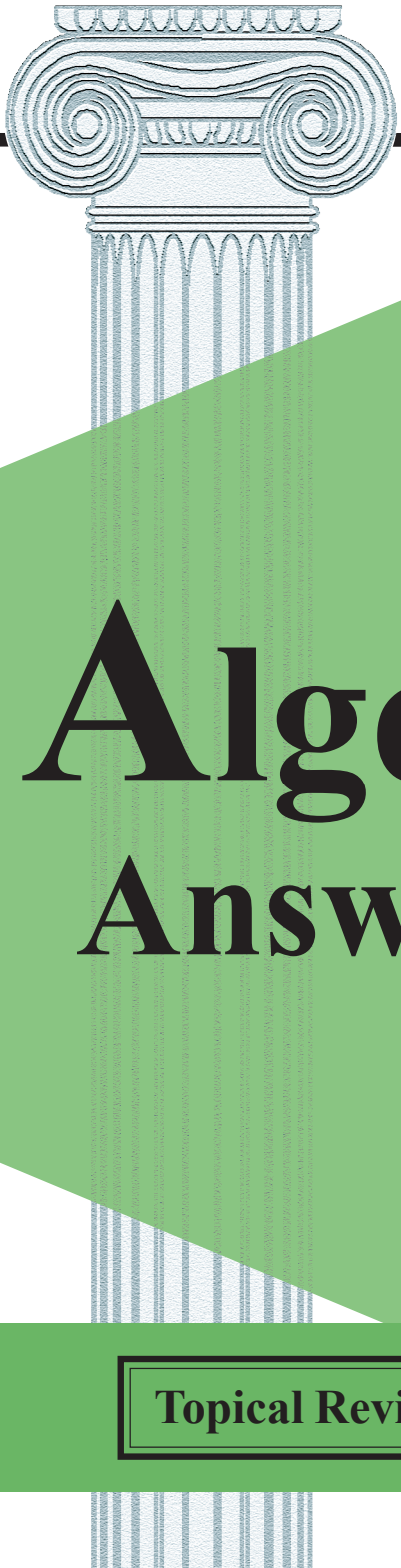


Common Core Edition

Algebra 1

Answer Keys

Topical Review Book Company

TEST 1

Part I

1. 3	5. 2	9. 4	13. 1	17. 4	21. 4
2. 4	6. 2	10. 3	14. 2	18. 3	22. 1
3. 3	7. 1	11. 3	15. 1	19. 3	23. 2
4. 1	8. 2	12. 4	16. 4	20. 1	24. 1

For parts II, III, and IV, partial credit should be given for answers that include, but not limited to, the following;

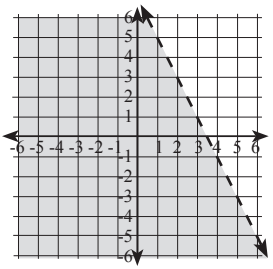
- **correct answer, but no work shown**
- **incorrect answer, but rest of work is appropriate**
- **appropriate work is shown, but one computational or rounding error is made**

Part II

25. \$14
26. $2x(x + 2)(x – 3)$
27. A point in the shaded region is stated along with justification.
28. $x = –4, 2$
29. 17
30. Yes, $x = –1$and $y = –5$ are the solutions to the equation $3x – 2 = –x – 6$ and work is shown for the check.
31. $f(–2) = 11$
32. $f(x) = (x –1)^2 + 7$
    (1, 7)

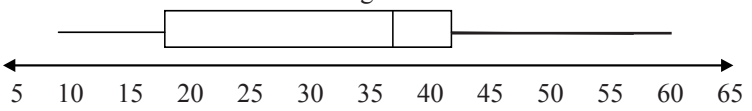
Part III

33.



A point in the shaded region of the graph is stated.

34. *a*) 205 pounds *b*) 3 pounds *c*) 15 months
35. *a*) 4 years *b*) $y = 4(2)^x$
36.



