

# HIGH SCHOOL Math TEKS FOCUS

## Objective Two

### Algebra (b2A)

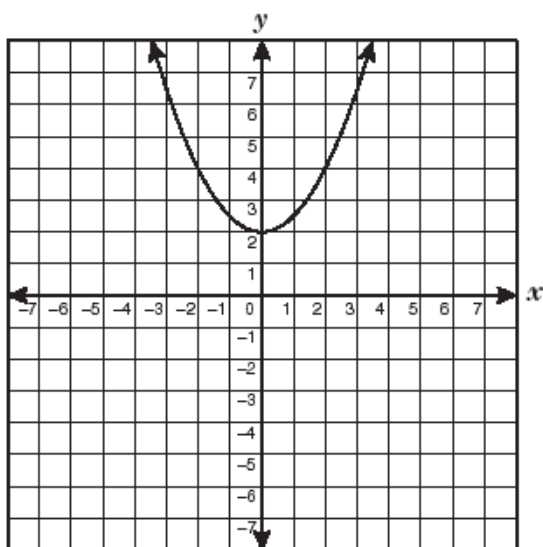
Identify & sketch the general forms of linear ( $y=x$ ) and quadratic ( $y=x^2$ ) parent functions

- 9 In the graph of the function  $y = x^2 + 5$ , which describes the shift in the vertex of the parabola if, in the function, 5 is changed to  $-2$ ?

- A 3 units up
- B 7 units up
- C 3 units down
- D 7 units down

9th Grade 2003

- 34 Which equation is the parent function of the graph represented below?



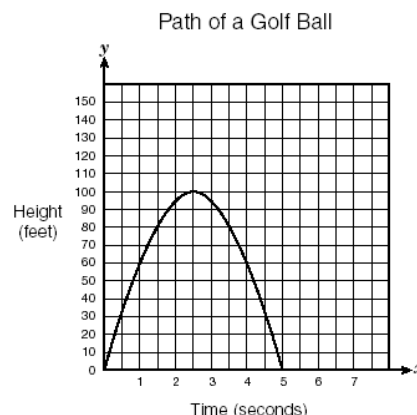
- F  $y = |x|$
- G  $y = x$
- H  $y = x^2$
- J  $y = \sqrt{x}$

11th Grade 2004

### Algebra (b2B)

(For a variety of situations) identify the mathematical domains & ranges and determine reasonable domain & range values for given situations

- 14 The graph shows the path of a golf ball.

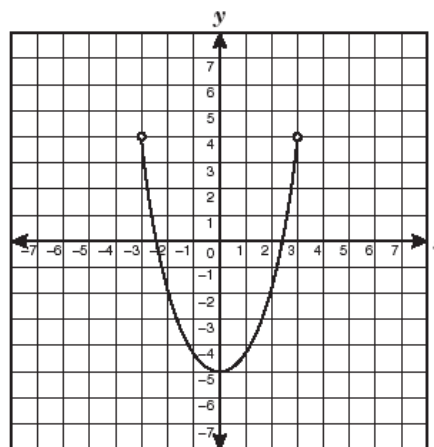


What is the range of this function?

- F  $0 < y < 100$
- G  $0 \leq y \leq 100$
- H  $0 \leq x \leq 5$
- J  $0 < x < 5$

10th Grade 2003

- 27 What is the domain of the function shown on the graph?



- A  $-3 \leq x \leq 3$
- B  $-3 < x < 3$
- C  $-5 < x \leq 4$
- D  $-5 \leq x < 4$

