

# The Distributive Property

To expand an expression with brackets means to remove the brackets by multiplying. This is done using the distributive property.

$$3(y+2)$$

→ Multiply each term in the brackets by the coefficient.

$$3y + 6$$

## Practice

Expand the following.

a)  $4(x+1)$   
 $4x+4$

c)  $2(4m+3n)$   
 $8m+6n$

e)  $3(-2p-4q)$   
 $-6p-12q$

b)  $3(2a-2)$   
 $6a-6$

d)  $-6(2s-t)$   
 $-12s+6t$

f)  $2(-x-4y)$   
 $-2x-8y$

## Practice # 1-25 odd only

Expand.

1.  $2(x+5)$     2.  $3(b+3)$     3.  $6(y-1)$   
4.  $5(t-3)$     5.  $7(m+1)$     6.  $4(a-7)$   
7.  $4(4+m)$     8.  $8(x-4)$     9.  $7(3+t)$

Expand.

10.  $2(3x+4)$     11.  $4(2y+1)$     12.  $3(4m-3)$   
13.  $5(5t-2)$     14.  $6(1+2x)$     15.  $7(4w-7)$   
16.  $2(3x+2y)$     17.  $3(4a+5b)$   
18.  $-3(3m-2n)$     19.  $-5(3s-t)$

Expand.

20.  $3(2x+4y+1)$     21.  $2(a+b+1)$   
22.  $4(3c-2d+5)$     23.  $5(x-3+4y)$   
24.  $-6(2+3x+y)$     25.  $-2(1-x-y)$

## Problems and Applications

Evaluate each expression for  $x = 1$  and  $y = 1$ . Then, expand and evaluate the new expression for  $x = 1$  and  $y = 1$ .

26.  $3(5x+2y+4)$     27.  $3(4x-2y-1)$

You can use the distributive property to multiply some pairs of numbers without a calculator.

$$\begin{aligned} 20 \times 38 &= 20(40-2) \\ &= 800-40 \\ &= 760 \end{aligned} \qquad \begin{aligned} 30 \times 31 &= 30(30+1) \\ &= 900+30 \\ &= 930 \end{aligned}$$

Use this method to multiply the following.

28.  $20 \times 19$     29.  $30 \times 28$     30.  $40 \times 37$   
31.  $50 \times 22$     32.  $20 \times 41$     33.  $30 \times 33$