

Practice

1. Write the product modelled by each set of tiles. Determine the product.



2. Use algebra tiles to determine each product. Sketch the tiles you used.

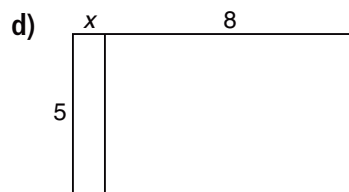
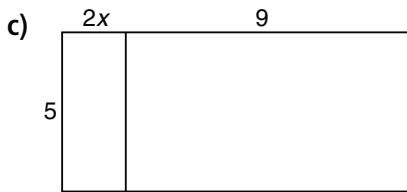
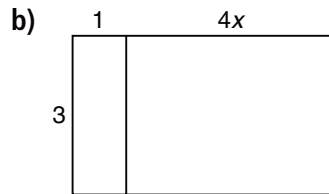
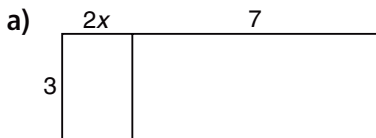
a) $2(4x + 1)$

b) $2(3x + 1)$

c) $5(2x + 3)$

d) $4(4x + 3)$

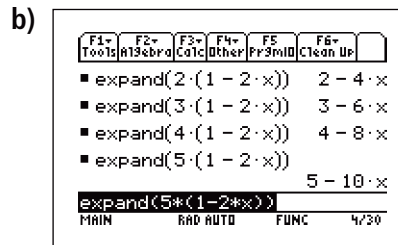
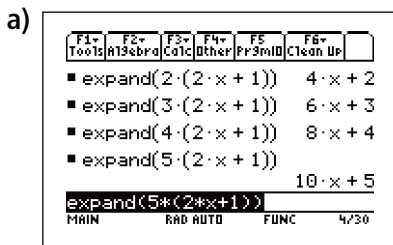
3. Write the product modelled by each figure. Determine the product.



4. Use the calculator screens below.

What patterns do you see? Explain each pattern.

Write the next 2 lines in each pattern.



We can also use paper and pencil to expand a product.

Example

Expand: $-3(-2x^2 + 3x - 4)$

Solution

$$-3(-2x^2 + 3x - 4)$$

Multiply each term in the brackets by -3 .

$$\begin{aligned} -3(-2x^2 + 3x - 4) &= (-3)(-2x^2) + (-3)(3x) + (-3)(-4) \\ &= (+6x^2) + (-9x) + (+12) \\ &= 6x^2 - 9x + 12 \end{aligned}$$

5. Expand: $-100(4x^2 + x - 4)$

Visualize algebra tiles. Are they useful to determine this product?

Explain.

6. Jessica expands $3(x^2 + 4x - 2)$ and gets $3x^2 + 4x - 2$.

Choose a tool.

Use the tool to explain why Jessica's answer is incorrect.

7. Multiply.

a) $7(3x - 1)$

b) $3(4x - 5)$

c) $2(6x - 4)$

d) $5(5x^2 - 3x)$

e) $4(-2x^2 + 3)$

f) $9(x^2 + x - 6)$

8. Expand.

a) $-2(4x + 2)$

b) $3(-5x^2 + 3)$

c) $2(-x - 4)$

d) $-7(x^2 - 5)$

e) $-2(-5x^2 + x)$

f) $6(3 - 2x)$

9. **Assessment Focus** Multiply. Which tools did you use? Explain.

a) $-2(x^2 - 2x + 4)$

b) $-3(-x^2 + 3x - 7)$

c) $2(4x^3 - 2x^2 - x)$

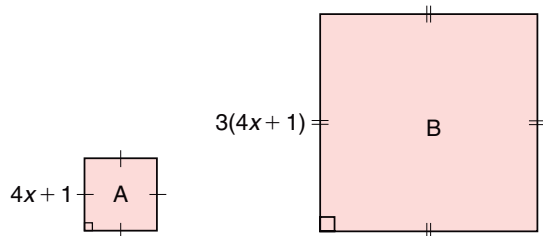
d) $8(3x^3 + 2x^2 - 3)$

e) $-6(2x^2 - x + 5)$

f) $4(x^2 - 3x - 3)$

10. Square A has side length $4x + 1$.

Square B has side length that is 3 times as great as that of Square A.



- a) Write an expression for the perimeter of each square.

Simplify each expression.

- b) What is the difference in perimeters?

11. **Take It Further** Explain how you could use algebra tiles to multiply a polynomial by a negative constant term.

Illustrate with an example.

In Your Own Words

When can you use algebra tiles to determine the product of a constant term and a polynomial?

When do you use paper and pencil?

Include examples in your explanation.