

Exercise 4.1

1. Factorize by identifying common factors.

1. $6x+12$

Ans:

$$= 6(x+2)$$

2. $15y^2+20y$

Ans:

$$= 5y(3y+4)$$

3. $-12x^2-3x$

Ans:

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

4. $4x^2-12y+9$

Ans:

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

5. $xy-3x^2+2x$

Ans:

$$x(y-3x+2)$$

6. $3a^2b-9ab^2+15ab$

Ans:

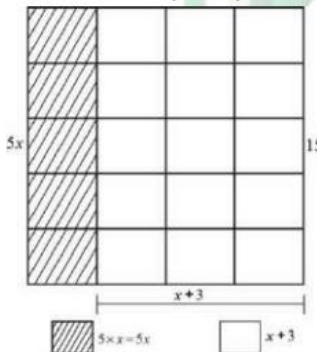
$$3ab[a-3b+5]$$

7. Factorize and represent pictorially:

1. $5x+15$

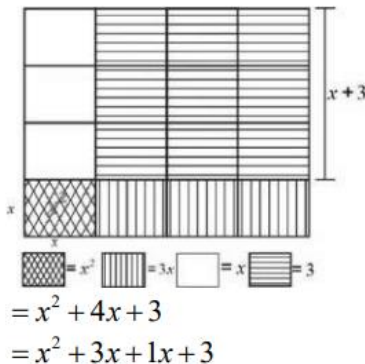
Ans:

$$= 5x+15 = 5(x+3)$$



2. x^2+4x+3

Ans:



$$= x(x+3)+1(x+3)$$

$$= (x+3)(x+1)$$

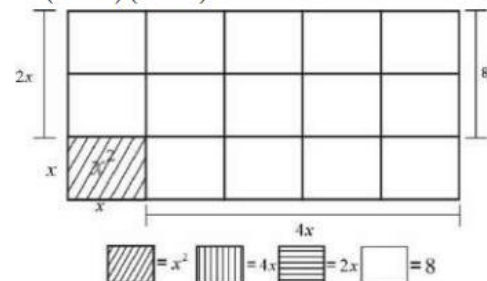
3. x^2+6x+8

Ans:

$$= x^2+4x+2x+8$$

$$= x(x+4)+2(x+4)$$

$$= (x+4)(x+2)$$



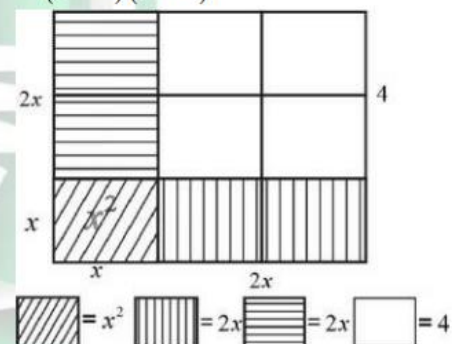
4. x^2+4x+4

Ans:

$$= x^2+2x+2x+4$$

$$= x(x+2)+2(x+2)$$

$$= (x+2)(x+2)$$



5. Factorize:

- x^2+x-12

Ans:

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

$$= x(x+4)-3(x+4)$$

$$= (x+4)(x-3)$$

- $x^2+7x+10$

Ans:

$$= x^2+5x+2x+10$$

$$= x(x+5)+2(x+5)$$

$$= (x+5)(x+2)$$

- x^2-6x+8

Ans:

$$= x^2-4x-2x+8$$

$$= x(x-4)-2(x-4)$$

$$= (x-4)(x-2)$$

- $x^2 - x - 56$

Ans:

$$= x^2 - 8x + 7x - 56$$

$$= x(x-8) + 7(x-8)$$

$$= (x-8)(x+7)$$

- $x^2 - 10x - 24$

Ans:

$$= x^2 - 12x + 2x - 24$$

$$= x(x-12) + 2(x-12)$$

$$= (x-12)(x+2)$$

- $y^2 + 4y - 12$

Ans:

$$= y^2 + 6y - 2y - 12$$

$$= y(y+6) - 2(y+6)$$

$$= (y+6)(y-2)$$

- $y^2 + 13y + 36$

Ans:

$$= y^2 + 9y + 4y + 36$$

$$= y(y+9) + 4(y+9)$$

$$= (y+9)(y+4)$$

- $x^2 - x - 2$

Ans:

$$= x^2 - 2x + 1x - 2$$

$$= x(x-2) + 1(x-2)$$

$$= (x-2)(x+1)$$

6. Factorize:

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

Ans:

$$= 2x^2 + 6x + 1x + 3$$

$$= 2x(x+3) + 1(x+3)$$

$$= (x+3)(2x+1)$$

- $2x^2 + 11x + 15$

Ans:

$$= 2x^2 + 5x + 6x + 15$$

$$= x(2x+5) + 3(2x+5)$$

$$= (2x+5)(x+3)$$

- $4x^2 + 13x + 3$

Ans:

$$= 4x^2 + 12x + 1x + 3$$

$$= 4x(x+3) + 1(x+3)$$

$$= (x+3)(4x+1)$$

- $3x^2 + 5x + 2$

Ans:

$$= 3x^2 + 3x + 2x + 2$$

$$= 3x(x+1) + 2(x+1)$$

$$= (x+1)(3x+2)$$

- $3y^2 - 11y + 6$

Ans:

$$= 3y^2 - 9y - 2y + 6$$

$$= 3y(y-3) - 2(y-3)$$

$$= (y-3)(3y-2)$$

- $2y^2 - 5y + 2$

Ans:

$$= 2y^2 - 4y - 1y + 2$$

$$= 2y(y-2) - 1(y-2)$$

$$= (y-2)(2y-1)$$

- $4z^2 - 11z + 6$

Ans:

$$= 4z^2 - 8z - 3z + 6$$

$$= 4z[z-2] - 3[z-2]$$

$$= [z-2][4z-3]$$

- $6 + 7x - 3x^2$

Ans:

$$= 6 - 9x - 2x - 3x^2$$

$$= 3(2+3x) - x(2+3x)$$

$$= (2+3x)(x-3)$$