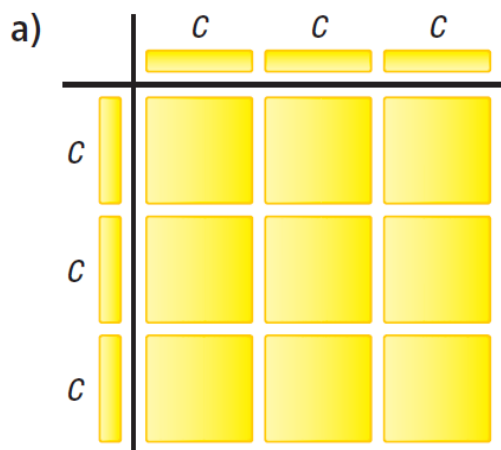


Homework

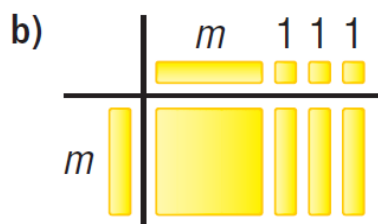
Section 5.6
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Check

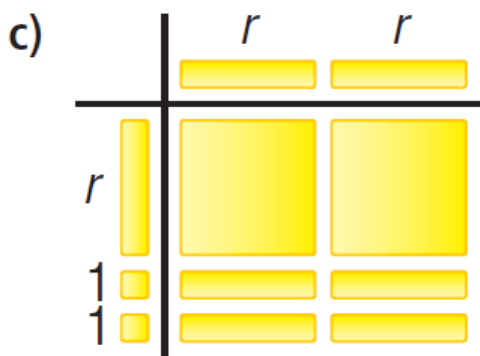
4. Write the multiplication sentence modelled by each set of algebra tiles.



$$(3c)(3c) = 9c^2$$



$$m(m+3) = m^2 + 3m$$



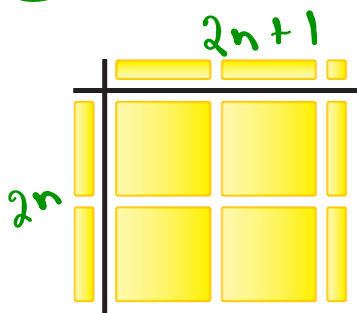
$$2r(r+2) = 2r^2 + 4r$$

6. Which of these multiplication sentences is modelled by the algebra tiles below?

a) $2n(n + 2)$

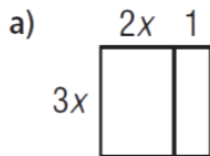
b) $2(2n^2 + 1)$

c) $2n(2n + 1)$

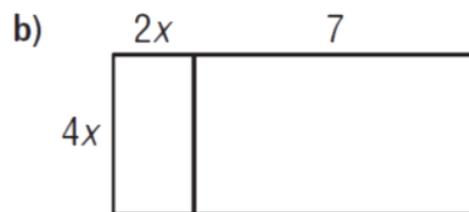


$$(2n)(2n+1) = 4n^2 + 2n$$

7. Write the multiplication sentence modelled by each rectangle.



$$(3x)(2x+1) = 6x^2 + 3x$$



$$(4x)(2x+7) = 8x^2 + 28x$$

11. Multiply or divide as indicated.

a) $(2r)(-6r) = -12r^2$

b) $(-16n^2) \div (-8n) = 2n$

c) $(-5g)(7g) = -35g^2$

d) $\frac{40k}{-10k} = -4$

e) $(9h)(3h) = 27h^2$

f) $\frac{48p^2}{12p} = 4p$

g) $18u^2 \div (-3u^2) = -6$

h) $\frac{-24d^2}{-8d^2} = 3$

12. Use any strategy to determine each product.

$$a) 2x(x + 6) = 2x^2 + 12x$$

$$b) 3t(5t + 2) = 15t^2 + 6t$$

$$c) -2w(3w - 5) = -6w^2 + 10w$$

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

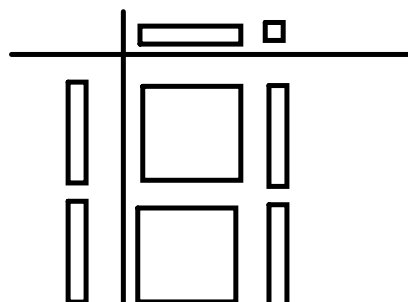
$$e) 3g(-5 - g) = -15g - 3g^2$$

$$f) (4 + 3y)(2y) = 8y + 6y^2$$

$$g) (-7s - 1)(-y) = 7sy + y$$

$$h) (-3 + 6r)(2r) = -6r + 12r^2$$

- 13.** A student thinks that the product $2x(x + 1)$ is $2x^2 + 1$. Choose a model. Use the model to explain how to get the correct answer.



14. Here is a student's solution for this question:

Multiply: $(-2d + 9)(-3d)$

$$\begin{array}{l} (-3d) (-2d+9) \\ 6d^2 - 27d \end{array}$$

$$\begin{array}{l} (-2d + 9)(-3d) \\ = \ominus 2d \ominus 3d - (9)(-3d) \\ = -6d^2 - (27d) \\ = \ominus 6d^2 - 27d \end{array}$$

Identify the errors in the solution, then write the correct solution.

