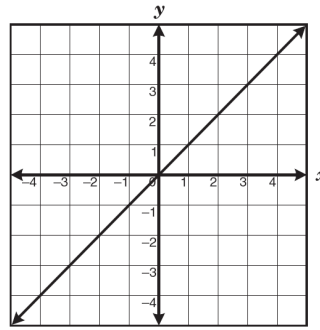A function is described by the equation $y = 2x^2 - 5x - 3$, in which y is dependent on x. If a value for the independent variable is selected from the set $\{-4, -1, 0, 2, 5\}$, which of the following is a corresponding dependent value?
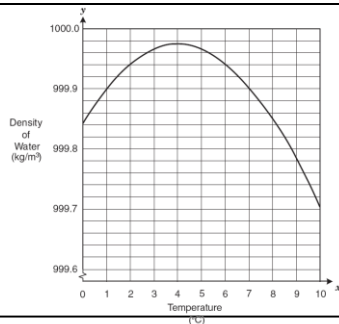
A   9

B   −6

C   −5

D   0

July '06 Obj 2 - # 5

The graph represents which type of parent function?

F   Exponential

G   Absolute value

H   Linear

J   Quadratic

July '06 Obj 2 - # 36

The graph shows the relationship between temperature and the density of water. Which of the following statements best describes this relationship?

F   The density of water increases as temperature increases between 4°C and 10°C.

G   The density of water decreases as temperature increases between 0°C and 4°C.

H   The density of water decreases as temperature increases between 4°C and 10°C.

J   The density of water remains constant as temperature increases.

July '06 Obj 2 - # 8

Simplify the algebraic expression:

$$\frac{3}{5}\left(15a^2b - 40ab^2\right) + \frac{2}{3}\left(33ab^2 - 6a^2b\right)$$

F $5a^2b - 2ab^2$

G $31a^2b - 28ab^2$

H $a^2b + 3ab^2$

J $15a^2b + 18ab^2$

July '06 Obj 2 - # 44

Brian was 1 out of 25 students who took a practice college entrance exam. No two students scored the same on the exam. If x represents the number of students who scored higher than Brian, which expression represents the number of students who scored lower than Brian?

F $24 - x$

G $x - 24$

H $25 - x$

J $x - 25$
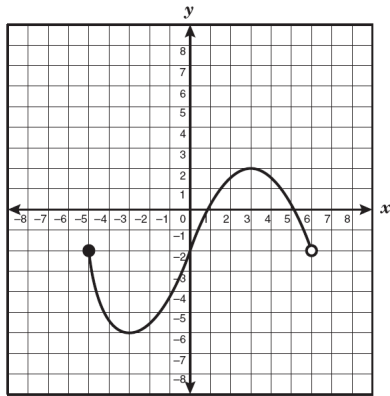
July '06 Obj 2 - # 26

Simplify the polynomial:

$$-3x(7x - 4) + 6x - (13 - 24x^2)$$

F $3x^2 + 18x - 13$

G $-24x^2 - 15x - 17$

H $-24x^2 + 10x - 17$

J $3x^2 + 18x + 13$

April '06 Obj 2 - # 6

Mr. Maxwell asked his students to identify the domain represented by the function graphed below. Which of the following student responses is correct?

F	$-5 \leq x < 6$
G	$-6 \leq x \leq 2$
H	$-5 \leq x < -2$
J	Not here

April '06 Obj 2 - # 12

Which equation is the parent function of a quadratic equation?

A	$y = \sqrt{x}$
B	$y = x$
C	$y = |x|$
D	$y = x^2$

April '06 Obj 2 - # 57

The graph below shows the amount of force needed to stretch a certain spring to various distances. Which of the following best represents the difference between the amount of force in pounds needed to stretch the spring to 10 inches and the amount needed to stretch it to 4 inches?
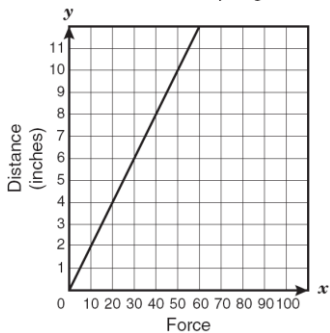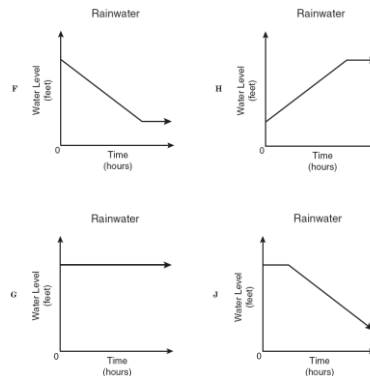

F	6
G	14
H	30
J	70

April '06 Obj 2 - # 48

The water level in a creek was at a maximum height after a heavy rain. The water level in the creek receded at a constant rate for several hours until it leveled off to its regular height. Which of the following graphs best represents this information?

