j^3} = \frac{20j^3}{2j^3} = 10$

L.I: Today we will be learning how to add/subtract algebraic fractions.

Adding + Subtracting Algebraic Fractions

22.2.18

$\frac{2}{5} + \frac{3}{4} = \frac{8}{20} + \frac{15}{20} = \frac{23}{20}$

$\frac{x}{5} + \frac{3}{4} = \frac{4x}{20} + \frac{15}{20} = \frac{4x+15}{20}$

$\frac{a}{3} + \frac{b}{5} = \frac{5a}{15} + \frac{3b}{15} = \frac{5a+3b}{15}$

$\frac{x+2}{5} + \frac{x-1}{2} = \frac{2x+4}{10} + \frac{5x-5}{10} = \frac{7x-1}{10}$

$\frac{a-3}{4} - \frac{a+2}{3} = \frac{3a-9}{12} - \frac{4a+8}{12} = \frac{-a-17}{12}$
 $\rightarrow \frac{3(a-3) - 4(a+2)}{12}$

$\frac{2a+3}{5} - \frac{4a-1}{10} = \frac{2(2a+3) - (4a-1)}{10} = \frac{4a+6-4a+1}{10} = \frac{7}{10}$

$\frac{3}{a} + \frac{2}{b} = \frac{3b}{ab} + \frac{2a}{ab} = \frac{3b+2a}{ab}$

$\frac{4}{3a} + \frac{3}{5} = \frac{20}{15a} + \frac{9a}{15a} = \frac{20+9a}{15a}$

$\frac{5}{n^2} - \frac{4}{n} = \frac{5}{n^2} - \frac{4n}{n^2} = \frac{5-4n}{n^2}$
 $\frac{5n}{n^3} - \frac{4n^2}{n^3} = \frac{5n-4n^2}{n^3} = \frac{5-4n}{n^2}$

Daily Practice

23.2.2018

Q1. Calculate the area of the circle shown



$A = \pi r^2 = 11^2 \cdot 0.97 \text{ cm}^2$

Q2. Factorise $15x^2 - 5xy$

$5x(3x - y)$

Q3. Multiply out and simplify $(3m - 1)(2m + 4)$

$6m^2 + 12m - 2m - 4$
 $6m^2 + 10m - 4$

Q4. Simplify $3x^2(2x + x^{\frac{1}{2}})$

$6x^3 + 3x^{\frac{5}{2}}$

L.I: Today we will be continuing to practise adding and subtracting fractions.

Express as single fractions in their simplest form

- (a) $\frac{1}{2x} + \frac{1}{3x}$ $x \neq 0$ (b) $\frac{2}{3p} - \frac{1}{4p}$ $p \neq 0$
 (c) $\frac{5}{3a} - \frac{1}{2a}$ $a \neq 0$ (d) $\frac{2}{3x} + \frac{4}{5x}$ $x \neq 0$
 (e) $\frac{1}{x} + \frac{2}{x^2}$ $x \neq 0$ (f) $\frac{3}{x^2} - \frac{2}{x}$ $x \neq 0$
 (g) $\frac{4}{m} - \frac{2}{m^3}$ $m \neq 0$ (h) $\frac{6}{n^2} + \frac{1}{n^3}$ $n \neq 0$
 (i) $\frac{1}{2x} - \frac{1}{x^2}$ $x \neq 0$ (j) $\frac{2}{p^3} - \frac{1}{3p}$ $p \neq 0$
 (k) $\frac{3}{4w} + \frac{2}{w^2}$ $w \neq 0$ (l) $\frac{5}{3u} + \frac{1}{u^2}$ $u \neq 0$

