

High School Math TEKS Focus

Objective Five

Algebra (d1B)

Investigate, describe, and predict the effects of changes in "a" on the graph of $y=ax^2$

- 2 How would the graph of the function $y = x^2 + 4$ be affected if the function were changed to $y = x^2 + 1$?
- F The graph would shift 3 units up.
G The graph would shift 3 units down.
H The graph would shift 3 units to the right.
J The graph would shift 3 units to the left.

9th Grade 2004

- 5 A recycling center pays \$0.35 per pound of glass that it receives. If students at Falcon High School want to raise \$500 in a glass-recycling project, what is a reasonable number of pounds of glass they must collect?

- A 750 lb
B 175 lb
C 500 lb
D 1500 lb

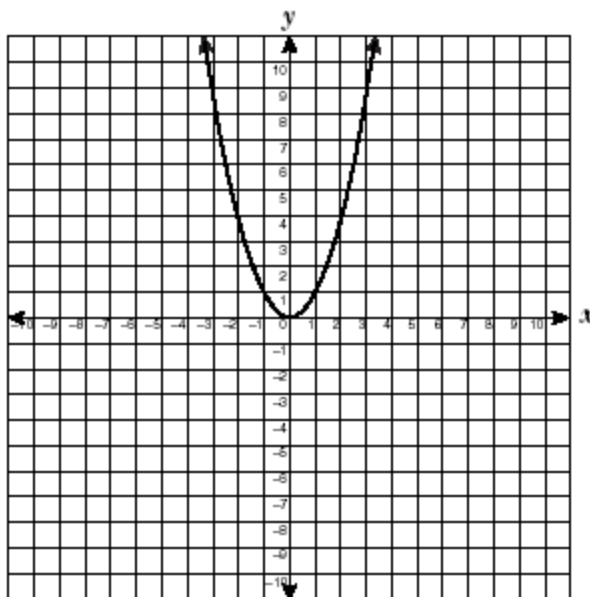
9th Grade 2004

- 17 What is the effect on the graph of the equation $y = -4x^2$ when the equation is changed to $y = 4x^2$?

- A The graph of $y = 4x^2$ is translated 8 units down.
B The graph of $y = 4x^2$ is a reflection of $y = -4x^2$ across the x -axis.
C The graph of $y = 4x^2$ is translated 8 units up.
D The graph of $y = 4x^2$ is a reflection of $y = -4x^2$ across the y -axis.

10th Grade 2004

- 22 The graph of the function $y = x^2$ is given below.



How will the graph be affected if the coefficient of x^2 is decreased to $\frac{1}{4}$?

- F The parabola will be wider.
G The parabola will be narrower.
H The parabola will be translated up.
J The parabola will be translated down.

10th Grade 2003

HIGH SCHOOL Math TEKS Focus
Objective Five

49 Which shows the functions correctly listed in order from widest to narrowest graph?

A $y = -7x^2$, $y = -\frac{1}{7}x^2$, $y = \frac{3}{4}x^2$, $y = 5x^2$

B $y = -\frac{1}{7}x^2$, $y = \frac{3}{4}x^2$, $y = 5x^2$, $y = -7x^2$

C $y = \frac{3}{4}x^2$, $y = -\frac{1}{7}x^2$, $y = 5x^2$, $y = -7x^2$

D $y = -7x^2$, $y = 5x^2$, $y = -\frac{1}{7}x^2$, $y = \frac{3}{4}x^2$

11th Grade 2003

59 Which equation will produce the widest parabola when graphed?

A $y = 2x^2$

B $y = -6x^2$

C $y = -0.6x^2$

D $y = 0.2x^2$

11th Grade 2004

HIGH SCHOOL Math TEKS FOCUS

Objective Five

Algebra (d1C)

Investigate, describe, and predict the effects of changes in "c" on the graph of $y=x^2+c$

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

45 How does the graph of $y = x^2$ differ from the graph of $y = x^2 - 4$?

- A The graph of $y = x^2 - 4$ is wider than the graph of $y = x^2$.
- B The graph of $y = x^2 - 4$ is shifted to the left of the graph of $y = x^2$.
- C The graph of $y = x^2 - 4$ is shifted down from the graph of $y = x^2$.
- D The graph of $y = x^2 - 4$ is narrower than the graph of $y = x^2$.