Feb '06 Obj 2 - # 4

A sporting-goods store sold a total of 80 backpacks at the beginning of a new school year. Each backpack sold for either $35 or $50, not including tax. If x represents the number of $35 backpacks the store sold, which expression represents the total amount of money in dollars from the sales of the two kinds of backpacks, not including tax?

F	$35x + 50(x - 80)$
G	$50x + 35(80 - x)$
H	$35x + 50(80 - x)$
J	$50x + 35(x - 80)$

April '06 Obj 2 - # 56

Which of the following is equivalent to $2x - 3y \geq 9$?

F	$y \geq \dfrac{3}{2}x + 3$
G	$y \leq \dfrac{2}{3}x - 3$
H	$y \geq \dfrac{2}{3}x - 3$
J	$y \leq \dfrac{3}{2}x + 3$

Feb '06 Obj 2 - # 18

The blocks below are arranged in sequence to show a pattern. Which expression can be used to determine the number of blocks at Stage *n*?

Stage 1 Stage 2 Stage 3 Stage 4
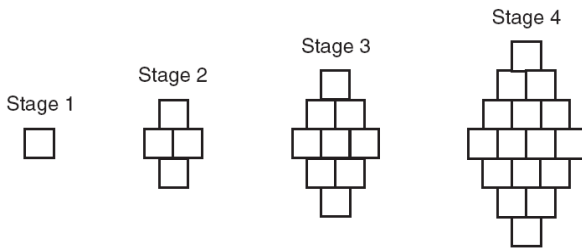
F $\sqrt{n}$

G $(n-1)+1$

H $2n$

J n^2

Feb '06 Obj 2 - # 28

Which of the following does not describe the graph of the parent function of a quadratic equation?

A The graph has its vertex at the origin.

B The graph is a parabola that opens upward.

C The graph has the *x*-axis as its line of symmetry.

D The graph has a minimum value at (0, 0).

Dec '06 Obj 2 - # 23

The graph of the function $y = \sqrt{25 - x^2}$ is shown on the coordinate grid below. What is the domain of the function?
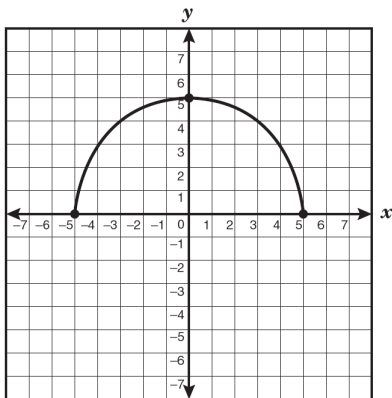
F $x \le 5$

G $x \ge -5$

H $-5 \le x \le 5$

J $0 \le x \le 5$

Feb '06 Obj 2 - # 50

An appliance store put one kind of refrigerator and one kind of freezer on sale. The total sales of these two appliances were $8000. The refrigerator was on sale for $750, and the freezer was on sale for $325. If *f* represents the number of freezers sold, which expression can be used to determine the number of refrigerators sold during this sale?

A $(8000 - 325f)/???$

B $(8000 - 750f)/???$

C $8000 - 750f$

D $8000 - 325f$

Dec '06 Obj 2 - # 33

A physicist determines the kinetic energy of a moving particle by multiplying one-half the particle's mass, *m*, by the square of the particle's velocity, *v*. The kinetic energy is best represented by —

A $\dfrac{mv^2}{2}$

B $2mv^2$

C $\dfrac{(mv)^2}{2}$

D $\dfrac{mv}{2}$

Feb '06 Obj 2 - # 53

In a recent survey conducted at a mall, 18 people between the ages of 10 and 35 were asked how many sit-ups they do for exercise on a weekly basis. The data are shown in the scatterplot. According to the data, what is the relationship between a person's age and the number of sit-ups done on a weekly basis?
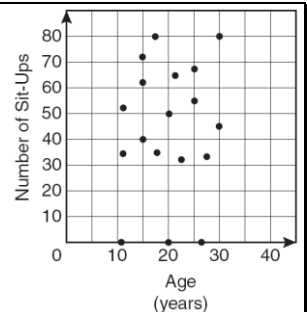
F The younger a person is, the more sit-ups the person does weekly.

G The older a person is, the more sit-ups the person does weekly.

H There is a constant correlation between the age of a person and the number of sit-ups done weekly.

J There is no correlation between a person's age and the number of sit-ups done weekly.

