

Practice

Form G

Multiplying Special Cases

Simplify each expression.

1. $(x + 7)^2$

$x^2 + 14x + 49$

2. $(w + 9)^2$

$w^2 + 18w + 81$

3. $(h + 3)^2$

$h^2 + 6h + 9$

4. $(2s + 4)^2$

$4s^2 + 16s + 16$

5. $(3s + 1)^2$

$9s^2 + 6s + 1$

6. $(5s + 2)^2$

$25s^2 + 20s + 4$

7. $(a - 5)^2$

$a^2 - 10a + 25$

8. $(k - 10)^2$

$k^2 - 20k + 100$

9. $(n - 4)^2$

$n^2 - 8n + 16$

10. $(3m - 4)^2$

$9m^2 - 24m + 16$

11. $(6m - 2)^2$

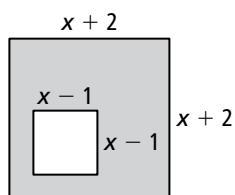
$36m^2 - 24m + 4$

12. $(4m - 2)^2$

$16m^2 - 16m + 4$

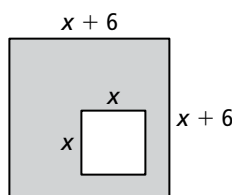
The figures below are squares. Find an expression for the area of each shaded region. Write your answers in standard form.

13.



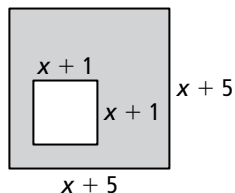
$6x + 3$

14.



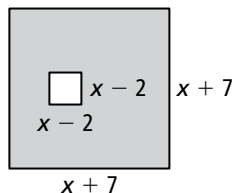
$12x + 36$

15.



$8x + 24$

16.



$18x + 45$

17. A square brown tarp has a square green patch green in the corner. The side length of the tarp is $(x + 8)$ and the side length of the patch is x . What is the area of the brown part of the tarp? $16x + 64$

18. A square red placemat has a gold square in the center. The side length of the gold square is $(x - 2)$ inches and the width of the red region is 4 inches. What is the area of the red part of the placemat? $-x^2 + 4x + 12$ square inches

Practice (continued)

Form G

Multiplying Special Cases

Mental Math Simplify each product.

19. 48^2 **2304**

20. 31^2 **961**

21. 29^2 **841**

22. 52^2 **2704**

23. 63^2 **3969**

24. 41^2 **1681**

25. 89^2 **7921**

26. 199^2 **39,601**

27. 302^2 **91,204**

Simplify each product.

28. $(v + 7)(v - 7)$
 $v^2 - 49$

29. $(b + 2)(b - 2)$
 $b^2 - 4$

30. $(z - 9)(z + 9)$
 $z^2 - 81$

31. $(x + 12)(x - 12)$
 $x^2 - 144$

32. $(8 + y)(8 - y)$
 $64 - y^2$

33. $(t - 15)(t + 15)$
 $t^2 - 225$

34. $(m + 1)(m - 1)$
 $m^2 - 1$

35. $(a + 4)(a - 4)$
 $a^2 - 16$

36. $(5 + g)(5 - g)$
 $25 - g^2$

37. $(p + 20)(p - 20)$
 $p^2 - 400$

38. $(f - 18)(f + 18)$
 $f^2 - 324$

39. $(2c + 3)(2c - 3)$
 $4c^2 - 9$

Mental Math Simplify each product.

40. $61 \cdot 59$
3599

41. $27 \cdot 33$
891

42. $202 \cdot 198$
39,996

43. $74 \cdot 66$
4884

44. $597 \cdot 603$
359,991

45. $85 \cdot 75$
6375

Simplify each product.

46. $(m + 4n)^2$
 $m^2 + 8mn + 16n^2$

47. $(3a + b)^2$
 $9a^2 + 6ab + b^2$

48. $(6s - t)^2$
 $36s^2 - 12st + t^2$

49. $(s + 7t^2)^2$
 $s^2 + 14st^2 + 49t^4$

50. $(p^5 - 8q^3)^2$
 $p^{10} - 16p^5q^3 + 64q^6$

51. $(e^4 + f^2)^2$
 $e^8 + 2e^4f^2 + f^4$

52. $(r^2 + 5s)(r^2 - 5s)$
 $r^4 - 25s^2$

53. $(6p^2 + 2q)(6p^2 - 2q)$
 $36p^4 - 4q^2$

54. $(3w^4 - z^3)(3w^4 + z^3)$
 $9w^8 - z^6$

55. **Error Analysis** Describe and correct the error made in simplifying the product.**The x terms should have a sum of zero; $4x^2 - 49$**

~~$$(2x + 7)(2x - 7)$$
$$= 4x^2 - 28x - 49$$~~

56. The formula $V = \frac{4}{3}\pi r^3$ gives the volume of a sphere with radius r . Find the volume of a sphere with radius $x + 9$. Write your answer in standard form.

$V = \frac{4}{3}\pi x^3 + 36\pi x^2 + 324\pi x + 972\pi$