

5.1 Greatest Common Factor

Solutions

Factor out the greatest common factor.	
1. $3x + 6$ $= 3x + 3 \cdot 2$ $= 3(x + 2)$	2. $4x + 12$
3. $6x - 4$ $= 2 \cdot 3x - 2 \cdot 2$ $= 2(3x - 2)$	4. $15x - 6$
5. $2x^2 + 7x$ $= 2x \cdot x + 7 \cdot x$ $= x(2x + 7)$	6. $9x^2 - 6x$
7. $8x^3y^2 + 12x^2y$ $= 2 \cdot 4 \cdot x^2 \cdot x \cdot y \cdot y + 3 \cdot 4 \cdot x^2 \cdot y$ $= 4x^2y(2xy + 3)$	8. $6x^4y^3 - 9x^2y$
9. $2x^2 + 8x - 6$ $= 2 \cdot x^2 + 2 \cdot 4x - 2 \cdot 3$ $= 2(x^2 + 4x - 3)$	10. $14x^2 + 7x - 28$
11. $2x^2y + 10xy - 6y$ $= 2 \cdot x^2 \cdot y + 2 \cdot 5x \cdot y - 2 \cdot 3 \cdot y$ $= 2y(x^2 + 5x - 3)$	12. $15xy^2 - 10xy + 20x$
13. $20x^2y - 15xy^2 + 5x$ $= 5 \cdot 4 \cdot x \cdot xy + 5 \cdot 3 \cdot x \cdot y^2 - 5 \cdot x$ $= 5x(4xy - 3y^2 + 1)$	14. $6x^2y^2 + 18x^2y - 6y$
Answers: 1. $3(x + 2)$; 3. $2(3x - 2)$; 5. $x(2x + 7)$; 7. $4x^2y(2xy + 3)$; 9. $2(x^2 + 4x - 3)$; 11. $2y(x^2 + 5x - 3)$; 13. $5x(4xy - 3y^2 + 1)$	

Factor out the greatest common binomial factor.

15. $a(x + 1) + 3(x + 1)$

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

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

16. $b(x + 4) - 2(x + 4)$

17. $x(a - 5) - 4(a - 5)$

$= x(a - 5) - 4(a - 5)$

$= (a - 5)(x - 4)$

18. $x(b + 3) + y(b + 3)$

19. $x(x - 2) + 3(x - 2)$

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

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

20. $x(x + 7) - 2(x + 7)$

21. $x(y + 1) + (y + 1)$

$= x(y + 1) + 1(y + 1)$

$= (y + 1)(x + 1)$

22. $y(a + 2) + (a + 2)$

Answers: **15.** $(x + 1)(a + 3)$; **17.** $(a - 5)(x - 4)$; **19.** $(x - 2)(x + 3)$; **21.** $(y + 1)(x + 1)$