Part IV

37. Solution (1, 1) and/or (1.5, 1.25)

TEST 2

Part I

1. 2	5. 4	9. 3	13. 1	17. 2	21. 4
2. 1	6. 2	10. 3	14. 1	18. 3	22. 2
3. 2	7. 1	11. 4	15. 3	19. 1	23. 1
4. 3	8. 2	12. 2	16. 3	20. 2	24. 3

For parts II, III, and IV, partial credit should be given for answers that include, but not limited to, the following;

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- **incorrect answer, but rest of work is appropriate**
- **appropriate work is shown, but one computational or rounding error is made**

Part II

25. $y = \frac{1}{3}x + 5$

26. [0, ∞] or equivalent explanation

27. $2(x - 1)(3x + 1)$

28. \$7,280

29. $\frac{3(b + 4)}{b + 2}$

30. $2x^4 - x^3 - 2x^2 + 2x - 4$

31. $h(-2) = -4$

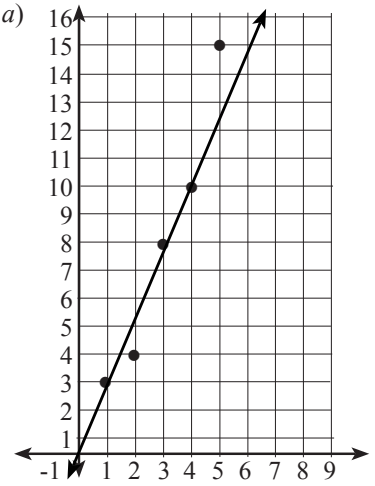
32. 210 chairs for guests

Part III

33. *a*) $25 + 8x < 11 + 10x$ or $11 + 10x > 25 + 8x$ where x is the month of the year

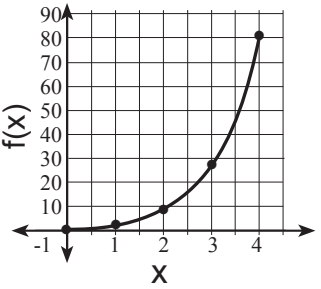
b) August – December ($x > 7$)

34. *a*)



b) $y = 3x - 1$

35. An appropriate graph is drawn such as the one to the right:
$-10 \le x \le 10, -100 \le x \le 100$
The graph is labeled appropriately.
Function Rule: $y = 3^x$
or equivalent equation



36. *a*) $y = 2.85x + 38.89$

b) correlation coefficient $r = 0.95$

c) The correlation between the linear regression equation and the data is good as $r = 0.95$. If the correlation is good, the correlation coefficient is quite close to either 1 or –1. 0.95 is very close to 1.

Part IV

37. *a*) $f(h) = 25 + 9.50h$

b) $0 \le h \le 20$ is the domain

c) Appropriate graph and scale are drawn.

TEST 3

Part I

1. 2	5. 4	9. 2	13. 3	17. 4	21. 4
2. 1	6. 3	10. 3	14. 4	18. 1	22. 2
3. 3	7. 3	11. 2	15. 3	19. 3	23. 3
4. 2	8. 4	12. 1	16. 1	20. 2	24. 2

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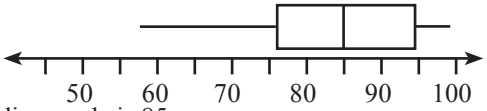
- **correct answer, but no work shown**
- **incorrect answer, but rest of work is appropriate**
- **appropriate work is shown, but one computational or rounding error is made**

Part II

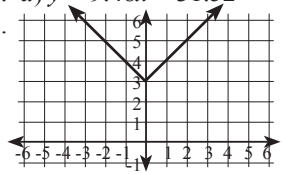
25. 4, 096
26. {–9}
27. $2x^4 + x^3 + 7x^2 + 4x - 4$
28. {–16} or (0, –16)
29. $f(x) = 22x - 45$ or equivalent function
30. $A(d) = d^2 - \pi(\frac{1}{2}d)^2$ or equivalent function
31. $x = -2, 10$; a method is chosen with an appropriate justification.
32. *a*)



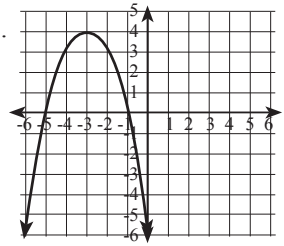
b) median grade is 85

Part III

33. *a*) $y = 9.48x + 31.52$ *b*) \$268.52
34.