Dec '06 Obj 2 - # 48

Below are congruent isosceles triangles arranged in a sequence to obtain a geometric pattern. Which expression can be used to find the perimeter of a composite figure made up of t triangles arranged in this pattern?
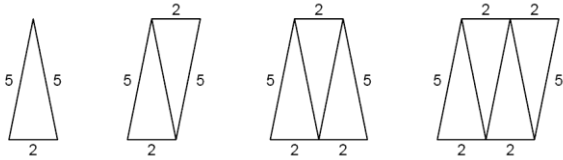
F $12t$
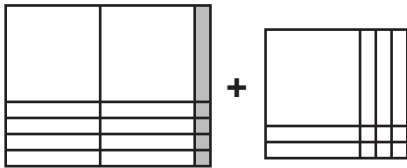
G $2t + 10$

H $5t + 2$

J $12t - 5$

Dec '06 Obj 2 - # 56

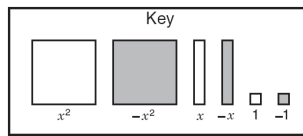If $(-3.5, y)$ is a solution to the equation $2x - 5y = 10$, what is the value of y?

F -3.4

G 13.75

H -0.6

J -3.75

Oct '06 Obj 2 - # 28

Look at the two polynomials modeled below using algebra tiles. Which expression describes the sum of the two polynomials in terms of x?
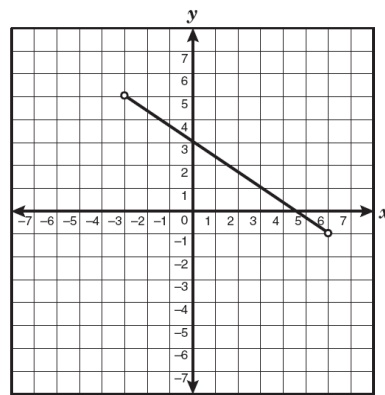

F $3x^2 + 12x - 10$

G $3x^4 + 12x^2 - 2$

H $3x^2 + 12x + 2$

J $2x^4 + 35x^2 - 24$

Key

x^2 $-x^2$ x $-x$ 1 -1

Dec '06 Obj 2 - # 58

Which inequality best represents the domain of the function shown on the graph?

F $-3 \leq x \leq 6$

G $-3 < x < 6$

H $-1 < x < 5$

J $-1 \leq x \leq 5$

Oct '06 Obj 2 - # 30

The squares are arranged in a sequence to show a pattern. The table shows the perimeter of each figure formed by the squares in the five pattern stages. Each side of a square represents 1 unit. If this pattern were to continue, which expression could be used to determine the perimeter of the figure at stage n?


Stage 1   Stage 2   Stage 3   Stage 4   Stage 5
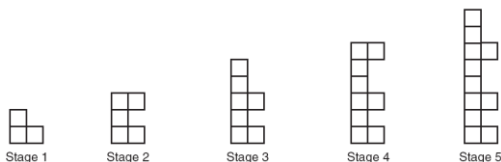
Stage, n	Perimeter, P (units)
1	8
2	12
3	16
4	20
5	24

F $n^2 + 7$

G $2(n^2 + 3)$

H $4(n + 1)$

J $-2(n - 1) + 8n$

Oct '06 Obj 2 - # 6

Lisa stayed to talk to her friends for about 5 minutes after school. Then she started to walk home. Halfway home she realized that she had forgotten her math book, so she ran back to school in half the time that she had already spent walking. Lisa took about 2 minutes to get her book and then walked home. She got home approximately 35 minutes after school was over. Which graph best represents this scenario?
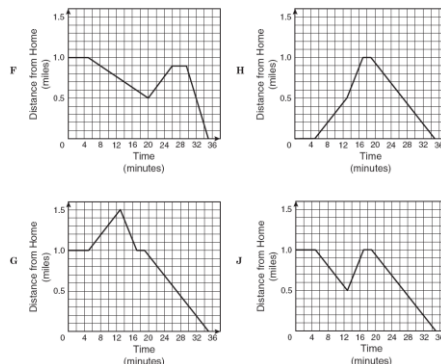
Oct '06 Obj 2 - # 34

A certain fan operates at a rate of 30 rotations per second at high speed. When the fan is turned off, the rate of rotation decreases at a constant rate of 6 rotations per second. If t represents the time in seconds after the fan has been turned off, which expression can be used to determine the number of seconds for the fan to come to a complete stop?

F	$30t - 6$
G	$\dfrac{30}{6}t$
H	$30 - 6t$
J	$\dfrac{30 - 6}{t}$

Oct '06 Obj 2 - # 42