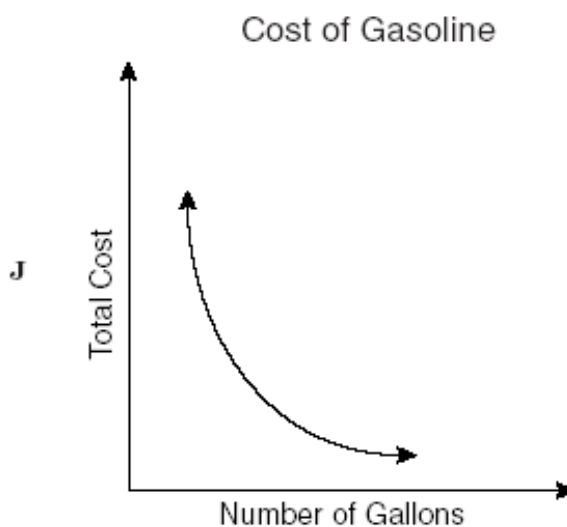
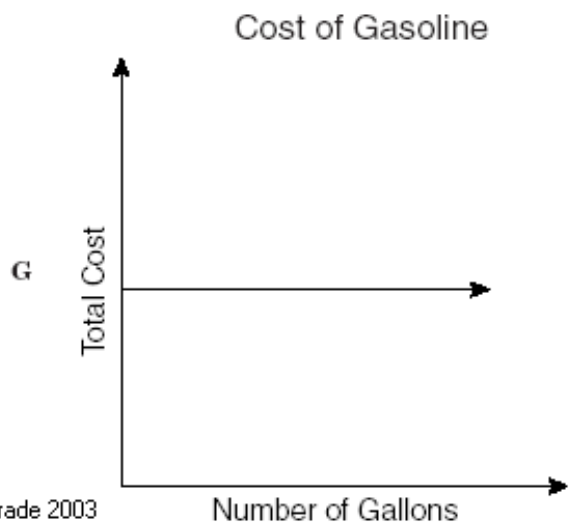
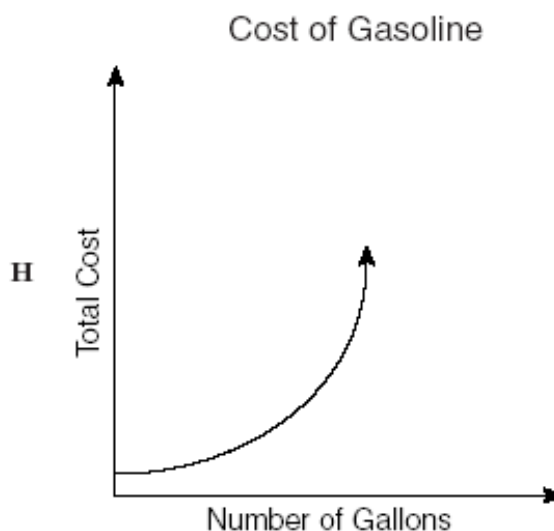
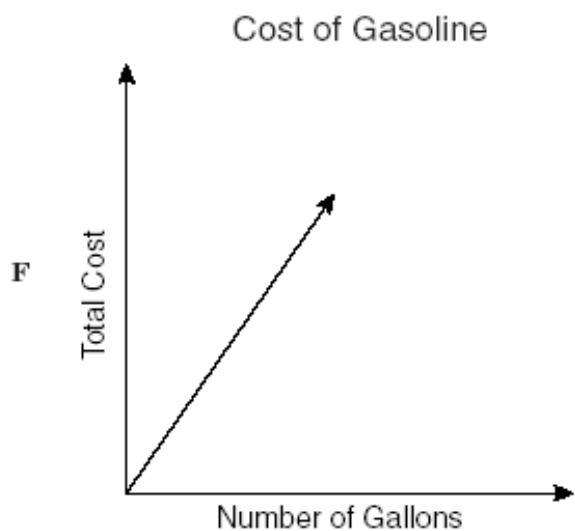
11th Grade 2004

High School Math TEKS Focus  
Objective Two

Algebra (b2C)

Interpret situations in terms of given graphs or create situations that fit given graphs

- 48 Identify the graph that best represents the relationship between the number of gallons of gasoline Mr. Johnson purchased at \$1.49 a gallon and the total cost of his gasoline.



