$(n-4)$ $(x+3)$

Alg 1 1.4 $2(x+3)$

Use the distributive property to evaluate expressions
Use the distributive property to simplify expressions

$2x+6$

term
like terms

$(n-4)$ $(n-4)$ $(x+3)$

$3(n-4) = 3n-12$

$3 \cdot -4$

KeyConcept Distributive Property

Symbol	For any numbers a, b, and c, $a(b+c) = ab + ac$ and $(b+c)a = ba + ca$ and $a(b-c) = ab - ac$ and $(b-c)a = ba - ca$.
Examples	$3(2+5) = 3 \cdot 2 + 3 \cdot 5$ $\quad$ $4(9-7) = 4 \cdot 9 - 4 \cdot 7$ $3(7) = 6 + 15$ $\quad$ $4(2) = 36 - 28$

Real-World Example 1: Distribute Over Addition

SPORTS A group of 7 adults and 6 children are going to a University of South Florida Bulls baseball game. Use the Distributive Property to write and evaluate an expression for the total ticket cost.

USF Bulls Baseball Tickets	
Ticket	**Cost ($)**
Adult Single Game	5
Children Single Game (12 and under)	3
Groups of 10 or more Single Game	2
Senior Single Game (65 and over)	3

Source: USF

Understand

$13 \cdot 2 = 26$

Plan

$2(7n + 6)$

Solve

$2 \cdot 13 = 26$

$2 \cdot 7 + 2 \cdot 6$

$14 + 12$

$14n + 12$

Check

1. **SPORTS** A group of 3 adults, an 11-year old, and 2 children under 10 years old are going to a baseball game. Write and evaluate an expression to determine the cost of tickets for the group.

3 A
1 - 11yo
2 under 10

$3 \cdot 5 + (1 \cdot 3 + 2 \cdot 3)$
$15 + 3 + 6 = 24$

$3 \cdot 5 + 3 \cdot 3$
$15 + 9$
24

Example 2 Mental Math

Use the Distributive Property to rewrite 7 • 49. Then evaluate.

$7 \cdot 49 = 7(50 - 1)$ Think: $49 = 50 - 1$

$= 7(50) - 7(1)$ Distributive Property

$= 350 - 7$ Multiply.

$= 343$ Subtract.

7. 49 = 343

7(50+1)

7.50 + 7.-1

350 + -7 =

GuidedPractice

4560

Use the Distributive Property to rewrite each expression. Then evaluate.

2A. 304(15) 15(300+4

15.300 + 15.4

4500 + 60

2B. $44 \cdot 2\frac{1}{2}$ 44(2+½)

88 + 22 = 110

2C. 210(5)

2D. 52(17)

5 (105+105)

*.5 (200+10)

1000 + 50 = 1050

(10+7)(50+2)

500 20

350 14 = 884

Example 3 Algebraic Expressions

Rewrite each expression using the Distributive Property. Then simplify.

a. $7(3w + 5)$

$3w - 5$ $3w - 5$

$3w - 5$

$3w - 5$ $3w - 5$

$3w - 5$

$21w - 35$ $3w - 5$

3A. $(8 + 4n)2$

3B. $-6(r + 3g - t)$

3C. $(2 + 5q)(1 - 3)$

3D. $-4(1 - 8 - 3m)$

$-3 \cdot 2 \; -3 \cdot -5q$

$-6 + 15q$

$-4 \cdot -8 \; + -4 \cdot -3m$

$32 + 12m$

$44m$

$$(2+-5g)(+-3)$$

$$-3 \cdot 2 + -3 \cdot -5g$$

$$-6 + 15g$$