

5.2 Factor by Grouping

Solutions

Factor.

1. $xy + 5x + 2y + 10$

	y	5
x	xy	$5x$
2	$2y$	10

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

2. $xy - 4x + 3y - 12$

3. $6xy - 4x + 9y - 6$

	$3y$	-2
$2x$	$6xy$	$-4x$
3	$9y$	6

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

4. $15xy - 10x + 6y - 4$

5. $xy - 3x - 5y + 15$

	y	-3
x	xy	$-3x$
-5	$-5y$	15

$= (x - 5)(y - 3)$

6. $2xy - 8x - 3y + 12$

7. $xy + 10 + 5x + 2y$
 $= xy + 5x + 2y + 10$

	y	5
x	xy	$5x$
2	$2y$	10

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

8. $xy + 12 + 4x + 3y$

Answers: 1. $(x + 2)(y + 5)$; 3. $(2x + 3)(3y - 2)$; 5. $(x - 5)(y - 3)$; 7. $(x + 2)(y + 5)$

Factor.

9. $2xy + 10x - 5 - y$
 $= 2xy + 10x - y - 5$

$$\begin{array}{r} 2x \quad y \quad 5 \\ \begin{array}{|c|c|} \hline 2xy & 10x \\ \hline -y & -5 \\ \hline \end{array} \\ -1 \end{array}$$

$$= (2x - 1)(y + 5)$$

10. $3xy + 4y - 4 - 3x$

11. $x^2 + 2x - 5x - 10$

$$\begin{array}{r} x \quad 2 \\ \begin{array}{|c|c|} \hline x^2 & 2x \\ \hline -5x & -10 \\ \hline \end{array} \\ -5 \end{array}$$

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

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

13. $6x^2 - 3x + 10x - 5$

$$\begin{array}{r} 2x \quad -1 \\ \begin{array}{|c|c|} \hline 6x^2 & -3x \\ \hline 10x & -5 \\ \hline \end{array} \\ 3x \\ 5 \end{array}$$

$$= (3x + 5)(2x - 1)$$

14. $10x^2 - 2ax + 5ax - a^2$

Answers: 9. $(2x - 1)(y + 5)$; 11. $(x - 5)(x + 2)$; 13. $(3x + 5)(2x - 1)$