16. Use any strategy to determine each quotient.

$$\text{a) } \frac{10x^2 + 4x}{2x} = 5x + 2$$

$$\text{b) } (6x^2 + 4x) \div x = 6x + 4$$

$$\text{c) } \frac{6y + 3y^2}{3y} = 2 + y$$

$$\text{d) } \frac{40x^2 - 16x}{8x} = 5x - 2$$

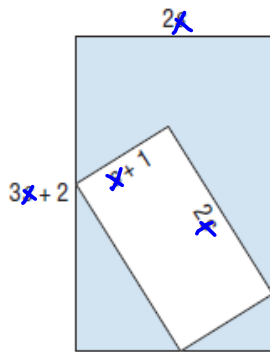
$$\text{e) } \frac{15g - 10g^2}{5g} = 3 - 2g$$

$$\text{f) } \frac{-12k - 24k^2}{3k} = -4 - 8k$$

$$\text{g) } (24h^2 + 36h) \div (-4h) = -6h - 9$$

$$\text{h) } (-8m^2 + 18m) \div (-2m) = 4m - 9$$

19. a) Write a polynomial to represent the area of each rectangle in the diagram below.

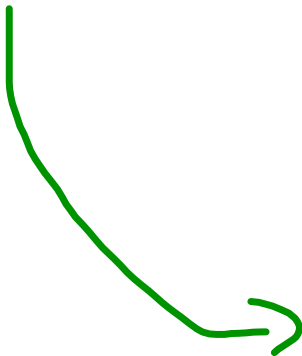


Blue
 $2x(3x+2)$
 $6x^2 + 4x$

White
 $2x(x+1)$
 $2x^2 + 2x$

- b) Determine a polynomial for the shaded area. Justify your strategy.
 c) Determine the area in part b when $x = 2.5$ cm.

→ (Blue) - (White)
 $(6x^2 + 4x) - (2x^2 + 2x)$
 $6x^2 + 4x - 2x^2 - 2x$
 $6x^2 - 2x^2 + 4x - 2x$
 $4x^2 + 2x$



$4x^2 + 2x$
 $4(2.5)^2 + 2(2.5)$
 $25 + 5$
 $= 30$

20. Determine each product.

$$\text{a) } 3m(2n + 4) = 6mn + 12m$$

$$\text{b) } (-5 + 3f)(-2g) = 10 - 6fg$$

$$\text{c) } 7m(-6p + 7m) = -42mp + 49m^2$$

$$\text{d) } (-8h - 3k)(4k) = -32kh - 12k^2$$

$$\text{e) } (-2t + 3r)(4t) = -8t^2 + 12rt$$

$$\text{f) } (-g)(8h - 5g) = -8hg + 5g^2$$

21. Determine each quotient.

$$\text{a) } (12x^2 + 6xy) \div 3x = 4x + 2y$$

$$\text{b) } \frac{12gh + 6g}{2g} = 6h + 3$$

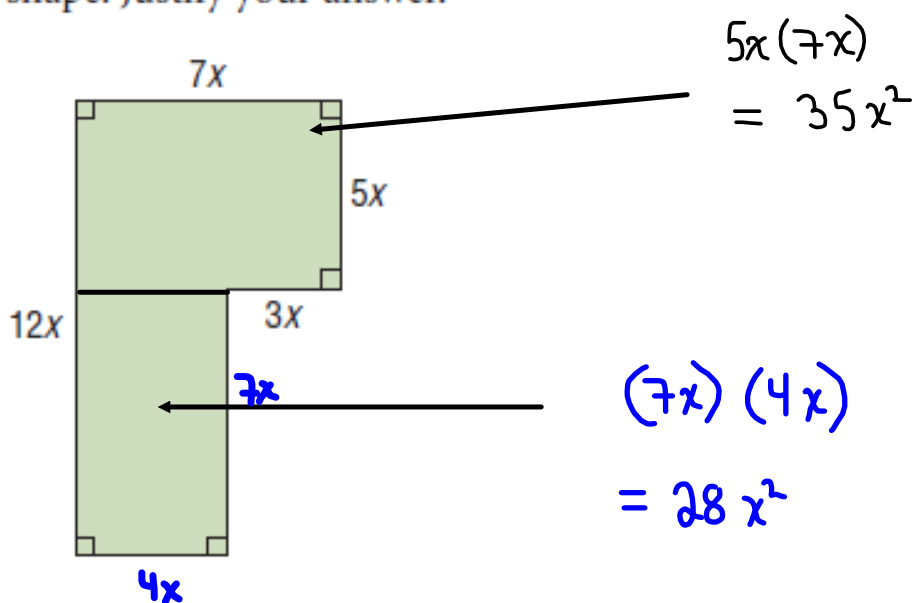
$$\text{c) } (-27p^2 + 36pq) \div 9p = -3p + 4$$

$$\text{d) } \frac{40rs - 35r}{-5r} = -8s + 7$$

$$\text{e) } \frac{14n^2 + 42np}{-7n} = -2n - 6p$$

Take It Further

22. Determine a polynomial for the area of this shape. Justify your answer.



$$\begin{aligned}T_{SA} &= 28x^2 + 35x^2 \\ &= 63x^2\end{aligned}$$

25. Simplify:

$$[(2x^2 - 8x + 3xy + 5) + (24x^2 - 16x - 12xy)] \div 4x$$

$$[2x^2 - 8x + 3xy + 5 + 24x^2 - 16x - 12xy] \div 4x$$

$$[2x^2 + 24x^2 - 8x - 16x + 3xy - 12xy] \div 4x$$

$$[26x^2 - 24x - 9xy + 5] \div 4x$$