Express as single fractions in their simplest form

- (a) $\frac{1}{2x} + \frac{1}{3x}$ $x \neq 0$ (b) $\frac{2}{3p} - \frac{1}{4p}$ $p \neq 0$
 $\frac{3}{6x} + \frac{2}{6x} = \frac{5}{6x}$ $\frac{8}{12p} - \frac{3}{12p} = \frac{5}{12p}$
 (c) $\frac{5}{3a} - \frac{1}{2a}$ $a \neq 0$ (d) $\frac{2}{3x} + \frac{4}{5x}$ $x \neq 0$
 $\frac{10}{6a} - \frac{3}{6a} = \frac{7}{6a}$ $\frac{10}{15x} + \frac{12}{15x} = \frac{22}{15x}$
 (e) $\frac{1}{x} + \frac{2}{x^2}$ $x \neq 0$ (f) $\frac{3}{x^2} - \frac{2}{x}$ $x \neq 0$
 $\frac{x}{x^2} + \frac{2}{x^2} = \frac{x+2}{x^2}$ $\frac{3}{x^2} - \frac{2x}{x^2} = \frac{3-2x}{x^2}$
 (g) $\frac{4}{m} - \frac{2}{m^3}$ $m \neq 0$ (h) $\frac{6}{n^2} + \frac{1}{n^3}$ $n \neq 0$
 (i) $\frac{1}{2x} - \frac{1}{x^2}$ $x \neq 0$ (j) $\frac{2}{p^3} - \frac{1}{3p}$ $p \neq 0$
 $\frac{x}{2x^2} - \frac{2}{2x^2} = \frac{x-2}{2x^2}$ $\frac{2}{p^3} - \frac{1}{3p}$
 (k) $\frac{3}{4w} + \frac{2}{w^2}$ $w \neq 0$ (l) $\frac{5}{3u} + \frac{1}{u^2}$ $u \neq 0$

Adding/Subtracting Algebraic Fractions

(i) $\frac{2}{k} + \frac{2k-7}{3k^2}$ $k \neq 0$

$$\frac{6k}{3k^2} + \frac{2k-7}{3k^2}$$

$$= \frac{8k-7}{3k^2}$$

(ii) $\frac{3}{x} - \frac{x}{x-1}$ $x \neq 0, 1$

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

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

Adding/Subtracting Algebraic Fractions

(iii) $\frac{3}{x+4} + \frac{2}{x-5}$ $x \neq -4, 5$

$$\frac{3(x-5)}{(x+4)(x-5)} + \frac{2(x+4)}{(x+4)(x-5)}$$

$$= \frac{3x-15+2x+8}{(x+4)(x-5)}$$

$$= \frac{5x-7}{(x+4)(x-5)}$$

Daily Practice 26.2.2018

Q1. Multiply out and simplify $(3x-1)(x+4)$

$$3x^2 + 12x - x - 4$$

$$3x^2 + 11x - 4$$

Q2. Factorise $x^2 + 3x - 18$

$$(x+6)(x-3)$$

Q3. Multiply out and simplify $2x^2(x^3 - x^{-3})$

$$2x^5 - 2x^{-1} = 2x^5 - \frac{2}{x}$$

Q4. Write as a single fraction $\frac{3}{x+1} - \frac{x}{5}$ $x \neq -1$

$$\frac{15}{5(x+1)} - \frac{x(x+1)}{5(x+1)}$$

$$\frac{15-x^2-x}{5(x+1)}$$

Today we will be continuing to practise adding and subtracting algebraic fractions.

Algebraic Fractions - Add/Subtract 2

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1: Simplify the following as far as possible:

a) $\frac{4}{v} - \frac{3}{v+1}$

b) $\frac{2}{3u-1} - \frac{1}{u}$

c) $\frac{1}{h} + \frac{5}{h-3}$

d) $\frac{2}{n+4} + \frac{5}{n}$

e) $\frac{4}{x} - \frac{5}{x-1}$

f) $\frac{2}{2r+3} - \frac{3}{r}$

1: Simplify the following as far as possible:

a) $\frac{4}{v} - \frac{3}{v+1}$

b) $\frac{2}{3u-1} - \frac{1}{u}$

c) $\frac{1}{h} + \frac{5}{h-3}$

d) $\frac{2}{n+4} + \frac{5}{n}$

e) $\frac{4}{x} - \frac{5}{x-1}$

f) $\frac{2}{2r+3} - \frac{3}{r}$

2: Simplify the following as far as possible:

a) $\frac{2}{2f-1} + \frac{5}{2f+1}$

b) $\frac{5}{2t-3} + \frac{3}{t-2}$

c) $\frac{3}{q+2} + \frac{4}{q+3}$

d) $\frac{5}{e-4} - \frac{4}{3e+1}$

e) $\frac{3}{3y-2} - \frac{5}{3y+2}$

f) $\frac{2}{a+4} + \frac{3}{a-1}$

2: Simplify the following as far as possible:

a) $\frac{2}{2f-1} + \frac{5}{2f+1}$

b) $\frac{5}{2t-3} + \frac{3}{t-2}$

c) $\frac{3}{q+2} + \frac{4}{q+3}$

d) $\frac{5}{e-4} - \frac{4}{3e+1}$

e) $\frac{3}{3y-2} - \frac{5}{3y+2}$

f) $\frac{2}{a+4} + \frac{3}{a-1}$

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

$$\frac{x}{2} + \frac{4x-1}{x}$$

$$\frac{2}{y+2} + \frac{1}{y}$$

$$\frac{2x}{x+1} - \frac{3}{x-1}$$

$$\frac{x-2}{4} + \frac{3x-1}{5x}$$

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

Prepare Solve

$$\frac{x+2}{x-4} = \frac{2x+1}{x-2}$$

$$\frac{x+2}{x-4} - \frac{2x+1}{x-2} = 0$$

$$(x+2)(x-2) - [(2x+1)(x-4)] = 0$$

$$\frac{x}{4} = 0$$

$$\times 4 \quad \times 4$$

$$x = 0$$

L.I: Today we will be learning how to multiply algebraic fractions.

Multiplying Algebraic Fractions

Follow the same process as multiplying regular fractions. Simplify where possible. You may be able to cancel terms before you multiply to make it easier.

Examples:

(i) $\frac{15x^2}{4} \times \frac{2y}{3}$

(ii) $\frac{20gh}{7f} \times 5f^2$

Multiplying Algebraic Fractions

- Same process as regular fractions.
- Possibility of simplifying beforehand.
- Leave answer in its simplest form.

Examples

denominator $\neq 0$

① $\frac{3}{a} \times \frac{b}{2} = \frac{3b}{2a}$

② $\frac{2b}{5} \times \frac{b}{4} = \frac{2b^2}{20} = \frac{b^2}{10}$

③ $\frac{5a^2b^2}{c} \times \frac{3c^2}{10a} = \frac{15a^2b^2c^2}{10ac} = \frac{3ab^2c}{2}$

Handwritten cancellation:
 $\frac{5a^2b^2}{c} \times \frac{3c^2}{10a}$
 $= \frac{3b^2ca}{2}$

④ $\frac{3x^5y^4}{2} \times \frac{8}{x^2y} = \frac{24x^3y^3}{2x^2y} = 12x^2y^2$

Daily Practice

5.3.2018

Q1. Multiply out and simplify $(3x - 4)(2x^2 + x - 5)$

$$6x^3 + 3x^2 - 15x - 8x^2 - 4x + 20$$

$$6x^3 - 5x^2 - 19x + 20$$

Q2. Simplify $\frac{2x-4}{4x^2-16}$

$$\frac{2(x-2)}{4(x^2-4)} = \frac{2(x-2)}{4(x+2)(x-2)}$$

Q3. Simplify $\sqrt{600}$

$$\sqrt{100 \times 6} = \underline{\underline{10\sqrt{6}}}$$

Q4. Write as a single fraction $\frac{2}{x} \times \frac{3}{y}$

$$= \frac{6}{xy}$$

Today we will be learning how to divide algebraic fractions.