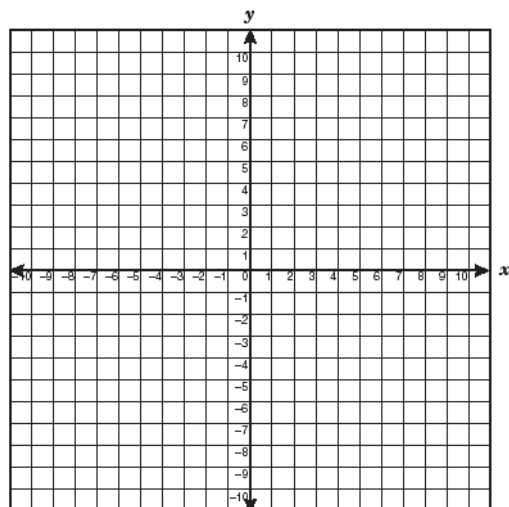
10th Grade 2004

4 What is the effect on the graph of the equation $y = x^2 + 1$ when it is changed to $y = x^2 + 5$?

- F The slope of the graph changes.
- G The curve translates in the positive x direction.
- H The graph is congruent, and the vertex of the graph moves up the y -axis.
- J The graph narrows.

11th Grade 2003

52 When graphed, which function would appear to be shifted 2 units up from the graph of $f(x) = x^2 + 1$?



- F $g(x) = x^2 - 1$
- G $g(x) = x^2 + 3$
- H $g(x) = x^2 - 2$
- J $g(x) = x^2 + 2$

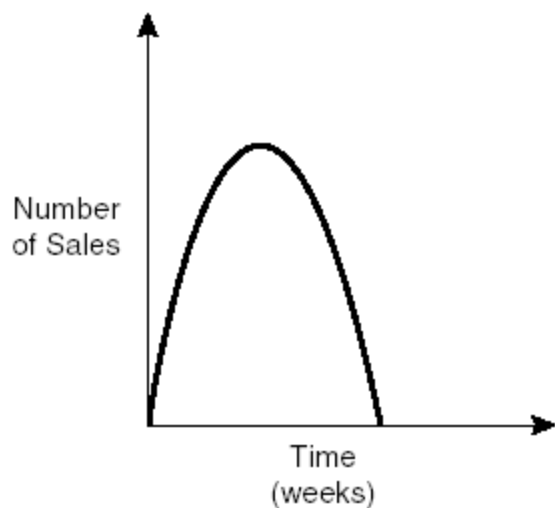
9th Grade 2003

HIGH SCHOOL Math TEKS Focus
Objective Five

Algebra (d1D)

(For problem situations) analyze graphs of quadratic functions and draw conclusions

- 1 The sales record for a recent hit CD at Tony's Music Store is shown on the graph below.



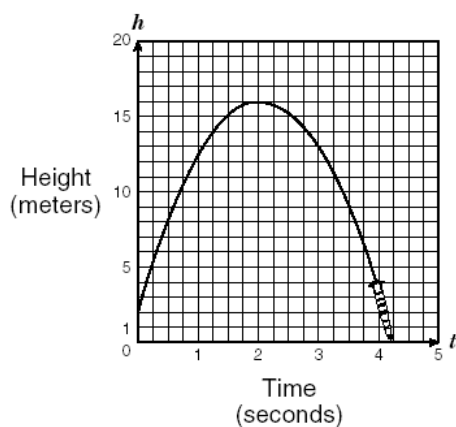
Which statement best describes the sales of this CD?

- A Sales rapidly increased, reached a peak, and then gradually decreased.
- B Sales gradually increased, reached a peak, and then leveled off.
- C Sales rapidly increased, reached a peak, and then rapidly decreased.
- D Sales remained constant throughout the time period.

