

## Simplifying Expressions 2

LI

- Simplify expressions by collecting like terms.

SC

- +, - numbers.

A man buys 5 apples and 3 peaches.

He eats 2 apples and 1 peach.

Make an expression for this

$$5a + 3p - 2a - p$$

Then find out how many apples and peaches are left

$$= 3a + 2p$$

A woman buys 17 strawberries and 8 pears.

She eats 9 strawberries and 3 pears.

Make an expression for this

$$17s + 8p - 9s - 3p$$

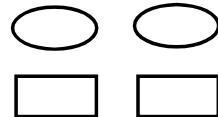
Then find out how many strawberries and pears are left

$$= 8s + 5p$$

Example 1

Simplify :

$$9x + 7y - 4x - 3y$$

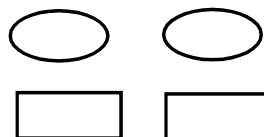


$$= \boxed{5x + 4y}$$

Example 2

Simplify :

$$8b + 12a - 3b - 4a$$

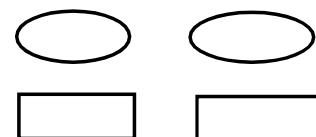


$$= \boxed{5b + 8a}$$

Example 3

Simplify :

$$27m + 47n - 29n - 13m$$

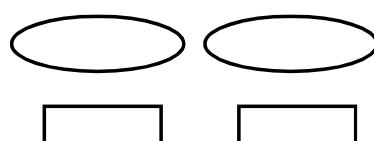


$$= \boxed{14m + 18n}$$

Example 4

Simplify :

$$313R + 465W - 186R - 243W$$



$$= \boxed{127R + 222W}$$

Simplify these expressions by collecting like terms :

$$1) 6x + 5y - 2x - 3y$$

$$2) 4p - 3r - 2p + 6r$$

$$3) 9w + 14n - 7w - 3n$$

$$4) 11z - 8f - 2z + 23f$$

$$5) 15b + 11a - 6b - 7a$$

$$6) 35p - 12k - 18p + 17k$$

$$7) 47s + 67h - 19s - 29h$$

$$8) 198r - 54a - 75r + 99a$$

$$9) 200v + 78w - 79v - 29w$$

$$10) 587d - 46x - 68d + 54x$$

## Answers

1)  $6x + 5y - 2x - 3y$   $4x + 2y$

2)  $4p - 3r - 2p + 6r$   $2p + 3r$

3)  $9w + 14n - 7w - 3n$   $2w + 11n$

4)  $11z - 8f - 2z + 23f$   $9z + 15f$

5)  $15b + 11a - 6b - 7a$   $9b + 4a$

6)  $35p - 12k - 18p + 17k$   $17p + 5k$

7)  $47s + 67h - 19s - 29h$   $28s + 38h$

8)  $198r - 54a - 75r + 99a$   $123r + 45a$

9)  $200v + 78w - 79v - 29w$   $121v + 49w$

10)  $587d - 46x - 68d + 54x$   $519d + 8x$

**Exercise 84**

Collect together to give a single term.

1.  $a + a$
2.  $b + b + b$
3.  $c + c + c + c$
4.  $d + d + d + d + d + d$
5.  $l + 2l$
6.  $m + 3m$
7.  $n + 5n$
8.  $3p + p$
9.  $6q + q$
10.  $8r + r$
11.  $2t + 3t$
12.  $3u + 5u$
13.  $4v + 6v$
14.  $5x + 2x$
15.  $8y + 3y$
16.  $3a + 6a + a$
17.  $4b + 10b + b$
18.  $5c + 6c + c$
19.  $4m + m + 7m$
20.  $n + 3n + 6n$
21.  $2l + 3l + 7l$
22.  $4p + 5p + 6p$
23.  $6q + 7q + 7q$
24.  $5a - 3a$
25.  $7b - 4b$
26.  $8c - 3c$
27.  $10l - 4l$
28.  $12m - 3m$
29.  $4n - n$
30.  $9p - p$
31.  $12q - q$
32.  $5r - 4r$
33.  $8t - 7t$
34.  $11u - 10u$
35.  $2v - v$
36.  $4a + 3a - 5a$
37.  $6b + 2b - 3b$
38.  $8c + 4c - 6c$
39.  $7l + 4l - 5l$
40.  $6m + 4m - 9m$
41.  $5n + 2n - 7n$
42.  $8p - 3p - 2p$
43.  $9q - 4q - 3q$
44.  $12r - 6r - 2r$
45.  $7s - 2s - s$
46.  $9t - 5t - t$
47.  $8u - 5u - 2u$
48.  $10v - 6v - 3v$
49.  $7x - 5x - x$
50.  $9y - 5y - 4y$

**Exercise 85**

Collect like terms in the following.

1.  $2x + 5y + 4x$
2.  $3u + 7v + 5u$
3.  $4a + 2b + 5a$
4.  $6x + 4y + x$
5.  $5m^2 + 3m + 2m^2$
6.  $6n^2 + 8n + 3n^2$
7.  $5u + 4v - 2u$
8.  $7x + 9y - 5x$
9.  $8p + 9q - p$
10.  $4l + 7m - 3l$
11.  $9z^2 + 4z - 6z^2$
12.  $8a^2 + 6a - 3a^2$
13.  $10b^2 + 5b - 2b^2$
14.  $2m + 6n + 5m + 3n$
15.  $3p + 7q + 2p + 5q$
16.  $2u + 5v + u + 3v$
17.  $3x^2 + 5x + 2x^2 + 4x$
18.  $4y^2 + 7y + 3y^2 + 2y$
19.  $2l + 7m + 3l - 4m$
20.  $8b + 9c + 4b - 2c$
21.  $5q + 9r + 2q - r$
22.  $11a + 12b + a - b$
23.  $6t^2 + 8t + 4t^2 - 5t$
24.  $7u^2 + 9u + 5u^2 - 4u$
25.  $7x + 5y - 4x + 2y$
26.  $9a + 3b - 5a + 6b$
27.  $8m + 5n - 7m + 3n$
28.  $9p + 7q - 4p - 3q$
29.  $10u + 8v - 4u - 3v$
30.  $8z^2 + 6z - 5z^2 - 4z$
31.  $2a + 3b + 3a + 4b + 4a$
32.  $3x + 4y + 5x + 2y + x$
33.  $8p + 6q - 3p - 2q + 4p$
34.  $15c + 12d - 8c - 9d - 3c$

**Exercise 84**

Collect together to give a single term.