Dividing Algebraic Fractions

Examples:

$$(i) \frac{v^2h}{9d} \div \frac{2v}{3d^2} = \frac{v^2h}{9d} \times \frac{3d^2}{2v} = \frac{3d^2v^2h}{18dv} = \frac{dvh}{6}$$

(ii)

$$\frac{24xy}{35z} \div \frac{20xy}{21z} = \frac{24xy}{5 \cancel{35z}} \times \frac{21z}{\cancel{20xy}} = \frac{18}{25}$$

$$\frac{3a}{b} \times \frac{2b}{c}$$

$$\frac{3b^2}{2} \div \frac{8b}{c}$$

$$\frac{x^2}{y} \div \frac{5x^2}{y}$$

$$\frac{5mn^2}{2} \times \frac{6}{45mn}$$

$$\frac{2p^2}{5} \div \frac{p^2}{10}$$

$$\frac{h^2}{t} \div \frac{9h}{2t}$$

$$\frac{11}{9d} \div \frac{11}{18d^2}$$

$$\frac{(x+3)^2}{2} \div \frac{(x+3)^3}{6}$$

Daily Practice

7.3.2018

Q1. Multiply out and simplify $(3x - 1)^2 = 9x^2 - 3x - 3x + 1 = 9x^2 - 6x + 1$

Q2. Factorise $x^2 - 11x + 24 = (x-8)(x-3)$

Q3. Calculate the volume of a cone with diameter of base 16cm and height 12cm to 2 s.f. $V = \frac{1}{3}\pi r^2 h = \frac{1}{3} \times \pi \times 8^2 \times 12 = 804.25 \text{ cm}^3 \rightarrow 800 \text{ cm}^3$ 2 s.f.

Q4. Simplify fully $\frac{(x-4)^2}{x^2 - 12x + 32} = \frac{(x-4)(x-4)}{(x-8)(x-4)} = \frac{x-4}{x-8}$

Today we will be completing a check-up on algebraic fractions.

HW due Friday

L1: Today we will be learning how to complete Exam style questions on Algebraic Fractions.

Homework Due Monday.

8. Simplify $\frac{n^5 \times 10n}{2n^2}$. MARKS
3

9. Express $\frac{7}{x+5} - \frac{3}{x}$ $x \neq -5, x \neq 0$ as a single fraction in its simplest form. 3

8. Simplify $\frac{8p^6}{2p^2 \times p}$. 3

9. Express $\frac{2}{(x-4)} + \frac{5}{x}$, $x \neq 0, x \neq 4$, as a single fraction in its simplest form. 3

7. Simplify $\frac{(x+4)^2}{x^2 - x - 20}$. 3

9. Simplify $\frac{x^6}{y^2} \times \frac{y^3}{x^3}$.

11. Express $\frac{3}{x+2} + \frac{5}{x-1}$ $x \neq -2, x \neq 1$ as a single fraction in its simplest form. 3

7. Express as a single fraction Marks

$\frac{a}{b} + \frac{b}{a}$, $a \neq 0, b \neq 0$. 2

8. Simplify $\frac{3x-15}{(x-5)^2}$. 2

9. Express $\frac{3}{x} - \frac{4}{x+1}$, $x \neq 0, x \neq -1$ as a single fraction in its simplest form. 3

6. Express $\frac{s^2}{t} \times \frac{3t}{2s}$ as a fraction in its simplest form. 2

Algebraic Fractions - Multiply/Divide 1

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1: Simplify the following as far as possible:

a) $\frac{7}{8v} \times \frac{2}{5v}$

b) $\frac{3u}{5} \times \frac{7u}{9}$

c) $\frac{9}{10h} \times \frac{5h}{4}$

d) $\frac{7n}{4} \times \frac{3}{7n}$

e) $\frac{4x}{9} \times \frac{2x}{3}$

f) $\frac{7}{6r} \times \frac{10}{3r}$

2: Simplify the following as far as possible:

a) $\frac{7}{10f} \div \frac{3f}{8}$

b) $\frac{6r}{5} \div \frac{3}{4r}$

c) $\frac{5a}{7} \div \frac{9a}{8}$

d) $\frac{5}{9e} \div \frac{8}{3e}$

e) $\frac{9}{2v} \div \frac{2v}{7}$

f) $\frac{10a}{9} \div \frac{5}{4a}$

2014_N5_Non-Calculator

8. Simplify $\frac{n^5 \times 10n}{2n^2}$.

$\frac{10n^6}{2n^2} = \underline{\underline{5n^4}}$

MARK

3

9. Express $\frac{7}{x+5} - \frac{3}{x}$ $x \neq -5, x \neq 0$ as a single fraction in its simplest form.

$\frac{7x}{x(x+5)} - \frac{3(x+5)}{x(x+5)}$

$\frac{7x}{x(x+5)} - \frac{3x+15}{x(x+5)} = \frac{4x-15}{x(x+5)}$

3

Today we will be continuing to practise mixed algebraic fractions.

