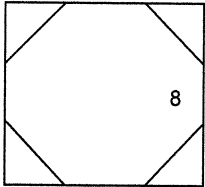
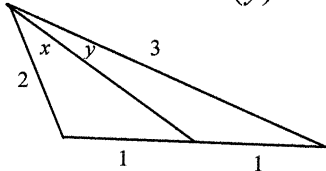
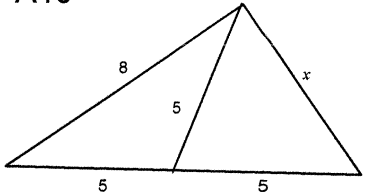
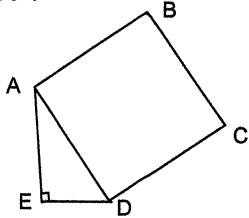
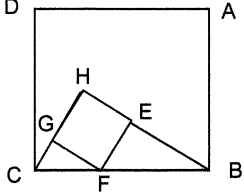
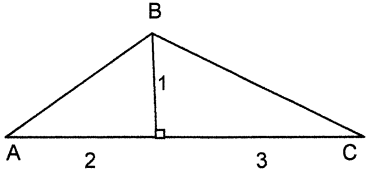
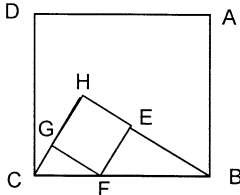
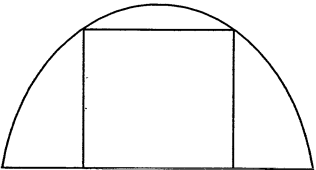
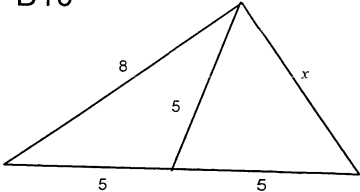
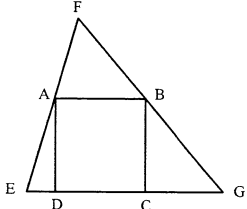


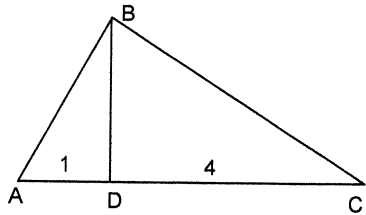
<p>A1 The line of slope m through $(1,0)$ has the same y-intercept as the line of slope $2m$ through $(1,1)$. Find m.</p>	<p>A2 Four triangles are cut from a square to leave a regular octagon with sides of length 8. Find the area of one of the four triangles.</p> 	<p>A3 Evaluate $f(1) + f(2) + \dots + f(2008)$ for $f(n) = (-1)^n n$.</p>	<p>A4 Evaluate $\frac{1}{\sqrt{x+3} - \sqrt{x}}$ if $\sqrt{x+3} + \sqrt{x} = 6$.</p>	<p>A5 Evaluate $f(1) + f(2) + \dots + f(2008)$ for $f(n) = (-1)^n n$.</p>
<p>A6 $ax^2 - 2x + 5$ takes its smallest value for $x = 1$. Find a.</p>	<p>A7 $\frac{\sin(x)}{\sin(y)} = ?$</p> 	<p>A8 Evaluate $\log_4 2 - \log_{16} 4$</p>	<p>A9 Solve for x: $(x^{5/3} - 64)^2 = x^{10/3}$</p>	<p>A10  $x = ?$</p>
<p>A11 Evaluate $(1 + 3 + 5 + \dots + 19)^{1/2}$</p>	<p>A12 A line of slope -2 has x and y intercepts that sum to 24. What is the x intercept?</p>	<p>A13 $f(x) = \frac{9x + 5}{2x + 3}$ for all x. Evaluate $f^{-1}(4)$.</p>	<p>A14 Solve for x: $3^x + 6^x = 1/2$</p>	<p>A15 Square ABCD has area 12. $\angle EAD = 30^\circ$. EA = ?</p> 
<p>A16 If $\log_{10}(x) = y$ and $\log_{10}(x^2) = y + 3$, find x.</p>	<p>A17 Find the area of the trapezoid bounded by the lines $x = 0$, $y = 0$, $2x + 3y = 6$, and $2x + 3y = 12$.</p>	<p>A18 Dividing $x^3 - kx + 5$ by $x - 2$ leaves remainder 1. Find k.</p>	<p>A19 $\sin u = 1/3 = \cos v$ $0^\circ < u < 90^\circ$ $0^\circ < v < 90^\circ$ $\sin(u + v) = ?$</p>	<p>A20 A circle centered at the origin contains $(3,1)$. Find the slope of the tangent line at $(3,1)$.</p>