35.

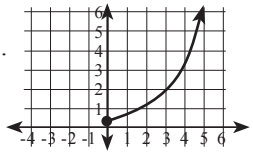


x-intercepts: (–5, 0),(–1, 0)
y-intercept: (0, –5)
Vertex is a maximum: (–3, 4)

36. *a*) $C(d) = 1600 + 0.10d$ *b*) \$2000 *c*) They would make \$400

Part IV

37.



$\frac{7}{3}$ is the average rate of change.

JUNE 2014

Part I

1.	1	5.	1	9.	3	13.	3	17.	4	21.	4
2.	4	6.	4	10.	2	14.	2	18.	1	22.	4
3.	2	7.	3	11.	3	15.	3	19.	3	23.	1
4.	2	8.	2	12.	3	16.	2	20.	1	24.	2

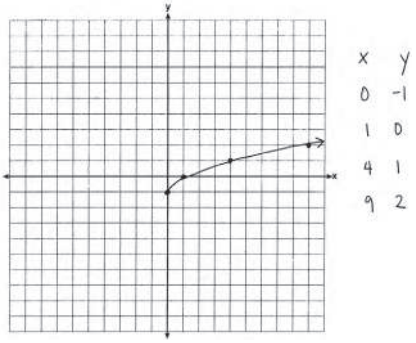
For parts II, III, and IV, partial credit should be given for answers that include, but not limited to, the following;

- **correct answer, but no work shown**
- **incorrect answer, but rest of work is appropriate**
- **appropriate work is shown, but one computational or rounding error is made**

Part II

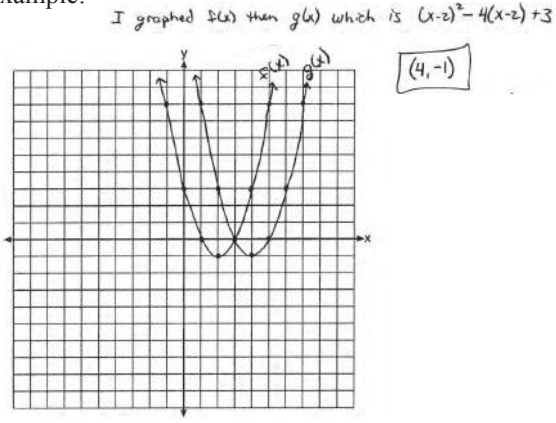
25. A correct graph is drawn.

Example:



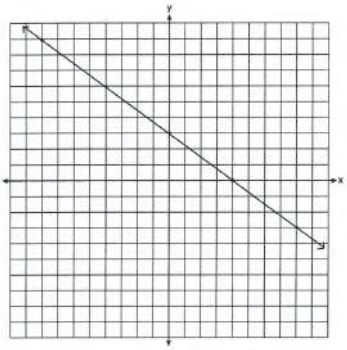
26. Correct explanations are made, such as 0.5 is the rate of decay and 300 is the initial amount.
27. 2, and correct work is shown.
28. (4, –1), and a correct explanation is given.

Example:



29. A correct graph is drawn, no, and a correct explanation that is based on the graph is given.

Example



No, it doesn't fall on the graph

30. Yes, and a correct justification is given.

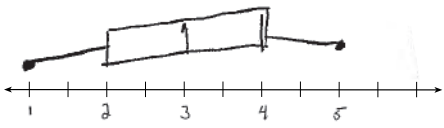
Example: Yes it can because in a function all numbers in the domain must lead to a self-specific number in the range, meaning one number in the domain cannot have two different numbers in the range.

31. $(x^2 + 7)(x + 1)(x - 1)$ and correct work is shown.

(x^2+7) (x^2-1)

$(x^2+7)(x-1)(x+1)$

32. A correct box plot with Min = 1, Q_1 = 2, Q_2 = 3, Q_3 = 4, Max = 5 is drawn



LE: 1
UE: 5
LQ: 2
UQ: 4
M: 3

1, 1.5, 1.5, 2, 2, 2.5, 2.5, 3, 3, 3, 3.5, 4, 4, 4.5, 5

Part III

33. $m(x) = x^2 + 10x + 16$ or an equivalent trinomial equation and –8 and –2, and correct work is shown.

