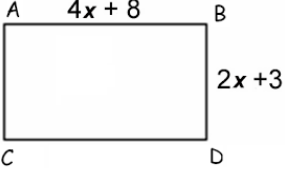
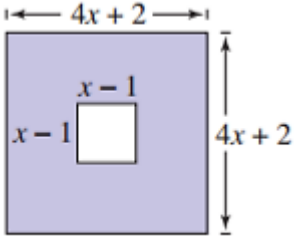
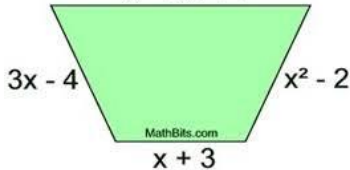
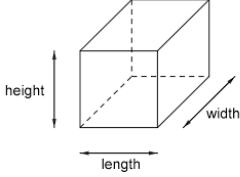


<p><b>1) Which of the following are polynomials?</b></p>	<p>a) <math>3x^3 + 4x^{-1}</math>    <b>no</b></p> <p>c) <math>4x^{\frac{1}{2}} + \frac{5}{x}</math>    <b>no</b></p>	<p>b) <math>2x + 3</math>    <b>yes</b></p> <p>d) <math>12y^6 + 4y^3 - 9y^2</math>    <b>yes</b></p>
<p><b>2) Classify the following polynomials</b></p>	<p>a) <math>-r^3 - 8r^2 + 8r - 7</math> <b>Cubic polynomial</b></p> <p>c) <math>-6p^2 + 4p - 5</math> <b>quadratic trinomial</b></p>	<p>b) 10 <b>Constant monomial</b></p> <p>d) <math>7n^2 + 8</math> <b>Quadratic binomial</b></p>
<p><b>3) Adding and Subtracting Polynomials</b></p>	<p>a) <math>(3x^3 - 6x) + (2x^3 + 3x)</math> <b><math>5x^3 - 3x</math></b></p>	<p>b) <math>(2x^4 - 9) - (-x^4 + 4x + 3)</math> <b><math>3x^4 - 4x - 12</math></b></p>
<p><b>4) Multiplying Polynomials</b></p>	<p>a) <math>(2x^2 + 5x - 1)(x - 3)</math> <b><math>2x^3 - x^2 - 16x + 3</math></b></p>	<p>b) <math>(6k + 5)(6k - 5)</math> <b><math>36k^2 - 25</math></b></p>
<p><b>5) Applications of Operations with Polynomials</b></p> <p><b>Perimeter:</b> add all the sides on the outside</p> <p><b>Area:</b> Use area formula for specific shape (multiply)</p>	<p>a) Find the perimeter and area.</p>  <p><b><math>P = 12x + 22</math> units</b> <b><math>A = 8x^2 + 28x + 24</math> sq units</b></p> <p>c) Find the area of the shaded region</p>  <p><b><math>A = 15x^2 + 18x + 3</math> sq units</b></p>	<p>b) Find the perimeter.</p>  <p><b><math>P = 2x^2 + 2x - 2</math> units</b></p> <p>d) Find the volume of a cube with side length <math>(x - 4)</math>.</p> <p>Volume = <math>l \times w \times h</math></p>  <p><b><math>V = x^3 - 12x^2 + 48x - 64</math> cu units</b></p>
<p><b>6) Dividing Polynomials (Long division)</b></p> <ol style="list-style-type: none"> <li>1) Divide</li> <li>2) Multiply</li> <li>3) Subtract</li> <li>4) Bring Down</li> <li>5) Repeat</li> </ol> <p><b>7) Synthetic Division</b> No Change the sign of the divisor (find the zero)</p>	<p style="text-align: center;"><b><u>Long Division</u></b></p> <p>a) <math>(2m^2 - 5m + 11) \div (m - 3)</math> <b><math>2m + 1 + \frac{14}{m - 3}</math></b></p> <p>c) <math>(3r^3 - 6r + 8) \div (r - 2)</math> <b><math>3r^2 + 6r + 6 + \frac{20}{r - 2}</math></b></p>	<p style="text-align: center;"><b><u>Synthetic Division</u></b></p> <p>b) <math>(2m^2 - 5m + 11) \div (m - 3)</math> <b><math>2m + 1 + \frac{14}{m - 3}</math></b></p> <p>d) <math>(3r^3 - 6r + 8) \div (r - 2)</math> <b><math>3r^2 + 6r + 6 + \frac{20}{r - 2}</math></b></p>

<p><b>8) Binomial Expansion</b></p> <p>Pascal's Triangle</p> $  \begin{array}{c}  1 \\  1 \ 1 \\  1 \ 2 \ 1 \\  1 \ 3 \ 3 \ 1 \\  1 \ 4 \ 6 \ 4 \ 1 \\  1 \ 5 \ 10 \ 10 \ 5 \ 1  \end{array}  $	<p>a) <math>(3 + x)^4</math></p> $81 + 108x + 54x^2 + 12x^3 + x^4$ <p>c) What is the <b>coefficient</b> of the <b>3<sup>rd</sup> term</b> in part a above?</p> $54$	<p>b) <math>(y - 2)^5</math></p> $y^5 - 10y^4 + 40y^3 - 80y^2 + 80y - 32$ <p>d) What is the <b>2nd term</b> in the expansion in part b above?</p> $-10y^4$																								
<p><b>9) Function Notation and Composition</b></p>	<p><b>Given that</b>  <math>f(x) = 2x^3 - 5x^2 + 3x - 1</math>    <math>g(x) = -3x^2 + 4x + 2</math>    <math>h(x) = 2</math>    <math>k(x) = x - 1</math></p> <p>Find:</p> <p>a) <math>(k - g)(x)</math>  <math>3x^2 - 3x - 3</math></p> <p>b) <math>(f \cdot h)(x)</math>  <math>4x^3 - 10x^2 + 6x - 2</math></p> <p>c) <math>(f \circ h)(x)</math>  <math>1</math></p> <p>d) <math>(g \circ k)(3)</math>  <math>-2</math></p>																									
<p><b>10) Function Inverses</b></p> <ul style="list-style-type: none"> <li>- Replace <math>f(x)</math> with <math>y</math></li> <li>- Switch <math>x</math> and <math>y</math></li> <li>- Solve for <math>y</math>.</li> </ul>	<p>Find the inverse:</p> <p>a) <math>f(x) = \sqrt{4x - 5}</math>  <math>f^{-1}(x) = \frac{x^2 + 5}{4}</math></p> <p>b) <math>f(x) = 3x^4 + 7</math>  <math>f^{-1}(x) = \sqrt[4]{\frac{x-7}{3}}</math></p>																									
<p><b>11)</b></p> <p>The accompanying tables define functions <math>f</math> and <math>g</math>.</p> <table border="1" data-bbox="272 1270 656 1365"> <tr><td><math>x</math></td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr> <tr><td><math>f(x)</math></td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td></tr> </table> <table border="1" data-bbox="272 1394 656 1488"> <tr><td><math>x</math></td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td></tr> <tr><td><math>g(x)</math></td><td>4</td><td>6</td><td>8</td><td>10</td><td>12</td></tr> </table>	$x$	1	2	3	4	5	$f(x)$	3	4	5	6	7	$x$	3	4	5	6	7	$g(x)$	4	6	8	10	12	<p>a) What is <math>(f \circ g)(3)</math>?</p> $6$ <p>b) What is <math>f(3) + 2g(6)</math>?</p> $25$	
$x$	1	2	3	4	5																					
$f(x)$	3	4	5	6	7																					
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