Solve It

Math A Regents Problems

Jan 00 #4 / 2 pts

Which expression is a factor of $x^2 + 2x - 15$?

(1) $(x-3)$ (3) $(x+15)$
(2) $(x+3)$ (4) $(x-5)$

Jan 00 #11 / 2 pts

If $9x + 2a = 3a - 4x$, then x equals

(1) a (3) $\frac{15a}{12}$
(2) $-a$ (4) $\frac{a}{13}$

Jan 00 #14 / 2 pts

Sterling silver is made of an alloy of silver and copper in the ratio of 37:3. If the mass of a sterling silver ingot is 600 grams, how much silver does it contain?

(1) 48.65 g (3) 450 g
(2) 200 g (4) 555 g

Jan 00 #15 / 2 pts

If $t = -3$, then $3t^2 + 5t + 6$ equals

(1) –36 (3) 6
(2) –6 (4) 18

Jan 00 #19 / 2 pts

When $3a^2 - 2a + 5$ is subtracted from $a^2 + a - 1$, the result is

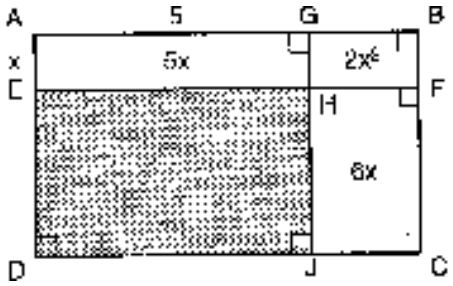
(1) $2a^2 - 3a + 6$ (3) $2a^2 - 3a - 6$
(2) $-2a^2 + 3a - 6$ (4) $-2a^2 + 3a + 6$

Jan 00 #22 / 2 pts

Mary and Amy had a total of 20 yards of material from which to make costumes. Mary used three times more material to make her costume than Amy used, and 2 yards of material was not used. How many yards of material did Amy use for her costume?

Jan 00 #28 / 3 pts

In the figure below, the large rectangle, *ABCD*, is divided into four smaller rectangles. The area of rectangle *AEHG* = $5x$, the area of rectangle *GHFB* = $2x^2$, the area of rectangle *HJCF* = $6x$, segment *AG* = 5, and segment *AE* = x.



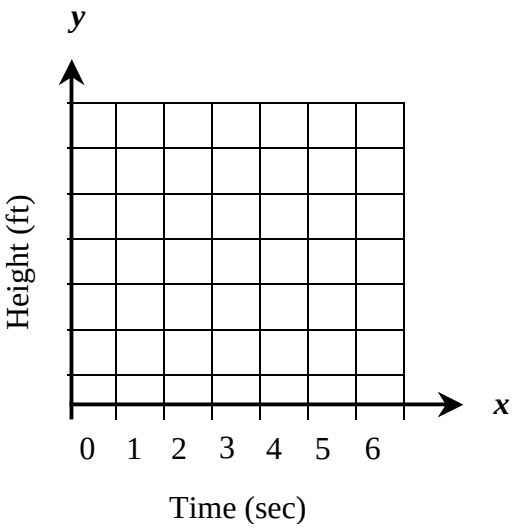
a) Find the area of the shaded region.

b) Write an expression for the area of rectangle *ABCD* in terms of x.

Jan 00 #31 / 4 pts

Amy tossed a ball in the air in such a way that the path of the ball was modeled by the equation $y = -x^2 + 6x$. In the equation, y represents the height of the ball in feet and x is the time in seconds.

a) Graph $y = -x^2 + 6x$ for $0 \leq x \leq 6$ on the grid provided below.



b) At what time, x, is the ball at its highest point?

Jun 00 #4 / 2 pts

Two numbers are in the ratio 2:5. If 6 is subtracted from their sum, the result is 50. What is the larger number?

(1) 55 (3) 40
(2) 45 (4) 35

Jun 00 #10 / 2 pts

A truck travels 40 miles from point A to point B in exactly 1 hour. When the truck is halfway between point A and point B, a car starts from point A and travels at 50 miles per hour. How many miles has the car traveled when the truck reaches point B?

