

# The Distributive Property

**1-5**

## **The Distributive Property**

Instant Replay Video Games sells new and used games. During a Saturday morning sale, the first 8 customers each bought a bargain game and a new release. To calculate the total sales for these customers, you can use the Distributive Property.

<b>Sale Prices</b>	
<b>Used Games</b>	<b>\$9.95</b>
<b>Bargain Games</b>	<b>\$14.95</b>
<b>Regular Games</b>	<b>\$24.95</b>
<b>New Releases</b>	<b>\$34.95</b>

## Method 1

$$\underbrace{\text{sales of bargain games}}_{8(14.95)} \quad \underbrace{\text{plus}}_{+} \quad \underbrace{\text{sales of new releases}}_{8(34.95)}$$

$$= 119.60 + 279.60$$

$$= 399.20$$

## Method 2

number of customers  
8

times  
×

each customer's purchase price  
(14.95 + 34.95)

$$= 8(49.90)$$

$$= 399.20$$

Either method gives total sales of \$399.20 because the following is true.

$$8(14.95) + 8(34.95) = 8(14.95 + 34.95)$$

the **Distributive Property**.

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  $(b - c)a = ba - ca$ .

$$3(2 + 5) = 3 \cdot 2 + 3 \cdot 5$$

$$3(7) = 6 + 15$$

$$21 = 21 \quad \checkmark$$

$$4(9 - 7) = 4 \cdot 9 - 4 \cdot 7$$

$$4(2) = 36 - 28$$

$$8 = 8 \quad \checkmark$$

The Symmetric Property of Equality allows the Distributive Property to be written as follows.

$$\text{If } a(b + c) = ab + ac, \text{ then } ab + ac = a(b + c).$$

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**Rewrite  $8(10 + 4)$  using the Distributive Property.**

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$$8(10 + 4) = 8(10) + 8(4) \quad \text{Distributive Property}$$

$$= 80 + 32 \quad \text{Multiply.}$$

$$= 112 \quad \text{Add.}$$



Rewrite  $(12 - 3)6$  using the Distributive Property. Then evaluate.

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$$(12 - 3)6 = 12 \cdot 6 - 3 \cdot 6 \quad \text{Distributive Property}$$

$$= 72 - 18 \quad \text{Multiply.}$$

$$= 54 \quad \text{Subtract.}$$

**Use the Distributive Property to find each product.**

**a.  $15 \cdot 99$**

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$$\begin{aligned} 15 \cdot 99 &= 15(100 - 1) && \text{Think: } 99 = 100 - 1 \\ &= 15(100) - 15(1) && \text{Distributive Property} \\ &= 1500 - 15 && \text{Multiply.} \\ &= 1485 && \text{Subtract.} \end{aligned}$$

$$35\left(2\frac{1}{5}\right)$$

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$$\begin{aligned}35\left(2\frac{1}{5}\right) &= 35\left(2 + \frac{1}{5}\right) \\ &= 35(2) + 35\left(\frac{1}{5}\right) \\ &= 70 + 7 \\ &= 77\end{aligned}$$

Think:  $2\frac{1}{5} = 2 + \frac{1}{5}$

Distributive Property

Multiply.

Add.