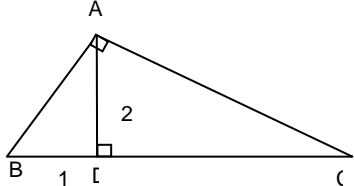
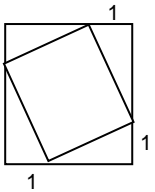
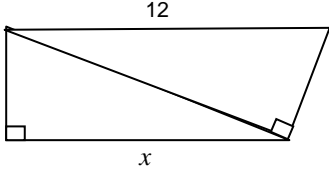
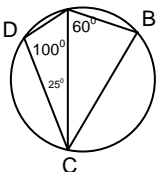
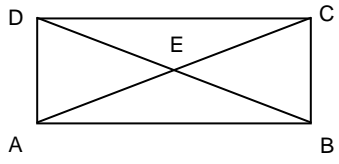
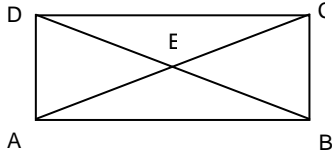
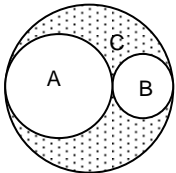
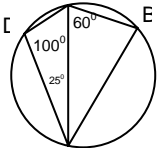
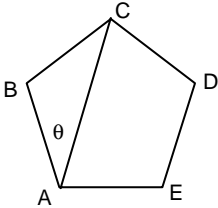
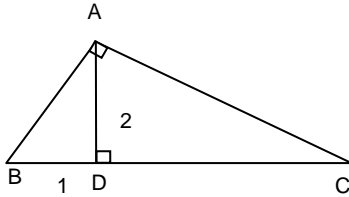
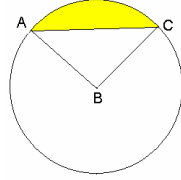
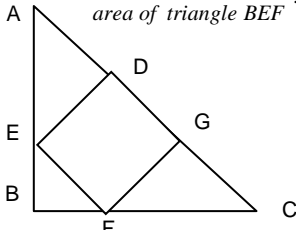
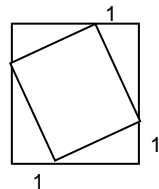


<p>A1</p> <p>Solve for <math>x</math>:</p> $x^2 - 6x + 9 = (x - 3)^{-1}$	<p>A2</p> <p>Find the area of an equilateral triangle of side 2.</p>	<p>A3</p> <p>The points <math>(a, 2a+3)</math> and <math>(4a, 5a+6)</math> lie on a line of slope 2. Find <math>a</math>.</p>	<p>A4</p> <p><math>\angle BAC = 90^\circ = \angle ADB</math>, <math>BD = 1</math>, and <math>AD = 2</math>. <math>AC = ?</math></p> 	<p>A5</p> $x + \frac{1}{x} = 3$ $x^2 + \frac{1}{x^2} = ?$
<p>A6</p> <p>Evaluate</p> $\sin(20^\circ) + \sin(340^\circ)$	<p>A7</p> <p>Evaluate</p> $\log_{\frac{1}{8}} 8$	<p>A8</p> <p>How many integers from 10 through 99 have 2 as exactly one digit?</p>	<p>A9</p> $x^{\frac{2}{5}} y = 3$ $xy^2 = 18$ $x = ?$	<p>A10</p> <p>Evaluate <math>\theta</math> in degrees if</p> $\cos(\theta) + \cos(2\theta) = 0$ <p>and</p> $0^\circ < \theta < 90^\circ.$
<p>A11</p> <p>The inner square has area 5. Each right triangle has leg 1. Find the area of the outer square.</p> 	<p>A12</p> <p>Solve for <math>x</math>:</p> $4^{5+x} = 8^x$	<p>A13</p>  <p><math>x = ?</math></p>	<p>A14</p> <p>Jack is twice as old as Jill. Seven years ago, he was three times as old as she was. How old is Jill now?</p>	<p>A15</p> $a^2 - b^2 = 31$ <p><math>a</math> and <math>b</math> are positive integers.</p> $a = ?$
<p>A16</p> <p>Simplify</p> $6 \log_8(2^x)$	<p>A17</p> <p>What is the area of the triangle formed by the <math>y</math>-axis and the lines</p> $y = x + 3$ $y = 2x - 7$	<p>A18</p> $f(x) = 5x + 3$ <p>for all <math>x</math>. Solve for <math>a</math>: <math display="block">f(f(a)) = 4a.</math></p>	<p>A19</p> <p>Find the volume in cubic inches of a cube with surface area <math>150 \text{ in.}^2</math></p>	<p>A20</p> <p>Find the minimum value of</p> $x^2 + 6x + 2005$ <p>for all real numbers <math>x</math>.</p>

<p>A21 A, B, C, D lie in order on a circle. <math>\angle ACD = 25^\circ</math>, <math>\angle ADC = 100^\circ</math>, and <math>\angle BAC = 60^\circ</math>. <math>\angle ACB = ?</math></p> 	<p>A22 Simplify <math display="block">\frac{x^9 - x^{-5}}{x^{-6} - x^8}</math></p>	<p>A23 If <math display="block">f^{-1}(x) = \frac{2x + 1}{3x - 2}</math> find <math>f(1)</math>.</p>	<p>A24 When 3 coins are tossed, what is the probability that exactly 2 are heads?</p>	<p>A25 Evaluate <math>\sec^2(\tan^{-1} 3)</math>.</p>