$(3x-1)(3-x) + (4x^2+19) = m(x)$

$9x - 3x^2 - 3 + 1x + 4x^2 + 19 = m(x)$

$10x + x^2 + 16 = m(x)$

$m(x) = 10x + x^2 + 16$ / $x^2 + 10x + 16$

$0 = (x+8)(x+2)$

$x+8=0$ or $x+2=0$

$-8 \quad -8 \qquad -2 \quad -2$

$x = -8 \qquad x = -2$

34. $(12 + 2x)(16 + 2x) = 396$ or an equivalent equation, a correct description is given, and correct work is shown to find 3.

It is the length plus the walkway x width plus the walkway

$(2x+16)(2x+12) = 396$
$4x^2+32x+24x+192 = 396$
$4x^2+56x-204 = 0$
$x^2+14x-51 = 0$
$(x+17)(x-3) = 0$

$x+17=0 \quad x-3=0$
$x=-17, 3$

3 meters

The width of the walkway is 3 meters

35. $A(n) = 175 - 2.75n$, correct work is shown to find 63, and a correct explanation is given.

$0 = 175 - 2.75n$
$2.75n = 175$
$n = 63.6\overline{36}$

She can watch for 63 weeks because at the 64th week she won't have enough money to rent a movie.

36. $2.35c + 5.50d = 89.50$ or an equivalent equation, no, and a correct justification is written, and correct work is shown to find 10.

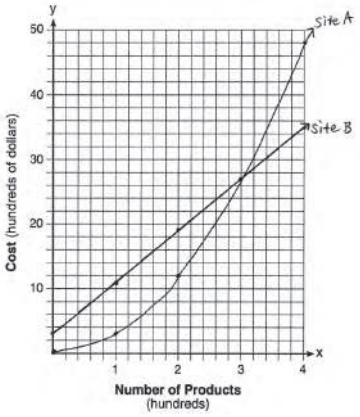
$2.35 \cdot 8 = 18.8$
$5.50 \cdot 14 = 77$
$18.8 + 77 = 95.8$ so it isn't true

$2.35c + 5.50d = 89.50$
$-2.35(c + d = 22)$
$-2.35c - 2.35d = -51.70$
$3.15d = 37.8$
$d = 12$

$c + d = 22$
$c + 12 = 22$
$c = 10$
10 cats

Part IV

37. Both functions are graphed and labeled correctly, 3, and a correct explanation is given, and site A and a correct justification is given. Example:



AUGUST 2014

Part I

1. 1	5. 4	9. 3	13. 2	17. 1	21. 4
2. 2	6. 2	10. 3	14. 4	18. 4	22. 2
3. 3	7. 1	11. 1	15. 1	19. 4	23. 2
4. 3	8. 1	12. 3	16. 2	20. 1	24. 4

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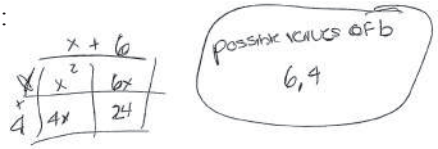
Part II

25. 4 and 6, and correct algebraic work is shown, such as factoring.

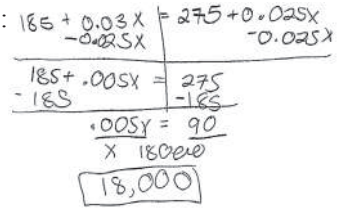
Example:



26. $B = 3000(1 + 0.042)^t$ or an equivalent equation in terms of B and t is written.

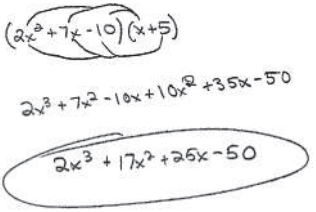
27. 18,000, and correct work is shown.