(1) 25 (3) 50
(2) 40 (4) 60

Jun 00 #10 / 2 pts

A truck travels 40 miles from point *A* to point *B* in exactly 1 hour. When the truck is halfway between point *A* and point B, a car starts from point *A* and travels at 50 miles per hour. How many miles has the car traveled when the truck reaches point B?

(1) 25 (3) 50
(2) 40 (4) 60

Jun 00 #14 / 2 pts

If rain is falling at the rate of 2 inches per hour, how many inches of rain will fall in *x* minutes?

(1) $2x$ (3) $\frac{60}{x}$
(2) $\frac{30}{x}$ (4) $\frac{x}{30}$

Jun 00 #15 / 2 pts

The expression $(x-6)^2$ is equivalent to

(1) x^2-36 (3) $x^2-12x+36$
(2) x^2+36 (4) $x^2+12x+36$

Jun 00 #18 / 2 pts

The graphs of the equations $y = x^2 + 4x - 1$ and $y + 3 = x$ are drawn on the same set of axes. At which point do the graphs intersect?

(1) (1,4) (3) (–2,1)
(2) (1,–2) (4) (–2,–5)

Jun 00 #19 / 2 pts

If $2x^2\ \ 4x+6$ is subtracted from $5x^2+8x-2$, the difference is

(1) $3x^2+12x-8$ (3) $3x^2+4x+4$
(2) $-3x^2-12x+8$ (4) $-3x^2-4x+4$

Jun 00 #35 / 4 pts

The area of the rectangular playground enclosure at South School is 500 square meters. The length of the playground is 5 meters longer than the width. Find the dimensions of the playground, in meters.

[Only an algebraic solution will be accepted.]

Aug 00 #5 / 2 pts Which table does *not* show an example of direct variation?

(1)

x	*y*
1	4
2	8
3	12
4	16

(3)

x	*y*
1	1/2
2	1
3	3/2
4	2

(2)

x	*y*
2	24
4	12
6	8
8	6

(4)

x	*y*
-4	-20
-3	-15
-2	-10
-1	-5

Aug 00 #9 / 2 pts Which equation represents a line parallel to the line $y = 2x - 5$?

(1) $y = 2x + 5$ (3) $y = 5x - 2$
(2) $y = -\frac{1}{2}x - 5$ (4) $y = -2x - 5$

Aug 00 #12 / 2 pts The solution set for the equation $x^2 - 2x - 15 = 0$ is

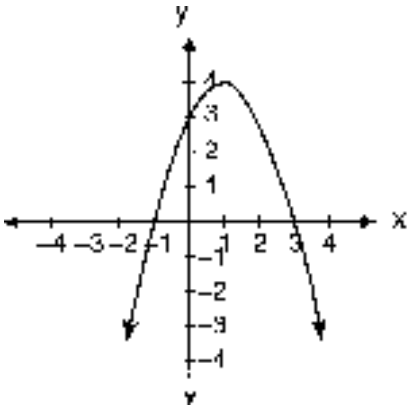
(1) {5,3} (3) {–5,3}
(2) {5,–3} (4) {–5,–3}

Aug 00 #15 / 2 pts Solve for x: $15x - 3(3x + 4) = 6$

(1) 1 (3) 3
(2) $-\frac{1}{2}$ (4) $\frac{1}{3}$

Aug 00 #17 / 2 pts

Which is an equation of the parabola shown in the accompanying diagram?



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

Aug 00 #19 / 2 pts

A girl can ski down a hill five times as fast as she can climb up the same hill. If she can climb up the hill and ski down in a total of 9 minutes, how many minutes does it take her to climb up the hill?

(1) 1.8 (3) 7.2
(2) 4.5 (4) 7.5

Aug 00 #20 / 2 pts

When $3x^2 - 2x + 1$ is subtracted from $2x^2 + 7x + 5$, the result will be

(1) $-x^2 + 9x + 4$ (3) $-x^2 + 5x + 6$
(2) $x^2 - 9x - 4$ (4) $x^2 + 5x + 6$

Aug 00 #24 / 2 pts

The sum of the ages of the three Romano brothers is 63. If their ages can be represented as consecutive integers, what is the age of the middle brother?

