

# 7.15

## Multiplication of Two Binomials

### • Example 1

(a) Multiply  $x + 2$  by  $x + 3$ .

We can think of  $x + 2$  as a single quantity and apply the distributive property.

$$\begin{aligned} & \overbrace{(x + 2)(x + 3)}^{\text{Multiply } x + 2 \text{ by } x \text{ and then by } 3.} \\ &= (x + 2)x + (x + 2)3 \\ &= x \cdot x + 2 \cdot x + x \cdot 3 + 2 \cdot 3 \\ &= x^2 + 2x + 3x + 6 \\ &= x^2 + 5x + 6 \end{aligned}$$

Note that this ensures that each term,  $x$  and  $2$ , of the first binomial is multiplied by each term,  $x$  and  $3$ , of the second binomial.

(b) Multiply  $a - 3$  by  $a - 4$ . (Think of  $a - 3$  as a single quantity and distribute.)

$$\begin{aligned} & (a - 3)(a - 4) \\ &= (a - 3)a - (a - 3) \cdot 4 \\ &= a \cdot a - 3 \cdot a - [(a \cdot 4) - (3 \cdot 4)] \\ &= a^2 - 3a - (4a - 12) \\ &= a^2 - 3a - 4a + 12 \\ &= a^2 - 7a + 12 \end{aligned}$$

### ● ● ● CHECK YOURSELF 1

Multiply.

a.  $(x + 4)(x + 5)$

b.  $(y + 5)(y - 6)$

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### ● ● ● CHECK YOURSELF ANSWER

1. (a)  $x^2 + 9x + 20$ ; (b)  $y^2 - y - 30$ .

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# 7.15 Exercises

Name \_\_\_\_\_

Section \_\_\_\_\_

Date \_\_\_\_\_

## A N S W E R S

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
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17. \_\_\_\_\_
18. \_\_\_\_\_
19. \_\_\_\_\_
20. \_\_\_\_\_

Multiply.

- |                          |                          |
|--------------------------|--------------------------|
| 1. $(x + 3)(x + 2)$      | 2. $(a - 3)(a - 7)$      |
| 3. $(m - 5)(m - 9)$      | 4. $(b + 7)(b + 5)$      |
| 5. $(p - 8)(p + 7)$      | 6. $(x - 10)(x + 9)$     |
| 7. $(w + 10)(w + 20)$    | 8. $(s - 12)(s - 8)$     |
| 9. $(3x - 5)(x - 8)$     | 10. $(w + 5)(4w - 7)$    |
| 11. $(2x - 3)(3x + 4)$   | 12. $(5a + 1)(3a + 7)$   |
| 13. $(3a - b)(4a - 9b)$  | 14. $(7s - 3t)(3s + 8t)$ |
| 15. $(3p - 4q)(7p + 5q)$ | 16. $(5x - 4y)(2x - y)$  |
| 17. $(x - 5)(x + 5)$     | 18. $(y + 9)(y - 9)$     |
| 19. $(2m + 3)(2m - 3)$   | 20. $(3r - 7)(3r + 7)$   |