9th Grade 2003

# High School Math TEKS Focus Objective Two

47 Which statement is true for the graph below?



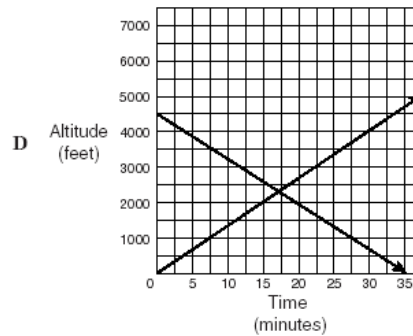
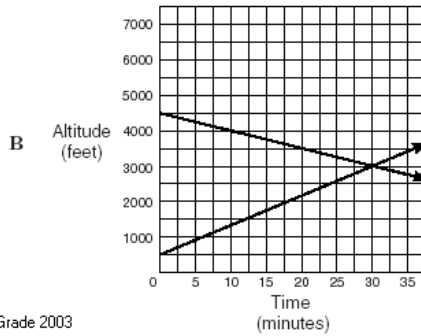
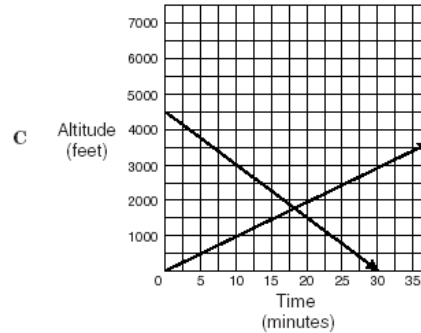
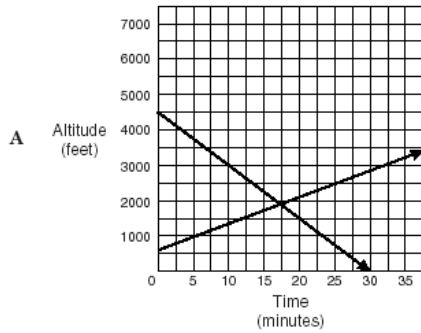
- A Ms. Goodlett will earn \$500 if she sells \$5000 worth of merchandise.
- B Mr. Murphy will not earn any money if he does not sell any merchandise.
- C Mr. Laster will earn \$1000 if he sells \$1000 worth of merchandise.
- D Ms. Cho will earn \$700 if she sells \$5000 worth of merchandise.

9th Grade 2004

# HIGH SCHOOL Math TEKS FOCUS

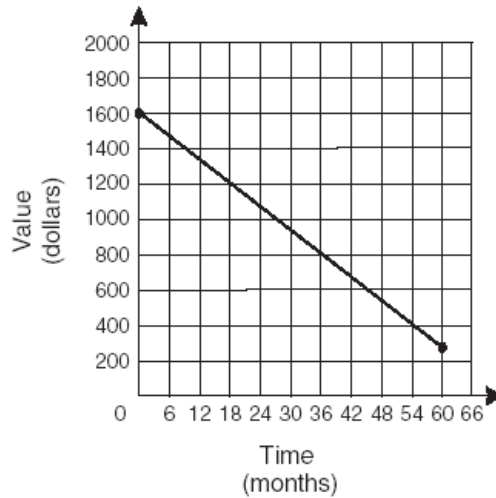
## Objective Two

- 37 At the Dallas-Fort Worth International Airport, a DC-10, at 4500 feet, is descending toward the east runway at a rate of 150 feet per minute, and a 727, at 600 feet, is climbing at a rate of 75 feet per minute. Which graph shows when the two planes will be at the same altitude?



11th Grade 2003

- 47 The graph below shows the decrease in the value of a personal computer over a period of 60 months.



Which is a reasonable conclusion about the value of this personal computer during the time shown on the graph?

- A Its value at 18 months was twice its value at 36 months.
- B Its value at 36 months was half its value at 54 months.
- C It depreciated \$200 every 12 months.
- D It depreciated \$400 every 18 months.

11th Grade 2004

## HIGH SCHOOL Math TEKS FOCUS Objective Two

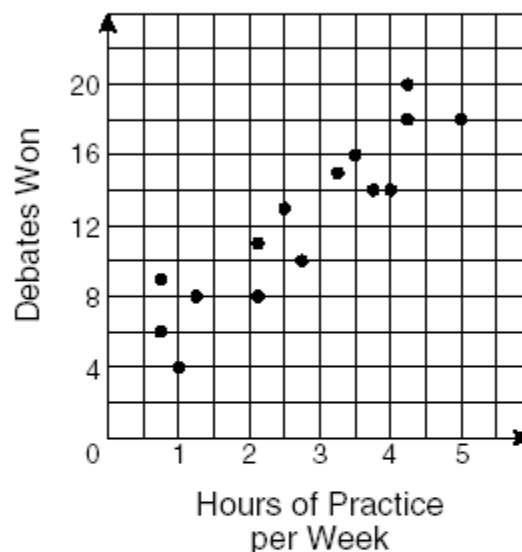
### Algebra (b2D)

*(In solving problems) collect & organize data, make and interpret scatter plots & models, predict and make decisions & critical judgments*

- 11 Monica collected data on the ages and heights of a random sample of sixth-, seventh-, and eighth-grade students at her school. If she plots the data on a scatterplot, what relationship will she most likely see between age and height?
- A A negative correlation
  - B No correlation
  - C A positive correlation
  - D A constant correlation

9th Grade 2003

- 12 The coaches of a group of debate teams answered a survey about hours of debate team practice and number of team wins. The graph shows the results of this survey.