<p>A26 Find the area of the triangle with vertices (2,1), (0,0), and (1,-2).</p>	<p>A27 Switching the digits of a two-digit number reduces the number by 45. One digit is 3. What is the other?</p>	<p>A28 Solve for x: <math> x + 2  -  x - 2  = 2</math></p>	<p>A29 Simplify <math>(x + i)^2 + (x + 1)^2 + (x - i)^2 + (x - 1)^2</math> for <math>i^2 = -1</math>.</p>	<p>A30 <math>2005^{x^2+x+1} = 2005^{x^3-1}</math> <math>x = ?</math></p>
<p>A31 ABCD is a rectangle. <math>\frac{\text{area}(ABE)}{\text{area}(ADE)} = ?</math></p> 	<p>A32 Simplify <math display="block">\sin\left(\frac{\pi}{8}\right)\cos\left(\frac{\pi}{8}\right)\cos\left(\frac{\pi}{4}\right)</math></p>	<p>A33 If <math>f(x) = x^{2005} + 2005x + 1003</math>, find <math>f(2005) + f(-2005)</math>.</p>	<p>A34 Six points lie on a circle. How many lines contain pairs of the points?</p>	<p>A35 <math>2\log_{10}(x + 1) = \log_{10}(x^2 + 4)</math> <math>x = ?</math></p>
<p>A36 Find the greatest distance between two points on the graph of <math>x^2 - 2x + y^2 = 8</math></p>	<p>A37 True or False: <math>(.75)^{1/3} + .1 &lt; 1</math></p>	<p>A38 Solve for x: <math>(x - 2005)^3 - (2005 - x)^3 = 16</math></p>	<p>A39 Solve for x: <math>\left(x + \frac{401}{4}\right)^2 - \left(x - \frac{401}{4}\right)^2 = 2005</math></p>	<p>A40 Solve for x: <math>10^x + 2005^x = 2</math></p>

<p>B1</p> <p>Solve for the real number <math>x</math>:</p> $x^2 - 6x + 9 = (x - 3)^{-1}$	<p>B2</p> <p>What is the greatest common divisor of 999 and 1002?</p>	<p>B3</p> <p>ABCD is a rectangle.</p> $\frac{\text{area}(ABE)}{\text{area}(ADE)} = ?$ 	<p>B4</p> <p>What is the remainder when <math>x^6 - 7x^3 + 1</math> is divided by <math>x - 2</math>?</p>	<p>B5</p> <p>True or False:</p> $(.75)^{1/3} + .1 < 1$
<p>B6</p> <p>Circles A, B, and C are pairwise tangent. Their centers lie on a line. The radius of circle A is twice the radius of circle B.</p> <p>Simplify <math>\frac{\text{shaded area}}{\text{area of circle B}}</math></p> 	<p>B7</p> <p>Simplify</p> $\frac{x^9 - x^{-5}}{x^{-6} - x^8}$	<p>B8</p> <p>Jack is twice as old as Jill. Seven years ago, he was three times as old as she was.</p> <p>How old is Jill now?</p>	<p>B9</p> <p>Solve for <math>x</math>:</p> $4^{5+x} = 8^x$	<p>B10</p> <p>Solve for <math>x</math>:</p> $10^x + 2005^x = 2$
<p>B11</p> <p>Find the volume in cubic inches of a cube with surface area <math>150 \text{ in.}^2</math></p>	<p>B12</p> <p>Find the slope of the line through the points <math>(2005, 2005^2)</math> and <math>(2004, 2004^2)</math>.</p> <p>Simplify.</p>	<p>B13</p> $x^2 + 6x = c$ <p>has only one solution.</p> <p>What is <math>c</math>?</p>	<p>B14</p> <p>A, B, C, D lie in order on a circle.</p> <p><math>\angle ACD = 25^\circ</math>,  <math>\angle ADC = 100^\circ</math>, and  <math>\angle BAC = 60^\circ</math>. <math>\angle ACB = ?</math></p> 	<p>B15</p> $a^2 - b^2 = 31$ <p><math>a</math> and <math>b</math> are positive integers.</p> <p><math>a = ?</math></p>