Jan 01 #5 / 2 pts

One of the factors of $4x^2 - 9$ is

(1) $(x + 3)$ (3) $(4x - 3)$
(2) $(2x + 3)$ (4) $(x - 3)$

Jan 01 #8 / 2 pts

The sum of $3x^2 + 4x - 2$ and $x^2 - 5x + 3$ is

(1) $4x^2 + x - 1$ (3) $4x^2 + x + 1$

(2) $4x^2 - x + 1$ (4) $4x^2 - x - 1$

Jan 01 #13 / 2 pts

Which equation could represent the relationship between the x and y values shown in the accompanying table?

x	y
0	2
1	3
2	6
3	11
4	18

(1) $y = x + 2$ (3) $y = x^2$

(2) $y = x^2 + 2$ (4) $y = 2^x$

Jan 01 #16 / 2 pts

If $bx - 2 = K$, then x equals

(1) $\frac{K}{b} + 2$ (3) $\frac{2 - k}{b}$

(2) $\frac{K - 2}{b}$ (4) $\frac{K + 2}{b}$

Jan 01 #17 / 2 pts

In a molecule of water, there are two atoms of hydrogen and one atom of oxygen. How many atoms of hydrogen are in 28 molecules of water?

(1) 14 (3) 42

(2) 29 (4) 56

Jan 01 #25 / 2 pts Two trains leave the same station at the same time and travel in oppo-site directions. One train travels at 80 kilometers per hour and the other at 100 kilometers per hour. In how many hours will they be 900 kilometers apart?

Bees

Math A Regents Problems

Jan 00 #1 / 2 pts

The expression $\sqrt{93}$ is a number between

(1) 3 and 9
(2) 8 and 9
(3) 9 and 10
(4) 46 and 47

Jan 00 #2 / 2 pts

Which number has the greatest value?

(1) $1\frac{2}{3}$
(2) $\sqrt{2}$
(3) $\frac{\pi}{2}$
(4) 1.5

Jan 00 #12 / 2 pts

If the circumference of a circle is 10π inches, what is the area, in square inches, of the circle?

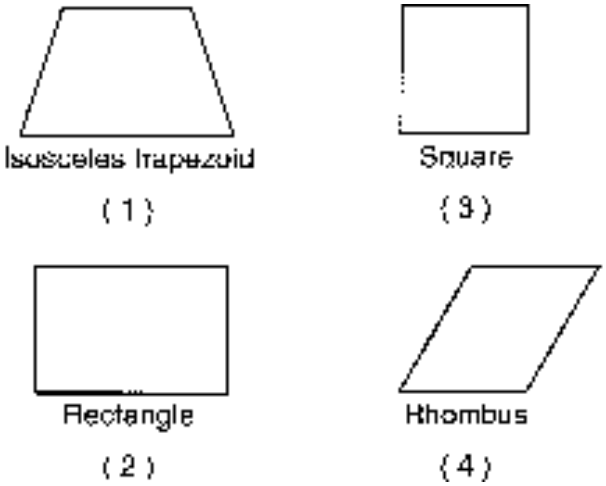
(1) 10π
(2) 25π
(3) 50π
(4) 100π

Jan 00 #3 / 3 pts

The volume of a rectangular pool is 1,080 cubic meters; Its length, width, and depth are in the ratio 10:4:1. Find the number of meters in each of the three dimensions of the pool.

Jun 00 #2 / 2 pts

Which geometric figure has one and only one line of symmetry?



Jun 00 #9 / 2 pts

The set of integers {3,4,5} is a Pythagorean triple. Another such set is

(1) {6,7,8} (3) {6,12,13}
(2) {6,8,12} (4) {8,15,17}

Jun 00 #28 / 3 pts

Tamika has a hard rubber ball whose circumference measures 13 inches. She wants to box it for a gift but can only find cube-shaped boxes of sides 3 inches, 4 inches, 5 inches, or 6 inches. What is the *smallest* box that the ball will fit into with the top on?

Aug 00 #7 / 2 pts

The volume of a cube is 64 cubic inches. Its total surface area, in square inches, is

(1) 16 (3) 96
(2) 48 (4) 576

Aug 00 #16 / 2 pts

The expression $2\sqrt{50} - \sqrt{2}$ is equivalent to

(1) $2\sqrt{48}$ (3) $9\sqrt{2}$

(2) 10 (4) $49\sqrt{2}$

Aug 00 #23 / 2 pts

Kerry is planning a rectangular garden that has dimensions of 4 feet by 6 feet. Kerry wants one-half of the gardens to have roses, and she says that the rose plot will have dimensions of 2 feet by 3 feet. Is she correct? Explain.

