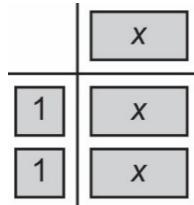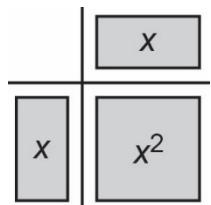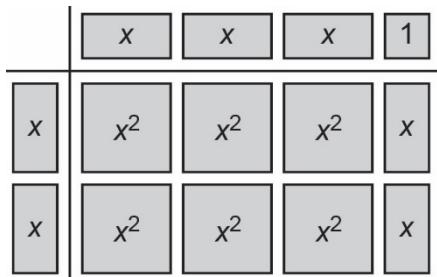Name_____ Date_____

Multiplying and Dividing Polynomials
Answers

Part A: Multiplying Polynomials

1. $2x$ represents the product of $2 \times (x)$.

   Model $(x) \times (x)$.   Model $2 \times (x)$.
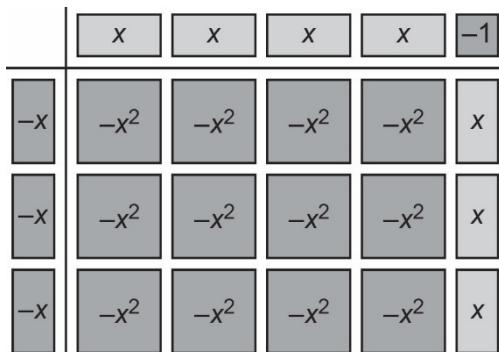

   The two models are not equivalent.
   So, $(x) \times (x) \neq 2x$.

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

   b) $-3x(4x - 1) = -12x^2 + 3x$

Mathology 9 PEI, *Algebraic Expressions*
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Multiplying and Dividing Polynomials
Answers (cont'd)

3. a) $2(2x^2 - 3x + 1) = 4x^2 - 6x + 2$

   b) $4(5y^2 - 3y + 8) = 20y^2 - 12y + 32$

   c) $-6x(-2x - 9) = 12x^2 + 54x$

Part B: Dividing Polynomials

1. I know that when I divide a polynomial by a monomial, I can write each term of the polynomial as a division with the monomial as the denominator. For example,

   $(-6x^2 + 12x) \div 3x$ can be written as $\frac{-6x^2}{3x} + \frac{12x}{3x}$.

   I can then simplify the individual fractions.

   I also know that when dividing like terms with different exponents, I subtract the exponents. So, $x^2 \div x = x$, because $2 - 1 = 1$.

2. a) $(8x^2 + 2x) \div (2x) = \frac{8x^2}{2x} + \frac{2x}{2x}$

   $$= 4x + 1$$

   b) $(-6x^2 - 3x) \div (-3x) = \frac{-6x^2}{-3x} + \frac{-3x}{-3x}$

   $$= 2x + 1$$

   c) $(-6x^2 - 8x) \div (2x) = \frac{-6x^2}{2x} + \frac{-8x}{2x}$

   $$= -3x - 4$$

Patterns and Relations Unit 1 Line Master 6g *Multiplying and Dividing Polynomials* **Answers** (cont'd)

3. a) $\left(\frac{9s}{-3}\right)(-4s) = (-3s)(-4s)$

$\qquad\qquad = 12s^2$

b) The order of operations tells me that I need to simplify the expression inside the first set of brackets before multiplying by the expression in the second set of brackets. If I didn't do this, I would have to multiply and divide larger numbers: $\frac{-36s^2}{-3}$. The answer would be the same because the order in which multiplication and division are performed doesn't matter.

4. a) $(14x^2 - 7x) \div 7x = \frac{14x^2}{7x} - \frac{7x}{7x}$

$\qquad\qquad\qquad = 2x - 1$

b) $(-8x^2 + 6x - 4) \div 2 = \frac{-8x^2}{2} + \frac{6x}{2} - \frac{4}{2}$

$\qquad\qquad\qquad = -4x^2 + 3x - 2$

c) $\left(\frac{4m^2}{-2m}\right)(-3m) = (-2m)(-3m)$

$\qquad\qquad\quad = 6m^2$