<p>B16</p> <p>Find the minimum value of <math>x^2 + 6x + 2005</math> for all real numbers <math>x</math>.</p>	<p>B17</p> <p>What is the least common multiple of 1203 and 2005?</p>	<p>B18</p> <p>ABCDE is a regular pentagon. Evaluate <math>\theta = \angle BAC</math> in degrees.</p> 	<p>B19</p> <p>Solve for <math>x</math>:</p> $\left(x^{\frac{1}{2}} - 2\right)^{\frac{1}{2}} = 3\left(x^{\frac{1}{2}} + 2\right)^{-\frac{1}{2}}$	<p>B20</p> <p>How many integers from 10 through 99 have 2 as exactly one digit?</p>

<p>B21  <math>\angle BAC = 90^\circ = \angle ADB</math>, <math>BD = 1</math>, and <math>AD = 2</math>.  <math>AC = ?</math></p> 	<p>B22  Rationalize the denominators and simplify</p> $\frac{1}{\sqrt{1+\sqrt{2}}} + \frac{1}{\sqrt{2+\sqrt{3}}} + \frac{1}{\sqrt{3+\sqrt{4}}}$	<p>B23  <math>x^2 + 9x + 5</math> has roots <math>r</math> and <math>s</math>.  Evaluate and simplify <math>rs</math>.</p>	<p>B24  When 3 coins are tossed, what is the probability that exactly 2 are heads?</p>	<p>B25  A and C lie on a circle with center B. <math>\angle ABC = 90^\circ</math> and <math>AB = 2</math>. Find the shaded area.</p> 
<p>B26  <math>x + \frac{1}{x} = 3</math>  <math>x^2 + \frac{1}{x^2} = ?</math></p>	<p>B27  Six points lie on a circle. How many lines contain pairs of the points?</p>	<p>B28  How many different integers <math>r</math> satisfy <math>r^3 - 3r + 2 = 0</math>?</p>	<p>B29  ABC is an isosceles right triangle. DEFG is a square. Simplify <math>\frac{\text{area of square DEFG}}{\text{area of triangle BEF}}</math>.</p> 	<p>B30  <math>x^{2/5} y = 3</math>  <math>xy^2 = 18</math>  <math>x = ?</math></p>
<p>B31  <math>2005^{x^2+x+1} = 2005^{x^3-1}</math>  <math>x = ?</math></p>	<p>B32  <math>x^2 + kx + 7</math> has integer roots.  <math>k &gt; 0</math>  <math>k = ?</math></p>	<p>B33  A lies on the circle with diameter <math>BC = 7</math>.  If <math>AB = 3</math>, evaluate <math>AC</math>.</p>	<p>B34  Set A has 10 elements. <math>A \cap B</math> has 2 elements, and <math>A \cup B</math> has 17. How many elements does B have?</p>	<p>B35  <math>a + b = ab</math>  <math>a + 7b = 3ab</math>  <math>b \neq 0</math>  <math>a = ?</math></p>
<p>B36  Switching the digits of a two-digit number reduces the number by 45. One digit is 3. What is the other?</p>	<p>B37  Solve for <math>x</math>:  <math>\sqrt{x^2} - x = 6</math></p>	<p>B38  The inner square has area 5. Each right triangle has leg 1. Find the area of the outer square.</p> 	<p>B39  Solve for <math>x</math>:  <math>(x - 2005)^3 - (2005 - x)^3 = 16</math></p>	<p>B40  Solve for <math>x</math>:  <math>\left(x + \frac{401}{4}\right)^2 - \left(x - \frac{401}{4}\right)^2 = 2005</math></p>