LESSON 2.2

The Distributive Property

BEFORE | *Now* | **WHY?**

You used properties to add and multiply. | You'll use the distributive property. | So you can find the snowfall in Utah Olympic Park, as in Ex. 37.

Vocabulary

equivalent numerical expressions, p. 73

In Example 1, the expressions $2(90 + 60)$ and $2(90) + 2(60)$ are called **equivalent numerical expressions** because they have the same value. The statement $2(90 + 60) = 2(90) + 2(60)$ illustrates the *distributive property* for evaluating the product of a number and a sum or difference.

The Distributive Property

Algebra	$a(b + c) = ab + ac$	**Numbers**	$4(6 + 3) = 4(6) + 4(3)$
	$(b + c)a = ba + ca$		$(6 + 3)4 = 6(4) + 3(4)$
	$a(b - c) = ab - ac$		$5(7 - 2) = 5(7) - 5(2)$
	$(b - c)a = ba - ca$		$(7 - 2)5 = 7(5) - 2(5)$

$3(A+4)$

$3A+12$

$4(6-3) = 4 \cdot 6 - 4 \cdot 3$

$4(9) = 24 - 12$

$36 = 36$

Two variable expressions that have the same value for all values of the variable(s) are called **equivalent variable expressions**. You can use the distributive property to write equivalent variable expressions.

LESSON 2.2

Name _____ Date _____

Practice A

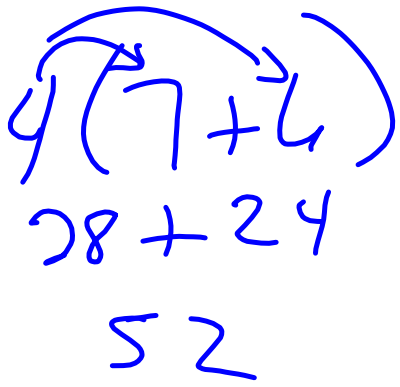
For use with pages 73–77

1. Describe and correct the error in the solution.

$$(m + 3)(-6) = m(-6) + 3(-6)$$
$$= -6m + 18$$

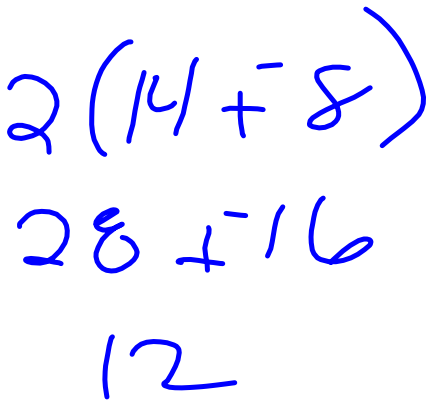
Use the distributive property to evaluate the expression.

2. $4(7 + 6)$

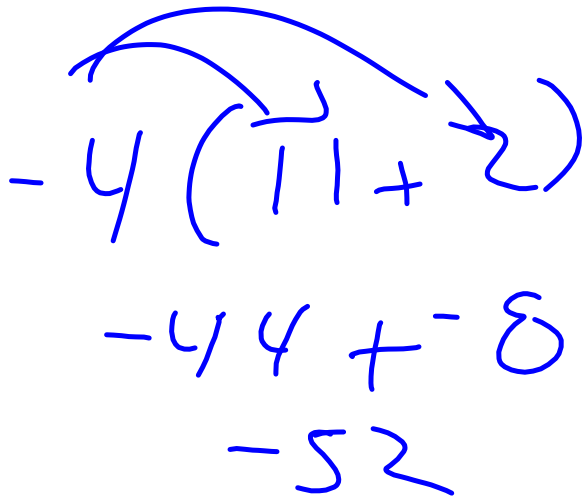


3. $(5 + 3)9$

4. $2(14 - 8)$



5. $(3 - 10)(-1)$ **6.** $-4(11 + 2)$ **7.** $-7(12 - 5)$



Evaluate the expression using the distributive property and mental math.

8. 6(205) **9.** 7(3.04) **10.** 5(86)

$7(3.04)$

$7(3+.04)$

$21 + .28$

21.28

11. 3(9.8)

12. 14(1.07)

13. 15(3.97)

3(9.8)

3(10 ± .20)

30 ± 60

29.40

15(4 ± .03)

60 ± .45

59.55

Use the distributive property to write an equivalent variable expression.

14. $9(x + 3)$ **15.** $(8 - y)(-2)$ **16.** $7(6z + 4)$

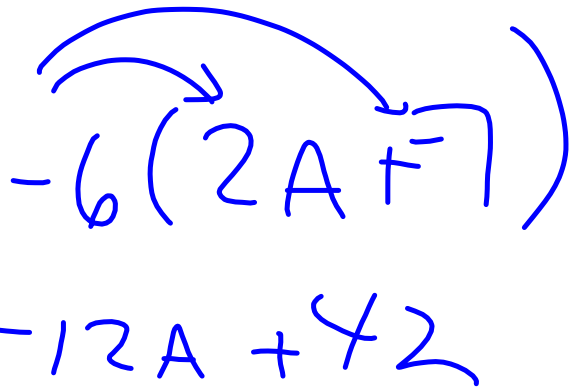
$9(x+3)$

$9x + 27$

$7(6z+4)$

$42z+28$

17. $-5(4j - 1)$ **18.** $-6(2a - 7)$ **19.** $(3 - 5b)(-8)$



20. You purchase 3 CDs that cost $13.99 each. Use the distributive property to find the total cost of the CDs.

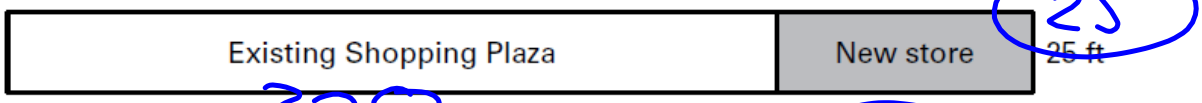
$3(13.99)$

$3(14 + -.01)$

$42 + -03$

41.97

21. A construction company is adding a store to a shopping plaza. The width of the plaza is 25 feet. The length of the existing plaza is 320 feet. The width of the new store is the same as the rest of the plaza. The length of the new store is 80 feet. Use the distributive property to find the area of the shopping plaza, in square feet, with the new store.



320

25

80

$25(320+80)$

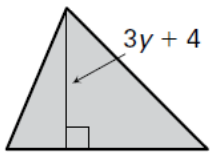
$8000+2000$

$10,000$

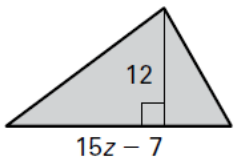
Find the area of the rectangle or triangle.

22.

23.



24.



$5(2x+1)$

$10x+5$

$\frac{1}{2}(15z-7)\cdot 12$

$6(15z-7)$

$90z-42$

$\frac{1}{2}(10)(3y+4)$

$5(3y+4)$

$15y+20$