Based on these results, if a team practices 4 hours per week next season, which is the best estimate of the number of debates the team can expect to win?

- F 1
- G 12
- H 16
- J 20

10th Grade 2004

- 60 The energy output from a chemical reaction is dependent on the amount of chemicals used. The table shows this relationship.

Amount of Chemicals (moles)	Energy Output (joules)
5	20
8	32
12	48
15	60

What is a reasonable amount of energy output from the reaction of 32 moles of the chemicals?

- F 77 joules
- G 92 joules
- H 110 joules
- J 128 joules

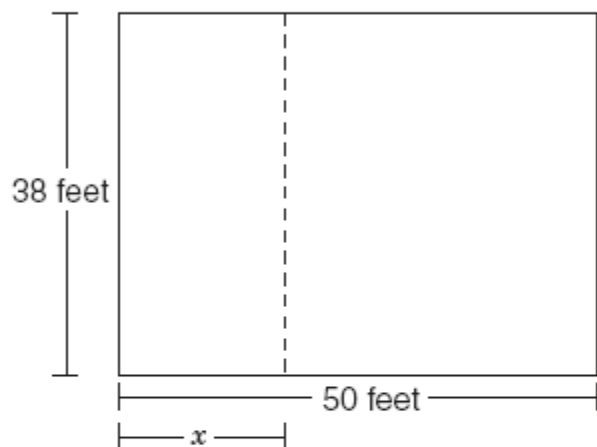
11th Grade 2003

## HIGH SCHOOL Math TEKS FOCUS Objective Two

### Algebra (b3A)

*Use symbols to represent unknowns and variables*

- 19 A large room has the dimensions shown below. A partition is to be installed so that 2 classes can use it. The area of the smaller classroom is  $38x$ . How can the area of the larger classroom be expressed in terms of  $x$ ?



- A  $50 - 38x$   
 B  $\frac{38(50)}{3x}$   
 C  $\frac{(50 - x)}{38}$   
 D  $38(50 - x)$

9th Grade 2003

- 32 Mrs. Franklin received a 7% raise at her job. If she was earning  $x$  dollars per year before, how much is she earning now?

- F  $x + 7$   
 G  $x + 0.07$   
 H  $x + 0.7x$   
 J  $x + 0.07x$

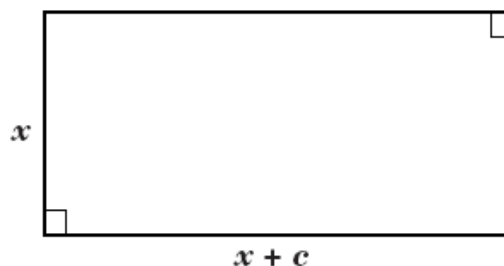
10th Grade 2004

- 45 A class consists of 8 freshmen and 22 sophomores. Freshmen had an average of  $x$  points on a test, while sophomores had an average of  $y$  points. Which expression gives the average test score per student for the entire class?

- A  $\frac{8x + 22y}{30}$   
 B  $\frac{22x + 8y}{30}$   
 C  $30\left(\frac{8}{x} + \frac{y}{22}\right)$   
 D  $\frac{x + y}{2}$

9th Grade 2004

- 53 Which equation best represents the area,  $A$ , of the rectangle below?



- A  $A = 2x + 2(x + c)$   
 B  $A = x^2 + (x + c)^2$   
 C  $A = x(x + c)$   
 D  $A = 2x(x + c)$

10th Grade 2003

# HIGH SCHOOL Math TEKS FOCUS

## Objective Two

### Algebra (b3B)

*(Given situations) look for patterns and represent generalizations algebraically*

- 43 Sue wants to write an expression that will always produce an even integer. Which of the following will always produce an even integer for any given integer,  $n$ ?

- A  $2n + 1$
- B  $2n - 1$
- C  $n + 2$
- D  $2n$

9th Grade 2004

- 4 Which expression can be used to find the values of  $s(n)$  in the table below?

<b><math>n</math></b>	1	2	3	4	5	6
<b><math>s(n)</math></b>	5	8	11	14	?	?

- F  $3n$
- G  $5n$
- H  $n + 4$
- J  $3n + 2$

10th Grade 2004

- 11 Let  $a$  represent the average speed in miles per hour a car traveled on a trip. Let  $f(t)$  represent the distance in miles the car had traveled  $t$  hours after the beginning of the trip. The function  $f(t)$  is best represented by —

- A  $t^2 + a$
- B  $at^2$
- C  $t + a$
- D  $at$

11th Grade 2004

- 54 The figures below show a pattern of dark tiles and white tiles that can be described by a relationship between 2 variables.

