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<td>Recognize the different parts of a polynomial.</td>
<td>A polynomial may have variable terms and a constant term. The number in front of a variable is its coefficient.</td>
<td>variable term $3x^2 + 2x + 4$</td>
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| Describe and classify polynomials. | A polynomial can be classified by its number of terms and by its term with the greatest degree. | Monomial: $3x$  
Binomial: $2x + 5$  
Trinomial: $x^2 + 2x - 1$ (degree 2) |
| Use algebra tiles to represent a polynomial. | We use these tiles: | $x^2 + 2x - 1$  
A pair of tiles with the same shape and size, but different colours forms a zero pair. The tiles model 0. |
| Simplify polynomials by combining like terms. | To simplify a polynomial, add the coefficients of like terms. | Like terms: $4x^2$ and $-2x^2$  
Unlike terms: $3x$ and $-5$  
$4x^2 - 2x^2 = 2x^2$ |
| Add polynomials. | To add polynomials, remove the brackets and add the coefficients of like terms. | $(4x^2 + 3x) + (x^2 - 5x)$  
$= 4x^2 + 3x + x^2 - 5x$  
$= 4x^2 + x^2 + 3x - 5x$  
$= 5x^2 - 2x$ |
| Subtract polynomials. | To subtract a polynomial, add the opposite terms. | $(3x^2 + 5x) - (2x^2 - x)$  
$= 3x^2 + 5x + (-2x^2 + x)$  
$= 3x^2 + 5x - 2x^2 + x$  
$= 3x^2 - 2x^2 + 5x + x$  
$= x^2 + 6x$ |
| Multiply a polynomial by a monomial. | To multiply a polynomial by a monomial, use the distributive property. | $3(x(6x - 5))$  
$= 3(6x) + (3x)(-5)$  
$= 18x^2 + (-15x)$  
$= 18x^2 - 15x$ |
| Divide a polynomial by a monomial. | To divide a polynomial by a monomial, divide each term of the polynomial by the monomial. | $\frac{24x^2 - 32x}{8x}$  
$= \frac{24x^2}{8x} + \frac{-32x}{8x}$  
$= 3x - 4$ |
5.1 1. Is the polynomial a monomial, binomial, or trinomial?

a) \(-3s^2 + 11\)       b) \(8d\)       c) \(2e^2 - 9e + 7\)       d) \(8h - 1\)

2. Sketch algebra tiles to model each polynomial.

a) \(3k - 4\)       b) \(2m^2 - m + 3\)       c) \(-n^2 + 5n - 2\)

5.2 3. Simplify each polynomial.

a) \(-7d - 4 + 8d + 2\)
   = \__________________________
   = \__________________________

b) \(3e^2 - 8e + 2e^2 + 11e\)
   = \__________________________
   = \__________________________

c) \(13 - 6h + 2h^2 + 7h - 9\)
   = \__________________________
   = \__________________________
   = \__________________________

d) \(-9k^2 + 15k - 8 - 2k^2 - 4k + 3\)
   = \__________________________
   = \__________________________

4. Identify and explain any errors you find.

a) \(2x^2 + 5x = 7x^2\)
   \[\text{Correction:} \quad 2x^2 + 5x = 7x^2\]
   \[\text{Explaination:} \quad \text{The equation is correct.}\]

b) \(5s - 7s = -2s\)
   \[\text{Correction:} \quad 5s - 7s = -2s\]
   \[\text{Explaination:} \quad \text{The equation is correct.}\]

5.3 5. Sketch algebra tiles to model each sum. Then write the sum.

a) \((-5e + 7) + (4e - 1)\)

Remaining tiles: ____________________
So, \((-5e + 7) + (4e - 1) = \__________\)

b) \((6f^2 - 2f + 5) + (-4f^2 - f - 3)\)

Remaining tiles: ____________________
So, \((6f^2 - 2f + 5) + (-4f^2 - f - 3) = \__________\)
6. Add.
   a) \((7r + 11) + (-2r + 3)\)  
      = 
      = 
      = 
   b) \((-9s^2 + 5s) + (16s^2 - 9s - 14)\)  
      = 
      = 
      = 

5.4 7. Use algebra tiles to model each difference. Sketch the tiles that remain, then write the difference.
   a) \((-2t + 5) - (-5t + 7)\) 
      Remaining tiles: 
      So, \((-2t + 5) - (-5t + 7) = \) 
   b) \((-7u - 2) - (-u^2 - 3u - 1)\) 
      Remaining tiles: 
      So, \((-7u - 2) - (-u^2 - 3u - 1) = \) 

8. Subtract.
   a) \((6v + 5) - (13v - 3)\)  
      = \(6v + 5 + (\_\_\_\_\_)\) 
      = 
      = 
      = 
   b) \((10w^2 - 7) - (-2w + 9w^2 + 5)\)  
      = 
      = 
      = 
      = 

5.5 9. Write the multiplication sentence modelled by each set of tiles.
   a) 
      
      
      
   b) 
      
      

10. Multiply.
   a) \(6(-7y^2 + 1)\)  
      = \(6(\_\_\_) + 6(\_\_\_)\) 
      = 
   b) \(-9(-2z^2 - 4z + 5)\)  
      = 
      = 
      = 

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11. Divide.
   a) \[ \frac{16a - 40}{8} \]
      \[ = \frac{16}{8} \times a + (\_ \_ \_ \_ \_ \_ \_) \]
      \[ = \_ \_ \_ \_ \_ \_ \_ \_ \]
      \[ = \_ \_ \_ \_ \_ \_ \_ \_ \]
   b) \[ \frac{27b^2 - 9b + 36}{-9} \]
      \[ = \_ \_ \_ \_ \_ \_ \_ \_ \]
      \[ = \_ \_ \_ \_ \_ \_ \_ \_ \]
      \[ = \_ \_ \_ \_ \_ \_ \_ \_ \]

5.6 12. Sketch algebra tiles to multiply. Write the product each time.
   a) \[ 2c(c + 5) \]
      \[ = \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \]
   b) \[ 3d(-d + 4) \]
      \[ = \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \]

   a) \[ 3e(5e - 2) \]
      \[ = (3e)(___) + (3e)(___) \]
      \[ = \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \]
      \[ = \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \]
   b) \[ -4f(5f + 2) \]
      \[ = \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \]
      \[ = \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \]
      \[ = \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \]

   a) \[ \frac{-21k^2}{7k} \]
      \[ = \frac{-21}{7} \times \frac{k^2}{k} \]
      \[ = \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \]
      \[ = \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \]
      \[ = \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \]
   b) \[ \frac{81m^2 - 45m}{-9m} \]
      \[ = \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \]
      \[ = \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \]
      \[ = \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \]
   c) \[ \frac{-33n^2 + 36n}{-3n} \]
      \[ = \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \]
      \[ = \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \]
      \[ = \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \]

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