Aug 00 #27 / 3 pts

To measure the length of a hiking trail, a worker uses a device with a 2-foot-diameter wheel that counts the number of revolutions the wheel makes. If the device reads 1,100.5 revolutions at the end of the trail, how many miles long is the trail, to the *nearest tenth of a mile?*

Aug 00 #31 / 4 pts

Mr. Santana wants to carpet exactly half of his rectangular living room. He knows that the perimeter of the room is 96 feet and that the length of the room is 6 feet longer than the width. How many square feet of carpeting does Mr. Santana need?

Aug 00 #35 / 4 pts

Jack is building a rectangular dog pen that he wishes to enclose. The width of the pen is 2 yards less than the length. If the area of the dog pen is 15 square yards, how many yards of fencing would he need to completely enclose the pen?

Jan 01 #3 / 2 pts

If $x > 0$, the expression $\left(\sqrt{x}\right)\left(\sqrt{2x}\right)$ is equivalent to

(1) $\sqrt{2x}$ (3) $x^2\sqrt{2}$

(2) $2x$ *(4)* $x\sqrt{2}$

Jan 01 #10 / 2 pts

Helen is using a capital **H** in an art design. The **H** has

(1) only one line of symmetry
(2) only two points of symmetry
(3) two lines of symmetry and only one point of symmetry
(4) two lines of symmetry and two points of symmetry

Jan 01 #23 / 2 pts

A cardboard box has length $x - 2$, width $x + 1$, and height $2x$.

a) Write an expression, in terms of x, to represent the volume of the box.

b) If $x = 8$ centimeters, what is the number of cubic centimeters in the volume of the box?

Cookies

Math A Regents Problems

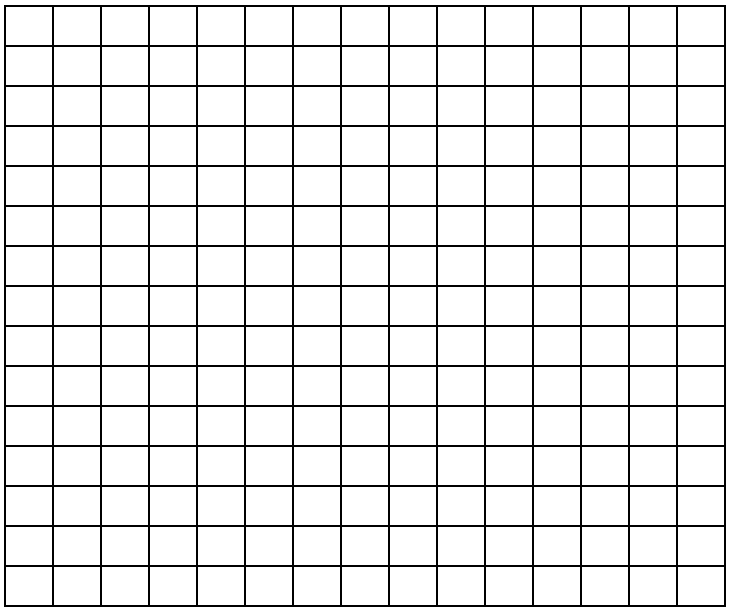
Jan 00 #7/ 2 pts

When the point (2,–5) is reflected in the *x*-axis, what are the coordinates of its image?

(1) (–5,2) (3) (2,5)
(2) (–2,5) (4) (5,2)