<p>A21 Let r be the infinite series $10^{-1} + 10^{-2} + 10^{-3} + \dots$ Evaluate r^{-1}.</p>	<p>A22 For how many integers x does the inequality $x(x - 3/2)(x - 7/2)(x - 15/2) < 0$ hold?</p>	<p>A23 ABCD and EFGH are squares. GC = 1 and GF = 2. Find the area of square ABCD.</p> 	<p>A24 $(\cos \angle ABC)^2 = ?$</p> 	<p>A25 What is the probability that a coin comes up heads at least once in three flips?</p>
<p>A26 The line through the points $(-1, h)$ and $(h, 2)$ is parallel to the line through $(3, h)$ and $(h, 5)$. Find h.</p>	<p>A27 The system of equations $x + y + z = 1$ $x + 2y + 3z = 3$ $x + 3y + 5z = b$ has infinitely many solutions for what real number b?</p>	<p>A28 Solve for x: $\log_{10}(x^2 - 25) - \log_{10}(x + 5) = 1$.</p>	<p>A29 A car travels 120 miles per hour on a circular racetrack of radius 1 mile. How many minutes does a lap take?</p>	<p>A30 For how many integers k does $kx^2 + 9x + k$ have real roots?</p>
<p>A31 How many integers from 10 through 99 have two different digits?</p>	<p>A32 a, b, and c are positive integers. $(a + bi)^2 = 7 + ci$ for $i^2 = -1$. $c = ?$</p>	<p>A33 Write $(3 + \sqrt{5})^{\frac{1}{2}}(3 - \sqrt{5})^{\frac{3}{2}} = a + b\sqrt{5}$ for integers a and b. Find b.</p>	<p>A34 Find k if $f(x) = 3x - k$ for all x and $f(f(2)) = 10$.</p>	<p>A35 $2 x + 3 = x - 3$ $-3 < x < 3$ $x = ?$</p>
<p>A36 $x^2 + 6x + y^2 + 8y = k$ is a circle of radius 9 for what real number k?</p>	<p>A37 What positive number is 1 more than 12 times its reciprocal?</p>	<p>A38 How many solutions are there to $\sin x = 2/3$ for $0^\circ < x < 2008^\circ$?</p>	<p>A39 Solve for x: $(7 - 251^{-1}) \left(7 - \frac{8}{x} \right)^{-1} = 1$</p>	<p>A40 $y = -x^2 + mx + 3$ has maximum value 3. $m = ?$</p>

<p>B1 If $x + 2y = 3$ and $x^2 - 4y^2 = 15$, find x.</p>	<p>B2 ABCD and EFGH are squares. GC = 1 and GF = 2. Find the area of square ABCD.</p> 	<p>B3 A line of slope -2 has x and y intercepts that sum to 24. What is the x intercept?</p>	<p>B4 a and b are positive integers. $(a + b\sqrt{2})^2 = 9 + 4\sqrt{2}$ $b = ?$</p>	<p>B5 How many integers from 10 through 99 have two different digits?</p>
<p>B6 Find the area of a square inscribed in a semicircle of radius 5.</p> 	<p>B7 Solve for x: $\sqrt{x-9} + \sqrt{x} = 9$.</p>	<p>B8 Find the area of the quadrilateral with vertices (0,0), (0,2), (6,6), and (2,0).</p>	<p>B9 $2 x+3 = x-3$ $-3 < x < 3$ $x = ?$</p>	<p>B10</p>  <p>$x = ?$</p>
<p>B11 What is the probability that a coin comes up heads at least once in three flips?</p>	<p>B12 Simplify $\frac{x^{12} - 1}{(x^6 - 1)(x^2 + 1)}$</p>	<p>B13 The line of slope m through (1,0) has the same y-intercept as the line of slope $2m$ through (1,1). Find m.</p>	<p>B14 Let r be the infinite series $10^{-1} + 10^{-2} + 10^{-3} + \dots$ Evaluate r^{-1}.</p>	<p>B15 A car travels 120 miles per hour on a circular racetrack of radius 1 mile. How many minutes does a lap take?</p>
<p>B16 $3 + \sqrt{5}$ is a root of $x^2 + bx + c$ for integers b and c. What is b?</p>	<p>B17 Evaluate and simplify $\frac{1}{5} + \frac{1}{5 \cdot 4} + \frac{1}{4 \cdot 3} + \frac{1}{3 \cdot 2} + \frac{1}{2 \cdot 1}$</p>	<p>B18 Dividing $x^3 - kx + 5$ by $x - 2$ leaves remainder 1. Find k.</p>	<p>B19 ABCD is a square of area 36. DE = 2, CG = 4. Find the area of $\triangle ABF$.</p> 	<p>B20 Solve for r and simplify: $r^9 = 999^3 + 3(999^2) + 3(999) + 1$</p>

