Lesson 9-4

Example 1

Simplify.

a. $4d(3d - 2)$ **b.** $-5r(-r^2 + 3r + 1)$

Solution

a. $4d(3d - 2) = 4d(3d) - 4d(2)$ Use the Distributive Property.
$= 12d^2 - 8d$ Multiply each p[air of monomials.

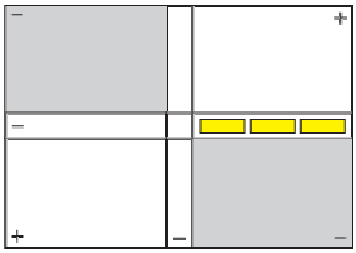
b. $-5r(-r^2 + 3r + 1) = -5r(-r^2) + (-5r)(3r) - (-5r)(1)$
$= 5r^3 - 15r^2 - 5r$

Example 2

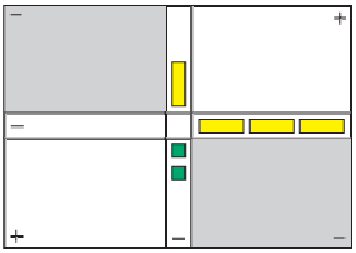
MODELING Show the product $3x(x - 2)$ using Algeblocks.

Solution

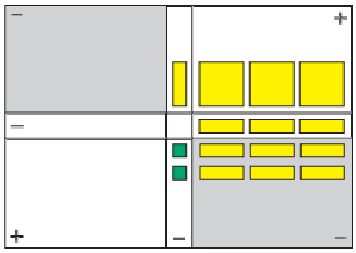
Step 1 Use a Quadrant Mat. Place three x-blocks on the positive horizontal axis.



Step 2 Place one x-block on the positive vertical axis, and two unit blocks on the negative vertical axis.



Step 3 Use x^2-blocks and x-blocks to form rectangular areas in all quadrants bounded by the pieces.



Example 3

Simplify.

a. $5(a^2 + ab) - 2(a^2 - ab)$

b. $4g(3g - 1) + 2g(3g - 1)$

Solution

a. $5(a^2 + ab) - 2(a^2 - ab)$
$= (5a^2 + 5ab) - (2a^2 - 2ab)$
$= 5a^2 + 5ab - 2a^2 + 2ab$
$= (5a^2 - 2a^2) + (5ab + 2ab)$
$= 3a^2 + 7ab$

b. $4g(3g - 1) + 2g(3g - 1)$
$= [4g(3g) - 4g(1)] + [2g(3g) - 2g(1)]$
$= (12g^2 - 4g) + (6g^2 - 2g)$
$= 12g^2 - 4g + 6g^2 - 2g$
$= (12g^2 + 6g^2) + (-4g - 2g)$
$= 18g^2 - 6g$

Example 4

ENTERTAINMENT Renting ski equipment from Downhill Adventures costs a fixed rate of $25 per customer plus $7.50/hour that the customer skis. The cost C is expressed by the formula $C = 25 + 7.5h$, where h is the number of hours that the customer spends skiing.

A group of friends is taking a ski vacation and will rent s sets of ski equipment each day. Write a formula for the total cost of renting the equipment each day. Assume that each of the friends will ski the same number of hours each day.

Solution

total cost = number of skiers · cost per skier
$= s(25 + 7.5h)$
$= 25s + 7.5hs$