1.  $a + a$  **2a**
2.  $b + b + b$  **3b**
3.  $c + c + c + c$  **4c**
4.  $d + d + d + d + d + d$  **6d**
5.  $l + 2l$  **3l**
6.  $m + 3m$  **4m**
7.  $n + 5n$  **6n**
8.  $3p + p$  **4p**
9.  $6q + q$  **7q**
10.  $8r + r$  **9r**
11.  $2t + 3t$  **5t**
12.  $3u + 5u$  **8u**
13.  $4v + 6v$  **10v**
14.  $5x + 2x$  **7x**
15.  $8y + 3y$  **11y**
16.  $3a + 6a + a$  **10a**
17.  $4b + 10b + b$  **15b**
18.  $5c + 6c + c$  **12c**
19.  $4m + m + 7m$  **12m**
20.  $n + 3n + 6n$  **10n**
21.  $2l + 3l + 7l$  **12l**
22.  $4p + 5p + 6p$  **15p**
23.  $6q + 7q + 7q$  **20q**
24.  $5a - 3a$  **2a**
25.  $7b - 4b$  **3b**
26.  $8c - 3c$  **5c**
27.  $10l - 4l$  **6l**
28.  $12m - 3m$  **9m**
29.  $4n - n$  **3n**
30.  $9p - p$  **8p**
31.  $12q - q$  **11q**
32.  $5r - 4r$  **r**
33.  $8t - 7t$  **t**
34.  $11u - 10u$  **u**
35.  $2v - v$  **v**
36.  $4a + 3a - 5a$  **2a**
37.  $6b + 2b - 3b$  **5b**
38.  $8c + 4c - 6c$  **6c**
39.  $7l + 4l - 5l$  **6l**
40.  $6m + 4m - 9m$  **m**
41.  $5n + 2n - 7n$  **0**
42.  $8p - 3p - 2p$  **3p**
43.  $9q - 4q - 3q$  **2q**
44.  $12r - 6r - 2r$  **4r**
45.  $7s - 2s - s$  **4s**
46.  $9t - 5t - t$  **3t**
47.  $8u - 5u - 2u$  **u**
48.  $10v - 6v - 3v$  **v**
49.  $7x - 5x - x$  **x**
50.  $9y - 5y - 4y$  **0**

**Exercise 85**

Collect like terms in the following.

1.  $2x + 5y + 4x$   **$6x + 5y$**
2.  $3u + 7v + 5u$   **$8u + 7v$**
3.  $4a + 2b + 5a$   **$9a + 2b$**
4.  $6x + 4y + x$   **$7x + 4y$**
5.  $5m^2 + 3m + 2m^2$   **$7m^2 + 3m$**
6.  $6n^2 + 8n + 3n^2$   **$9n^2 + 8n$**
7.  $5u + 4v - 2u$   **$3u + 4v$**
8.  $7x + 9y - 5x$   **$2x + 9y$**
9.  $8p + 9q - p$   **$7p + 9q$**
10.  $4l + 7m - 3l$   **$l + 7m$**
11.  $9z^2 + 4z - 6z^2$   **$3z^2 + 4z$**
12.  $8a^2 + 6a - 3a^2$   **$5a^2 + 6a$**
13.  $10b^2 + 5b - 2b^2$
14.  $2m + 6n + 5m + 3n$
15.  $3p + 7q + 2p + 5q$
16.  $2u + 5v + u + 3v$   **$7m + 9n$**
17.  $3x^2 + 5x + 2x^2 + 4x$   **$5x^2 + 9x$**
18.  $4y^2 + 7y + 3y^2 + 2y$   **$7y^2 + 9y$**
19.  $2l + 7m + 3l - 4m$   **$5l + 3m$**
20.  $8b + 9c + 4b - 2c$   **$12b + 7c$**
21.  $5q + 9r + 2q - r$   **$7q + 8r$**
22.  $11a + 12b + a - b$   **$12a + 11b$**
23.  $6t^2 + 8t + 4t^2 - 5t$   **$10t^2 + 3t$**
24.  $7u^2 + 9u + 5u^2 - 4u$   **$12u^2 + 5u$**
25.  $7x + 5y - 4x + 2y$   **$3x + 7y$**
26.  $9a + 3b - 5a + 6b$   **$4a + 9b$**
27.  $8m + 5n - 7m + 3n$   **$m + 8n$**
28.  $9p + 7q - 4p - 3q$   **$5p + 4q$**
29.  $10u + 8v - 4u - 3v$   **$6u + 5v$**
30.  $8z^2 + 6z - 5z^2 - 4z$   **$3z^2 + 2z$**
31.  $2a + 3b + 3a + 4b + 4a$   **$9a + 7b$**
32.  $3x + 4y + 5x + 2y + x$   **$9x + 6y$**
33.  $8p + 6q - 3p - 2q + 4p$   **$9p + 4q$**
34.  $15c + 12d - 8c - 9d - 3c$   **$4c + 3d$**