10th Grade 2003

HIGH SCHOOL Math TEKS FOCUS Objective Five

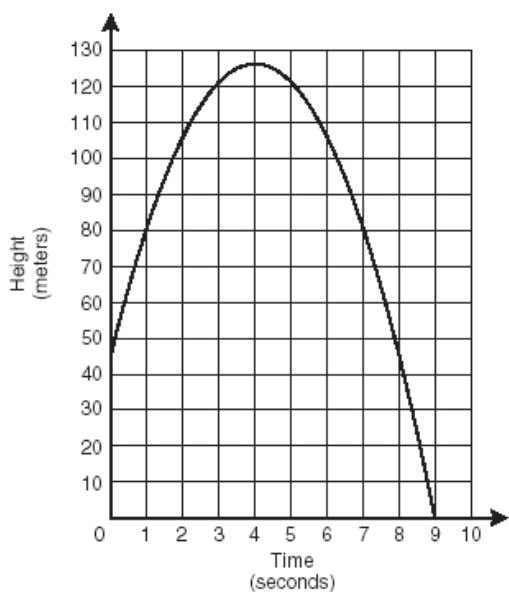
- 55 The graph below shows h , the height in meters of a model rocket, versus t , the time in seconds after the rocket is launched. From the graph, what conclusion can be made about the flight of the rocket?



- A The rocket reached its maximum height after 2.5 seconds.
- B At 0 seconds the rocket was 2 meters off the ground.
- C The height of the rocket was 0 meters when it was launched.
- D The rocket was in flight for 5 seconds.

10th Grade 2004

- 4 The graph below shows the height of a baseball from the time it is thrown from the top of a building to the time it hits the ground.



How much time elapses while the baseball is 80 meters or more above the ground?

- F 1 sec
- G 9 sec
- H 7 sec
- J 6 sec

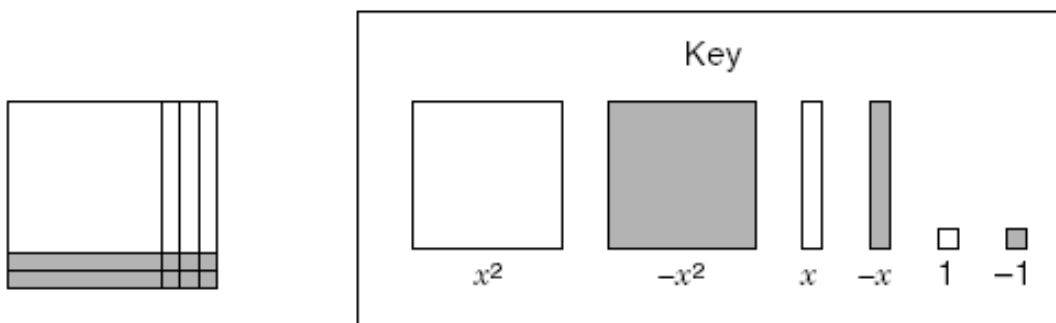
11th Grade 2004

HIGH SCHOOL Math TEKS FOCUS Objective Five

Algebra(d2A)

Solve quadratic equations using concrete models, tables, graphs, and algebraic methods

27 The polynomial $x^2 + x - 6$ is modeled below using algebraic tiles.



What are the solutions to the equation $x^2 + x = 6$?

- A $x = -3$ and $x = -2$
- B $x = -3$ and $x = 2$
- C $x = 3$ and $x = -2$
- D $x = 3$ and $x = 2$

10th Grade 2003

47 What is the solution set for the equation $4(3x - 2)^2 = 36$?

- A $\{-\frac{11}{6}, \frac{11}{6}\}$
- B $\{-\frac{11}{3}, \frac{11}{3}\}$
- C $\{-\frac{1}{3}, \frac{5}{3}\}$
- D $\{-\frac{2}{3}, \frac{4}{3}\}$

11th Grade 2003

37 The completion of a certain chemical reaction is expressed by the equation $y = 250 - 5x - x^2$, where y is the number of seconds needed to complete the reaction and x is the temperature in degrees Celsius at which the reaction occurs. If the reaction is complete in 200 seconds, what is the temperature at which the reaction occurs?

- A 5°C
- B 7°C
- C 10°C
- D 12°C

11th Grade 2004

High School Math TEKS Focus

Objective Five

Algebra(d2B)

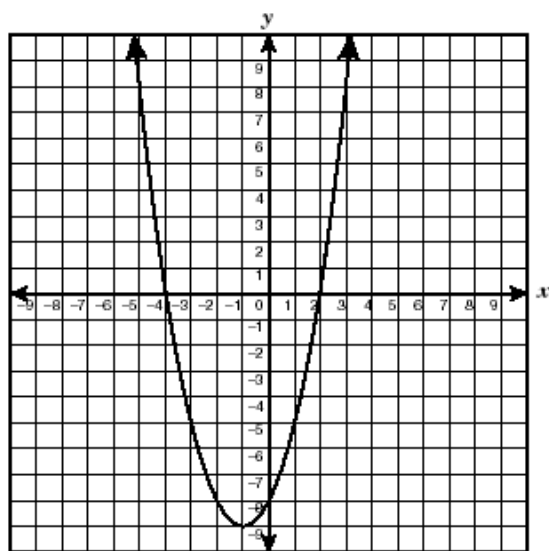
Relate the solutions of quadratic equations to the roots of their functions