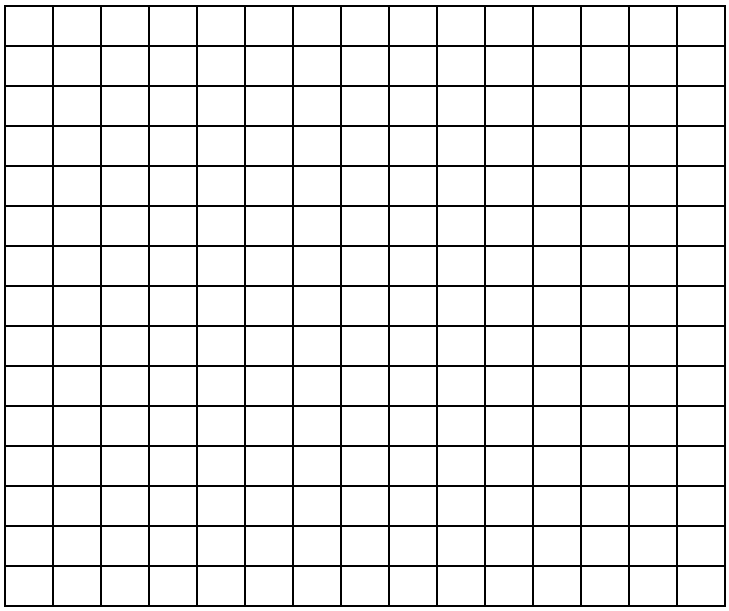
Jan 00 #21 / 2 pts

The midpoint *M* of liner segment *AB* has coordinates (–3,4). If point *A* is the origin, (0,0), what are the coordinates of point *B*? [The use of the accompanying grid is optional.]



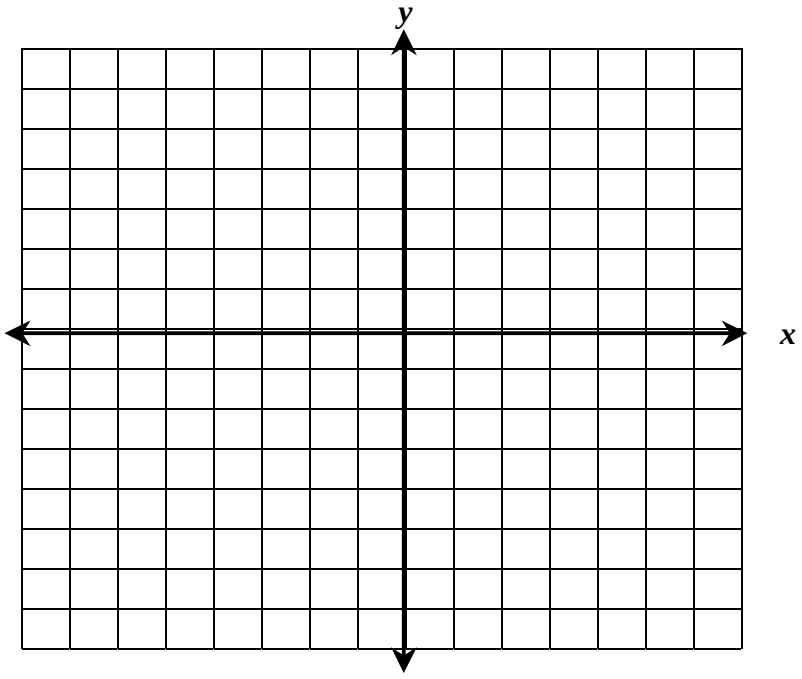
Jan 00 #1 / 2 pts

A straight line with slope 5 contains the points (1,2) and (3,K). Find the value of K. [The use of the accompanying grid is optional.]



Jan 00 #29 / 3 pts

a) On the set of axes provided below, sketch a circle with a radius of 3 and a center at (2,1) and also sketch the graph of the line $2x + y = 8$.



What is the total number of points of intersection of the two graphs?

Jan 00 #29 / 3 pts

a) On the set of axes provided below, sketch a circle with a radius of 3 and a center at (2,1) and also sketch the graph of the line $2x + y = 8$.

What is the total number of points of intersection of the two graphs?

Jan 00 #33 / 4 pts

A group of 148 people is spending five days at a summer camp. The cook ordered 12 pounds of food for each adult and 9 pounds of food for each child. A to al of 1,410 pounds of food was ordered.

a) Write an equation or a system of equations that describes the above situation and define your variables.

b) Using your work from part a, find:

1. the total number of adults in the group

2. the total number of children in the group

Jun 00 #1 / 2 pts Which inequality is represented in the graph below?

