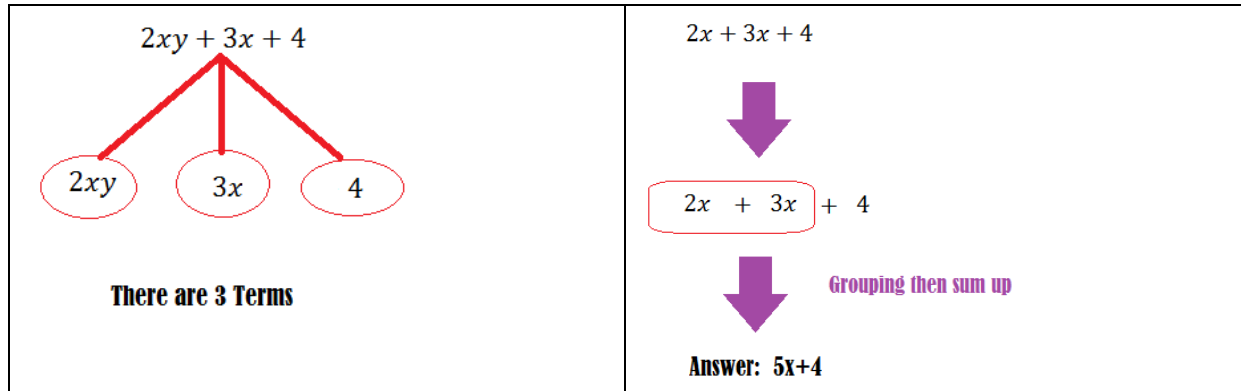


Factorisation & Algebraic Fractions

ALGEBRA



Determine the number of terms in the equation below

- $2xy + 3x + 4$ (Answer: 3 terms)
- $2y + 3x + 4 + 4xy + 2x$
- $12xy + 53x + 4 - 6x$
- $x + 5x$
- $12xy + 3x + 4y$

Simplify the terms below

- $2x + 3x + 4$
- $2y + 14xy + 4y$
- $12xy + 53yx + 4$
- $xy + 3xy + 5x$
- $12xy - 3xy + 4y$
- $2x + 3x + 4$
- $2y + y - 4y - 4x + 3y - 2x$
- $12xy + 10xy + 4y$
- $6y + 3xy - 5y$
- $12xy - 3xy - 4y + xy$
- $\frac{3}{5}x + x + \frac{1}{2}y + 3y$
- $x + \frac{1}{2}x + \frac{1}{3}y + \frac{2}{3}y$
- $3xy + 5y + 2xy + 6x - 3y$

Example: For Multiplication

Solve the following equation

$$a^2 \times a^3 \times a^5$$

Solution:

$$a^2 \times a^3 \times a^5 = a^{10}$$

Example: For Divide

Solve the following equation

$$a^5 \div a^3$$

Solution:

$$a^5 \div a^3 = a^2$$

Example: With Fraction

Solve the following equation

$$\frac{a^3 b^5 c^2}{a^{10} c^1}$$

Solution:

$$\begin{aligned} \frac{a^3 b^5 c^2}{a^{10} c^1} &= a^{3-10} b^5 c^{2-1} \\ &= a^{-7} b^5 c \end{aligned}$$

Expand with 'k' $k(a + b^2)$

Example

Expand the following equation

$$3(a + b)$$

Solution:

$$3(a + b) = 3a + 3b$$

Example:

Expand the following equation

$$3a^2(a^2 + b)$$

Solution

$$\begin{aligned} &3a^2(a^2 + b) \\ &= 3a^4 + 3a^2b \end{aligned}$$

Example

Simplify the following equation

$$ba^2 \times \frac{1}{2}a^5 \times a^3$$

Solution:

$$ba^2 \times \frac{1}{2}a^5 \times a^3 = \frac{1}{2}a^{10}b$$

Expanding

$$5(x + 3) + 6(x - 4)$$

$$5x + 15 + 6x - 24$$

$$11x - 9$$

Method 1:

Expand the factors for the following equation/
Kembangkan ungkapan berikut

$$(x + 3)(x + 4)$$

Solution

$$(x + 3)(x + 4)$$

Answer: $x^2 + 7x + 12$

Method 2: Alternative Method / **Kaedah Jubin**

Expand the factors for the following equation/
Kembangkan ungkapan berikut

$$(x + 3)(x + 4)$$

Solution

	x	3
x	x^2	3x
4	4x	12

Answer $x^2 + 7x + 12$

Expand the brackets/ **Cuba kembangkan dengan dua kaedah diatas**

1. $(x + 5)(x + 4)$
2. $(x + 2)(x + 7)$
3. $(x + 4)(2x + 6)$
4. $(3x + 4)(x + 2)$
5. $(2x + 4)(3x + 1)$

Factorisation

Question

Factorise each of the following/ Faktorkan ungkapan ungkapan dibawah

$$3xy + 6x$$

Answer

<div style="border: 1px solid red; border-radius: 50%; width: 20px; height: 20px; display: flex; align-items: center; justify-content: center; margin: 0 auto;">3</div> <div style="border: 1px solid red; border-radius: 50%; width: 20px; height: 20px; display: flex; align-items: center; justify-content: center; margin: 0 auto;">x</div>	3xy	6x	$3xy + 6x$ $= 3x (y + 2)$
	xy	2x	
	y	2	

HCF = 3x

Exercises

a) $2xy^2 + xy$

b) $4x^2y + 8x^5y$

c) $2yx^8 + 4xy$

d) $4x^2y + 12x^5y^4$

Quadratic Equations

Example:

Factorized the following?

$$2x^2 + 7x + 3$$

Solution:

$$2x^2 + 7x + 3$$

2x	1	x
x	3	6x
$2x^2$	3	7x

Question:

Factorized the following quadratic equation

a) $x^2 + 3x + 2$

b) $4x^2 + 8x + 4$

c) $3x^2 + 15x + 5$

d) $2x^2 + 13x + 15$

e) $3x^2 + 16x + 5$

Revision

Try to factorised this questions Part I

(a) $15x + 25$

(b) $3x^2 - 9x$

(c) $4xy + 40x^2$

(d) $7x^2yz - 8y$

(e) $9x^2y^2 + 3xy$

(f) $x + x^2 + x^3$

(g) $2x + 3y$

(h) $16x^2y^2 - 8x^2y + 9y$

Drop your answers here

Try to factorised this questions Part II

(a) $x^2 + 3x + 2$

(h) $x^2 + 3x - 10$

(b) $x^2 + 5x + 6$

(i) $x^2 + 4x - 5$

(c) $x^2 + 10x + 21$

(j) $x^2 - 3x + 2$

Drop your answers here

Try to factorised this questions Part III

(a) $3x^2 + 9x + 6$

(e) $2x^2 + 16x + 14$

(b) $4x^2 + 20x + 24$

(f) $3x^2 + 18x + 15$

Drop your answers here