25 What are the roots of the quadratic equation $x^2 - 3x + 2 = 0$?

- A -2 and -1
- B -2 and 1
- C 2 and -1
- D 2 and 1

10th Grade 2003

40 What are the roots of the function graphed below?



- F (-1, -9) and (0, -8)
- G (0, -4) and (2, 0)
- H (-4, 0) and (2, 0)
- J (0, 2) and (0, -4)

10th Grade 2004

15 What are the x-intercepts of the graph of the equation $y = x^2 + x - 12$?

- A $x = 4, x = 3$
- B $x = -4, x = 3$
- C $x = -4, x = -3$
- D $x = 4, x = -3$

11th Grade 2003

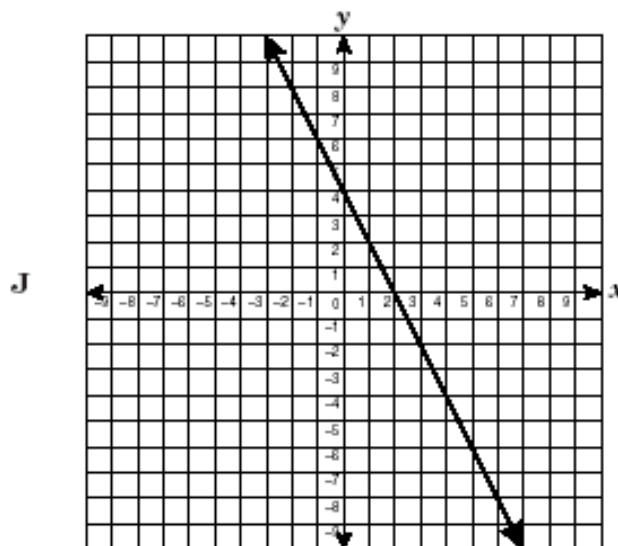
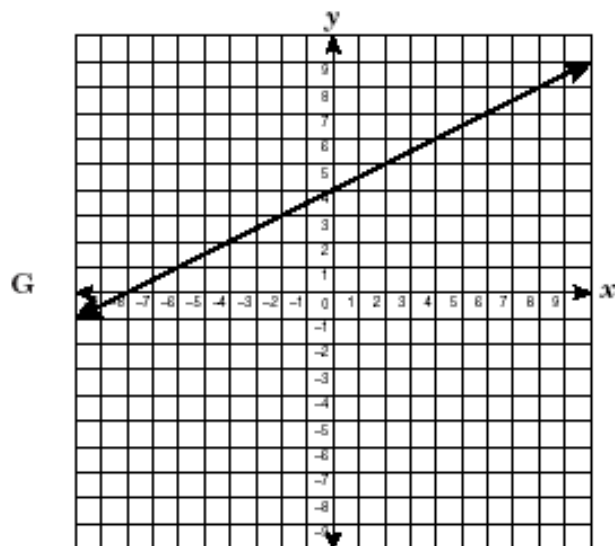
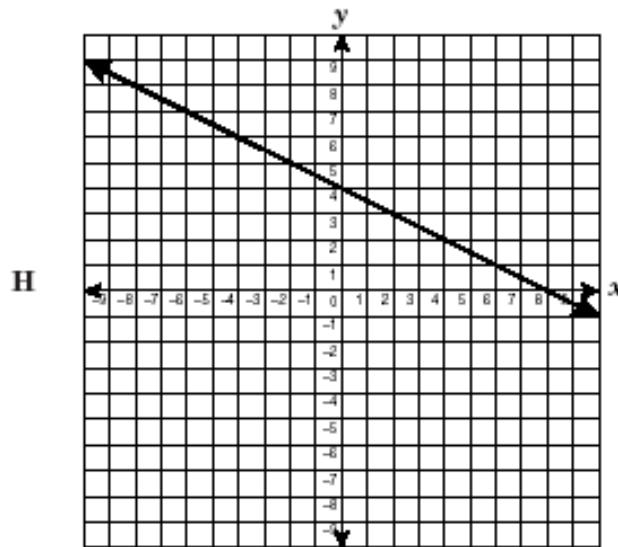
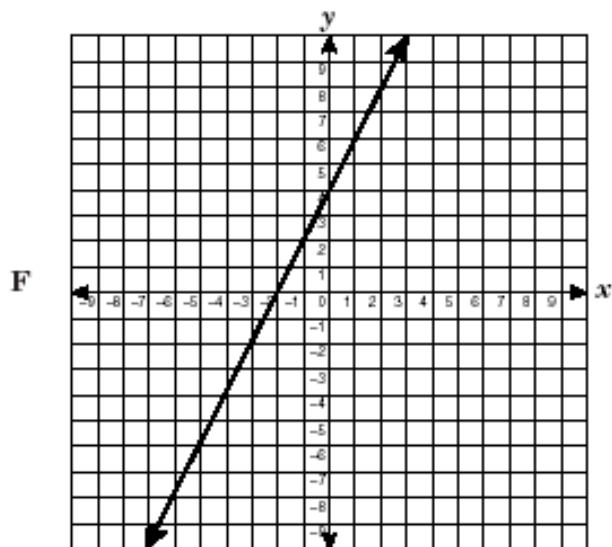
42 Which ordered pair represents one of the roots of the function $f(x) = 2x^2 + 3x - 20$?