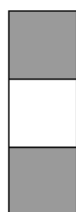


Figure 1

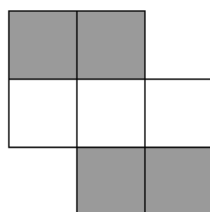


Figure 2

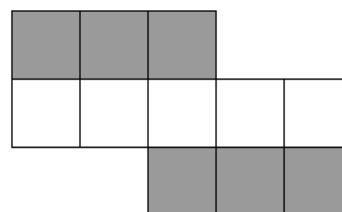


Figure 3

Which rule relates  $d$ , the number of dark tiles, to  $w$ , the number of white tiles?

- F  $d = 2w$
- G  $w = d - 1$
- H  $d = 2w - 2$
- J  $w = \frac{1}{2}d + 1$

11th Grade 2003

**HIGH SCHOOL Math TEKS Focus**  
**Objective Two**

**Algebra (b4A)**

***Find specific function values, simplify polynomial expressions, transform & solve equations, and factors as necessary in problem situations***

**46** The area of a rectangle is given by the equation  $2l^2 - 5l = 18$ , in which  $l$  is the rectangle's length. What is the length of the rectangle?

**F** 1.5

**G** 2

**H** 4.5

**J** 6

9th Grade 2003

**16** The area of a rectangle is  $3x^2 + 14x + 8$ , and the width is  $x + 4$ . Which expression best describes the rectangle's length?

**F**  $3x + 2$

**G**  $2x + 4$

**H**  $2x + 2$

**J**  $3x - 2$

9th Grade 2004

**31** In the equation  $y = 2x^2 - 5x - 18$ , which is a value of  $x$  when  $y = 0$ ?

**A** -18

**B**  $1\frac{1}{2}$

**C** 2

**D**  $4\frac{1}{2}$

10th Grade 2003

**37** After a ball is dropped, the rebound height of each bounce decreases. The equation  $y = 5(0.8)^x$  shows the relationship between  $x$ , the number of bounces, and  $y$ , the height of the bounce, for a certain ball. What is the approximate height of the fifth bounce of this ball to the nearest tenth of a unit?

**A** 20.0 units

**B** 4.0 units

**C** 1.6 units

**D** 1.3 units

10th Grade 2003

**21** Solve the equation  $2a - 6 + 5a = 3a + 10$  for  $a$ .

Record your answer and fill in the bubbles on your answer document. Be sure to use the correct place value.

11th Grade 2003

**HIGH SCHOOL Math TEKS FOCUS**  
**Objective Two**

**Algebra (b4B)**

*Use the commutative, associative, and distributive properties to simplify algebraic expressions*

- 20** Simplify the algebraic expression  $3(x + 3) - 2(x + 3)$ .

**F**  $x + 3$   
**G**  $x - 3$   
**H**  $-6x^2 - 54$   
**J**  $6x^2 + 3$

9th Grade 2004

- 10** Simplify the expression  $3(x + 1) - 2(3x + 7)$ .

**F**  $-3x - 11$   
**G**  $-3x - 10$   
**H**  $-3x - 8$   
**J**  $-3x + 17$

10th Grade 2003

- 1** Simplify the algebraic expression  $5(x + 3)(x + 2) - 3(x^2 + 2x + 1)$ .

**A**  $2x^2 + 7$   
**B**  $2x^2 + 27$   
**C**  $2x^2 + 7x + 7$   
**D**  $2x^2 + 19x + 27$

10th Grade 2004

- 25** Which expression is equivalent to  $5(x^2 - 4x) - (x + 1)$ ?

**A**  $5x^2 - 21x + 1$   
**B**  $5x^2 - 5x - 1$   
**C**  $5x^2 - 21x - 1$   
**D**  $5x^2 - 5x + 1$

10th Grade 2004

- 25** Which expression is equivalent to  $(5n - 2)3n - (5n - 2)(n - 1)$ ?

**A**  $n - 1$   
**B**  $3n^2 - 3n$   
**C**  $10n^2 - 13n + 2$   
**D**  $10n^2 + n - 2$

11th Grade 2003

- 41** Which expression is equivalent to  $\frac{2}{3}(3x - 15y) + (9y - 11x)$ ?

**A**  $-9x - y$   
**B**  $11x - 21y$   
**C**  $10x - 4y$   
**D**  $-9x - 26y$

11th Grade 2004