(1) $-4 < x < 2$ (3) $-4 < x \leq 2$

(2) $-4 \leq x < 2$ (4) $-4 \leq x \leq 2$

Jun 00 #7 / 2 pts Which ordered pair is the solution of the following system of equations?

$$3x + 2y = 4$$
$$-2x + 2y = 24$$

(1) (2,–1) (3) (–4,8)
(2) (2,–5) (4) (–4,–8)

Jun 00 #8 / 2 pts Which equation represents a circle whose center is (3,–2)?

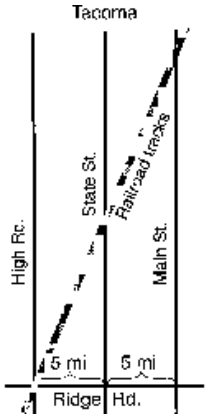
(1) $(x + 3)^2 + (y - 2)^2 = 4$
(2) $(x - 3)^2 + (y + 2)^2 = 4$
(3) $(x + 2)^2 + (y - 3)^2 = 4$
(4) $(x - 2)^2 + (y + 3)^2 = 4$

Aug 00 #13 / 2 pts What is the value of y in the following system of equations?

$$2x + 3y = 6$$
$$2x + y = -2$$

(1) 1 (3) –3
(2) 2 (4) 4

Aug 00 #21 / 2 pts The accompanying diagram shows a section of the city of Tacoma. High Road, State Street, and Main Street are parallel and 5 miles apart. Ridge Road is perpendicular to the three parallel streets. The distance between the intersection of Ridge Road and State Street and where the railroad tracks cross State Street is 12 miles. What is the distance between the intersection of Ridge Road and Main Street and where the railroad tracks cross Main Street?


Tacoma
High Rd.
State St.
Railroad tracks
Main St.
5 mi
5 mi
Ridge
Rd.

Jan 01 #34 / 4 pts

There were 100 more balcony tickets than main-floor tickets sold for a concert. The balcony tickets sold for $4 and the main-floor tickets sold for $12. The total amount of sales for both types of tickets was $3,056.

a) Write an equation or a system of equations that describes the given situation. Define the variables.

b) Find the number of balcony tickets that were sold.

All About Alice

Math A Regents Problems

Jan 00 #8 2 pts

The expression $\left(x^2z^3\right)\left(xy^2z\right)$ is equivalent to

(1) $x^2y^2z^3$ (3) $x^3y^3z^4$

(2) $x^3y^2z^4$ (4) $x^4y^2z^5$

Jan 00 #18 / 2 pts

If the number of molecules in 1 mole of a substance is 6.02×10^{23}, then the number of molecules in 100 moles is

(1) 6.02×10^{21} (3) 6.02×10^{24}

(1) 6.02×10^{22} (3) 6.02×10^{25}

Jun 00 #6 / 2 pts

What is the inverse of the statement "If it is sunny, I will play baseball"?

(1) If I play baseball, then it is sunny.
(2) If it is not sunny, I will not play baseball.
(3) If I do not play baseball, then it is not sunny.
(4) I will play baseball if and only if it is sunny.

Jun 00 #20 / 2 pts

What is the value of 3^{-2}?

(1) $\frac{1}{9}$ (3) 9

(2) $-\frac{1}{9}$ (4) -9

Jun 00 #29 / 3 pts

The distance from Earth to the imaginary planet Med is 1.7×10^7 miles. If a spaceship is capable of traveling 1,420 miles per hour, how many days will it take the spaceship to reach the planet Med? Round your answer to the *nearest day*.

Aug 00 #1 / 2 pts

The product of $2x^3$ and $6x^5$ is

(1) $10x^8$ (3) $10x^{15}$
(2) $12x^8$ (4) $12x^{15}$

Aug 00 #4 / 2 pts

Expressed in decimal notation, 4.726×10^{-3} is

(1) 0.004726 (3) 472.6
(2) 0.04726 (4) 4,726

Jan 01 #11 / 2 pts

The distance from Earth to the Sun is approximately 93 million miles. A scientist would write that number as

(1) 9.3×10^6 (3) 93×10^7
(2) 9.3×10^7 (4) 93×10^{10}

End of Year

Math A Regents Problems

Jan 00 #16 / 2 pts The expression $\frac{y}{x} - \frac{1}{2}$ is equivalent to

(1) $\frac{2y-x}{2x}$ (3) $\frac{1-y}{2x}$

(2) $\frac{x-2y}{2x}$ (4) $\frac{y-1}{x-2}$

Jan 00 #20 / 2 pts The distance between parallel lines λ. How many points are equidistant from lines λ and *m* and 8 units from point *A*?