- F $(-\frac{5}{2}, 0)$
- G $(-4, 0)$
- H $(-5, 0)$
- J $(-20, 0)$

11th Grade 2004

High School Math TEKS Focus
Objective Five

36 Which graph best represents the line passing through the point (0, 4) and perpendicular to $y = -\frac{1}{2}x$?



11th Grade 2003

High School Math TEKS Focus

Objective Five

Algebra(d3A)

Use patterns to generate the laws of exponents and apply them in problem-solving situations

- 10 Which expression describes the area in square units of a rectangle that has a width of $4x^3y^2$ and a length of $3x^2y^3$?

F $12x^6y^6$
G $12x^5y^5$
H $7x^6y^6$
J $7x^5y^5$

9th Grade 2003

- 27 The area of a rectangle is $30m^{11}n^5$ square units. If the length of the rectangle is $6m^4n^2$ units, how many units wide is the rectangle? ($m \neq 0$ and $n \neq 0$)

A $5m^7n^3$ units
B $24m^7n^3$ units
C $36m^{15}n^7$ units
D $180m^{15}n^7$ units

9th Grade 2003

- 9 Which expression is equivalent to $\frac{(8x^3)(2x^5)}{4x^6}$?

A $4x^9$
B $4x^2$
C $2x^8$
D $2x^4$

9th Grade 2004

- 44 If $y = x^3$, what is equivalent to x^{12} ?

F y^{36}
G y^{15}
H y^9
J y^4

9th Grade 2004

- 41 The area of a rectangle is $144a^8b^4$ square units. If the width of the rectangle is $8a^2b^2$ units, what is the length in units?

A $18a^6b^2$ units
B $136a^6b^2$ units
C $152a^{10}b^6$ units
D $1152a^{10}b^6$ units

10th Grade 2003

- 33 Which expression is equivalent to $\frac{27x^{-2}y^6}{3x^5y^2z^0}$?

A $\frac{9x^7y^4}{z}$
B $\frac{y^4}{9x^3}$
C $\frac{9y^4}{x^7}$
D $\frac{9y^4}{x^7z}$

10th Grade 2004

- 48 Which expression best represents the simplification of $(3m^{-2}n^4)(-4m^6n^{-7})$?

F $-\frac{12m^4}{n^3}$
G $-\frac{1}{12m^4n^3}$
H $-\frac{m^4n^3}{12}$
J $-\frac{12n^3}{m^4}$

11th Grade 2003

HIGH SCHOOL Math TEKS Focus
Objective Five

54 The area of a rectangle is $144j^9k^{15}$ square units. If the width of the rectangle is $8j^4k^5$ units, what is the rectangle's length?

F $1152j^{13}k^{20}$ units

G $152j^{13}k^{20}$ units

H $136j^5k^{10}$ units

J $18j^5k^{10}$ units

11th Grade 2004