4.3 Multiplying Polynomials Solutions

Multiply and simplify where possible.

1. $(7x)(5x) = 7 \cdot 5 \cdot x \cdot x =$ $\boxed{35x^2}$

2. $(8x)(2x)$

3. $(4x^3)(-3x^2)$
$= 4 \cdot (-3) \cdot x^3 \cdot x^4$
$= -12x^{3+2}$
$= \boxed{-12x^5}$

4. $(-8x^2)(2x^5)$

5. $2(3x - 5)$
$= 2 \cdot 3x - 2 \cdot 5$
$= \boxed{6x - 10}$

6. $5(2a + 4)$

7. $2x^2(3x^3 - 4x)$
$= 2x^2 \cdot 3x^3 - 2x^2 \cdot 4x$
$= \boxed{6x^5 - 8x^3}$

8. $3a(4a^2 + 5a^3)$

9. $2x(5x^2 - 4x + 7)$
$= 2x \cdot 5x^2 - 2x \cdot 4x + 2x \cdot 7$
$= \boxed{10x^3 - 8x^2 + 14x}$

10. $-5a(a^2 - 2a + 1)$

Answers: **1.** $35x^2$; **3.** $-12x^5$; **5.** $6x - 10$; **7.** $6x^5 - 8x^3$; **9.** $10x^3 - 8x^2 + 14x$

Multiply and simplify where possible.

11. $(x + 8)(x + 3)$

$= x^2 + 8x + 3x + 24$

$= \boxed{x^2 + 11x + 24}$

	x	8
x	x^2	$8x$
3	$3x$	24

12. $(x + 2)(x + 1)$

13. $(3x + 8)(x - 2)$

$= 3x^2 + 8x - 6x - 16$

$= \boxed{3x^2 + 2x - 16}$

	$3x$	8
x	$3x^2$	$8x$
-2	$-6x$	-16

14. $(4x + 3)(x - 3)$

15. $(x - 1)(2x + 3)$

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

$= \boxed{2x^2 + x - 3}$

	x	-1
$2x$	$2x^2$	$-2x$
3	$3x$	-3

16. $(x - 4)(3x + 5)$

17. $(7x - 1)(2x - 3)$

$= 14x^2 - 2x - 21x + 3$

$= \boxed{14x^2 - 23x + 3}$

	$7x$	-1
$2x$	$14x^2$	$-2x$
-3	$-21x$	3

18. $(5x - 2)(2x - 1)$

Answers: **11.** $x^2 + 11x + 24$; **13.** $3x^2 + 2x - 16$; **15.** $2x^2 + x - 3$; **17.** $14x^2 - 23x + 3$

Multiply and simplify where possible.

19. $(x + 8)(x - 8)$

$= x^2 + 8x - 8x - 64$

$= \boxed{x^2 - 64}$

	x	8
x	x^2	$8x$
-8	$-8x$	-64

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

21. $(x^2 - 1)(x^2 - 1)$

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

$= \boxed{x^4 - 2x^2 + 1}$

	x^2	-1
x^2	x^4	$-x^2$
-1	$-x^2$	1

22. $(3x^2 + 1)(3x^2 + 1)$

23. $(3x + 8)^2$

$= (3x + 8)(3x + 8)$

$= 9x^2 + 24x + 24x + 64$

$= \boxed{9x^2 + 48x + 64}$

	$3x$	8
$3x$	$9x^2$	$24x$
8	$24x$	64

24. $(4x - 3)^2$

25. $(x - 1)(5x^2 + 2x - 3)$

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

$= \boxed{5x^3 - 3x^2 - 5x + 3}$

	$5x^2$	$2x$	-3
x	$5x^3$	$2x^2$	$-3x$
-1	$-5x^2$	$-2x$	3

26. $(x + 2)(3x^2 - 2x - 1)$

Answers: **19.** $x^2 - 64$; **21.** $x^4 - 2x^2 + 1$; **23.** $9x^2 + 48x + 64$; **25.** $5x^3 - 3x^2 - 5x + 3$

Multiply and simplify where possible.

27. $(5x + 1)(2x^2 - 3x - 5)$

$= 10x^3 + 2x^2 - 15x^2 - 3x - 25x - 5$

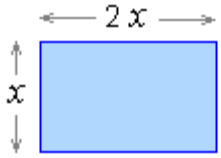
$=$ $10x^3 - 13x^2 - 28x - 5$

	$2x^2$	$-3x$	-5
$5x$	$10x^3$	$-15x^2$	$-25x$
1	$2x^2$	$-3x$	-5

28. $(8x + 3)(2x^2 + x - 1)$

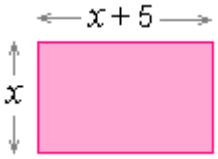
Write an expression for the area of each rectangle below.

29.

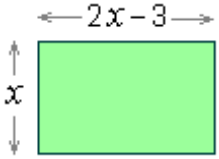


Area = $x \cdot 2x =$ $2x^2$ square units

30.

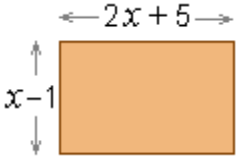


31.



Area = $x \cdot (2x - 3) =$ $2x^2 - 3x$ square units

32.



Answers: **27.** $10x^3 - 13x^2 - 28x - 5$; **29.** $2x^2$; **31.** $2x^2 - 3x$