(1) 1 (3) 3

(2) 2 (4) 4

Jun 00 #3 / 2 pts Which number is rational?

(1) $\neq$ (3) $\sqrt{7}$

(2) $\frac{5}{4}$ (4) $\sqrt{\frac{3}{2}}$

Jun 00 #5 / 2 pts The quotient of $-\frac{15x^8}{5x^2}, x \uparrow 0,$ is

(1) $-3x^4$ (3) $-3x^6$

(2) $-10x^4$ (4) $-10x^6$

Jun 00 #11 / 2 pts

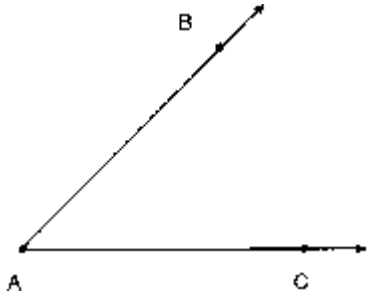
If $a \uparrow 0$ and the sum of x and $\frac{1}{a}$ is 0, then

(1) $x = a$ (3) $x = -\frac{1}{a}$

(2) $x = -a$ (4) $x = 1 - a$

Jun 00 #22 / 2 pts

Using only a ruler and compass, construct the bisector of angle *BAC* in the accompanying diagram.



Jun 00 #32 / 4 pts

A treasure map shows a treasure hidden in a park near a tree and a statue. The map indicates that the tree and the statue are 10 feet apart. The treasure is buried 7 feet from the base of the tree and also 5 feet from the base of the statue. How many places are possible locations for the treasure to be buried? Draw a diagram of the treasure map, and indicate with an **X** *each* possible location of the treasure.

Aug 00 #6 / 2 pts

If a < b, c < d, and a, b, c, and d are all greater than 0, which expression is always true?

(1) $a - c + b - d = 0$ (3) $\frac{a}{d} > \frac{b}{c}$

(2) $a + c > b + d$ (4) $ac < bd$

Aug 00 #10 / 2 pts The operation * for the set $\{p,r,s,v\}$ is defined in the accompanying table. What is the inverse element of r under the operation *?

*	p	r	s	v
p	s	v	p	r
r	v	p	r	s
s	p	r	s	v
v	r	s	v	p

(1) p (3) s
(2) r (4) v

Aug 00 #14 / 2 pts What is the converse of the statement "If it is sunny, I will go swimming"?

(1) If it is not sunny, I will not go swimming.
(2) If I do not go swimming, then it is not sunny.
(3) If I go swimming, it is sunny.
(4) I will go swimming if and only if it is sunny.

Aug 00 #22 / 2 pts Perform the indicated operation and express the result in simplest terms:

$$\frac{x}{x+3} \div \frac{3x}{x^2-9}$$

Jan 01 #7 / 2 pts If a and b are integers, which equation is always true?

(1) $\frac{a}{b} = \frac{b}{a}$ (3) $a - b = b - a$

(2) $a + 2b = b + 2a$ (4) $a + b = b + a$

Jan 01 #9 / 2 pts

If $x \neq 0$, the expression $\frac{x^2 + 2x}{x}$ is equivalent to

(1) $x + 2$ (3) $3x$

(2) 2 (4) 4

Jan 01 #12 / 2 pts

Given the statement: "If two sides of a triangle are congruent, then the angles opposite these sides are congruent."

Given the converse of the statement: "If two angles of a triangle are congruent, then the sides opposite these angles are congruent."

What is true about this statement and its converse?

(1) Both the statement and its converse are true.
(2) Neither the statement nor its converse is true.
(3) The statement is true but its converse is false.
(4) The statement is false but its converse is true.

Jan 01 #14 / 2 pts

A locker combination system uses three digits from 0 to 9. How many different three-digit combinations with no digit repeated are possible?

(1) 30 (3) 720
(2) 504 (4) 1,000

Jan 01 #31 / 2 pts

Solve algebraically for x: $\frac{1}{x} = \frac{x + 1}{6}$