Homework Due Monday!

Today we will be marking homework.

Homework Due Today

Q1. Write in their simplest form

(i) $\frac{(x+4)(x+5)}{(x+4)^2} \quad x \neq -4 = \frac{\cancel{(x+4)}(x+5)}{\cancel{(x+4)}(x+4)} = \frac{x+5}{x+4}$

(ii) $\frac{(x+2)^2}{x^2-x-6} \quad x \neq -2, 3$

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

(iii) $\frac{5km-20m^2}{(k-4m)^2} \quad k, m \neq 0$

$\frac{5m(\cancel{k-4m})}{(\cancel{k-4m})(\cancel{k-4m})} = \frac{5m}{k-4m}$

(i) $\frac{5}{x} + \frac{3}{x^2} \quad x \neq 0$

$$\frac{5x^2}{x^3} + \frac{3x}{x^3}$$

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

$$\frac{5x+3}{x^2} \checkmark$$

(ii) $\frac{2}{a} - \frac{3}{(a+4)} \quad a \neq -4, 0$

$$\frac{2(a+4)}{a(a+4)} - \frac{3a}{a(a+4)}$$

denominator

$$\frac{2a+8-3a}{a(a+4)}$$

$$= \frac{-a+8}{a(a+4)} \checkmark$$

(iii) $\frac{a}{x} - \frac{b}{y} \quad x, y \neq 0$

$$\frac{ay}{xy} - \frac{bx}{xy} \checkmark$$

$$\frac{ay-bx}{xy} \checkmark$$

(iv) $\frac{4}{x+3} + \frac{3}{x} \quad x \neq -3, 0$

$$= \frac{4x}{x(x+3)} + \frac{3(x+3)}{x(x+3)} \checkmark$$

$$= \frac{4x+3x+9}{x(x+3)}$$

$$= \frac{7x+9}{x(x+3)} \checkmark$$

$$(v) \frac{2x+1}{4} - \frac{x+2}{6} \quad x \neq 0$$

$$\frac{3(2x+1)}{12} - \frac{2(x+2)}{12} \checkmark$$

$$\frac{6x+3}{12} - \frac{2x+4}{12}$$

$$= \frac{4x-1}{12} \checkmark$$

(vi) $\frac{x}{(x+1)} - \frac{3}{(x-4)} \quad x \neq 4, -1$

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

$$= \frac{x^2 - 7x - 3}{(x+1)(x-4)} \checkmark$$

(vii) $\frac{s^2}{t} \times \frac{3t}{2s} \quad t, s \neq 0$

$$\frac{3ts^2}{2ts} = \frac{3s}{2} \checkmark$$

(viii) $\frac{5p^2}{8} \div \frac{p}{2}$

$$\frac{5p^2}{8} \times \frac{2}{p} \checkmark$$

$$= \frac{10p^2}{8p} \div 2p = \frac{5p}{4} \checkmark$$

(ix) $\frac{3x}{y} \times \frac{2x+4}{x^2} \quad y, x \neq 0$

$$\frac{6x^2+12x}{x^2y} \checkmark$$

$$= \frac{6x+12}{xy} \checkmark$$

(x) $\frac{8y}{2x} \div \frac{4y}{x^3} \quad x \neq 0$

$$\frac{8y}{2x} \times \frac{x^3}{4y} \checkmark$$

$$\frac{8x^3y}{8xy} \div 8xy = x^2 \checkmark$$

Daily Practice

2.3.2018

Q1. Calculate the radius of a cylinder with a volume of 7288.16cm³ and a height of 9cmQ2. Multiply out and simplify (7x - 1)(x² - 3x + 4)Q3. Factorise 6x² + 7x - 20Q4. Write as a single fraction $\frac{2}{x+2} - \frac{x}{3}$

Attachments

Nat 5 Pack 1- Unit EF (complete).pdf