B21

$\angle ABC = 90^\circ$. $\angle ADB = 90^\circ$.
 $AD = 1$, $CD = 4$.
 area $\triangle ABC =$



B22

Evaluate $r + 1$
 if $r^3 - r^2 - r + 1 = 0$
 and $r \neq 1$.

B23

What positive
 number is 1 more
 than 12 times its
 reciprocal?

B24

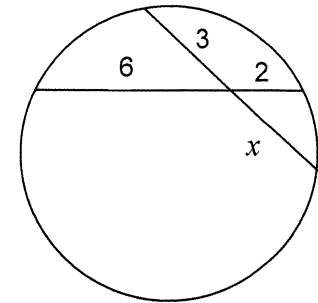
Evaluate

$$\frac{1}{\sqrt{x+3} - \sqrt{x}}$$

if

$$\sqrt{x+3} + \sqrt{x} = 6.$$

B25

 $x = ?$ 

B26

$ax^2 - 2x + 5$ takes
 its smallest value
 for $x = 1$.
 Find a .

B27

$r^2 + s^2 = 12$.
 $r + s = 4$.
 Evaluate rs .

B28

Evaluate
 $(1 + 3 + 5 + \dots + 19)^{\frac{1}{2}}$

B29

$AB = 8$, $BC = 6$,
 $AC = 10$.
 M is the midpoint
 of A and C .
 $MB = ?$

B30

Solve for x :
 $8^{2x-2008} = 4^x$

B31

The system of equations
 $x + y + z = 1$
 $x + 2y + 3z = 3$
 $x + 3y + 5z = b$
 has infinitely many
 solutions for what real
 number b ?

B32

Find the greatest
 common divisor of
 $12^3 - 12$ and $11^3 - 11$.

B33

Solve for x :

$$\left(7 - 251^{-1}\right) \left(7 - \frac{8}{x}\right)^{-1} = 1$$

B34

Solve for x :

$$3^x + 6^x = \frac{1}{2}$$

B35

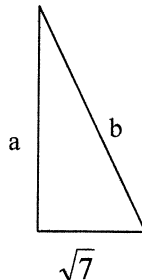
The line through the
 points $(-1, h)$ and $(h, 2)$
 is parallel to the line
 through $(3, h)$ and $(h, 5)$.
 Find h .

B36

For how many
 positive integers
 k does
 $kx^2 + 9x + k$
 have real roots?

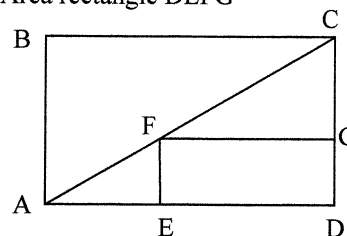
B37

If a and b are integers, what
 is b ?



B38

$CF = 2AF$,
 Evaluate
 $\frac{\text{Area rectangle } ABCD}{\text{Area rectangle } DEFG}$



B39

41 is the n th prime
 number.
 Find n .

B40

What is the largest
 integer that is a
 factor of both
 2008 and
 $2008^2 + 12$?