Example:



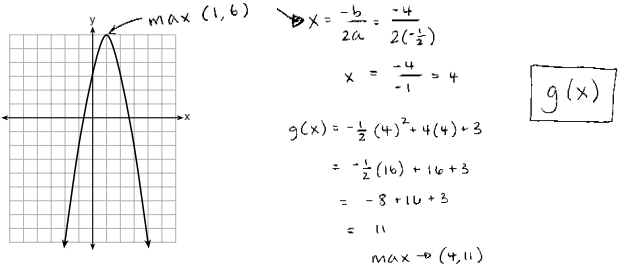
28. $2x^3 + 17x^2 + 25x - 50$ and correct work is shown.

Example:



29. $g(x)$, and a correct justification is given.

Example:



30. 6, and correct work is shown.

Example:

$3(x+3) \leq 5x-3$

$3x+9 \leq 5x-3$

$-3x \quad -3x$

$9 \leq 2x-3$

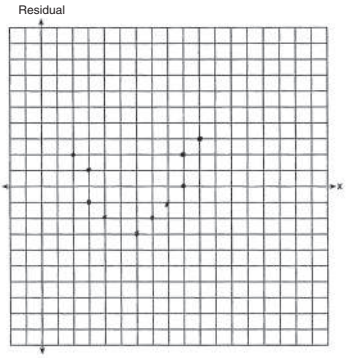
$+3 \quad +3$

$\frac{12}{2} \leq \frac{2x}{2}$

$6 \leq x$

Smallest possible value = 6

31. A correct plot is drawn, poor fit is stated, and a correct justification is written, such as stating that a pattern is formed.



bad fit because there is pattern in the residuals

32. 9, and a correct explanation is written.

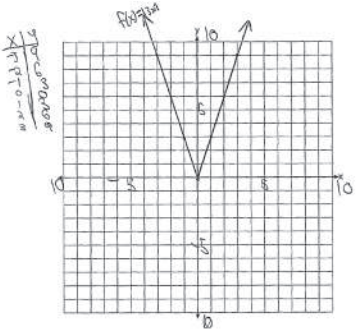
$c=(\frac{b}{2})^2 \quad c=(\frac{6}{2})^2 \quad c=(3)^2$

$c=9$

The value of c is determined by taking the "b" & dividing it by 2, then squaring it.

Part III

33. A correct graph of $f(x)$ is drawn. A correct relationship for $g(x)$ is described, such as $g(x)$ is two units below $f(x)$. A correct relationship for $h(x)$ is described, such as $h(x)$ is shifted 4 units to the right of $f(x)$.



graph g(x) would be two points below graph f(x)

h(x) would 4 points to the right

34. $\frac{2A-hb_2}{h}$ or an equivalent expression and 8, and correct work is shown.

Example:

$\frac{A}{\frac{1}{2}h} = \frac{\frac{1}{2}h(b_1+b_2)}{\frac{1}{2}h}$

$\frac{A}{\frac{1}{2}h} = b_1+b_2$

$-b_2 \quad -b_2$

$\frac{A}{\frac{1}{2}h} - b_2 = b_1$

$b_1 = \frac{2A}{h} - b_2$

$\frac{2(60)}{6} - 12$

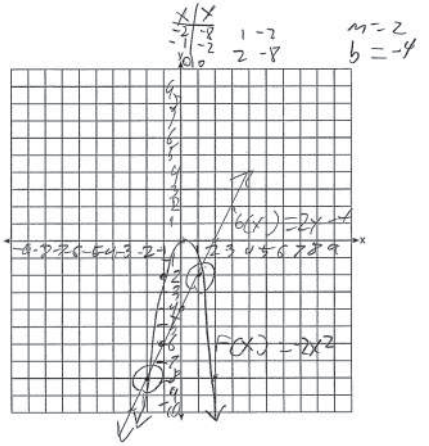
$\frac{120}{6} - 12$

$20-12$

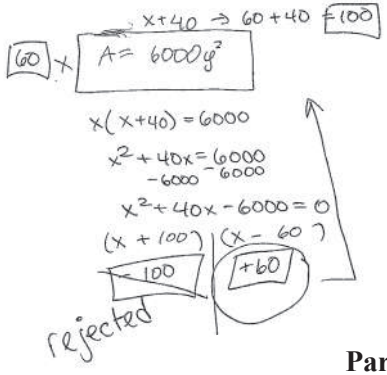
$b_1 = 8$

8 feet

35. Both functions are graphed correctly, and –2 and 1 are stated.

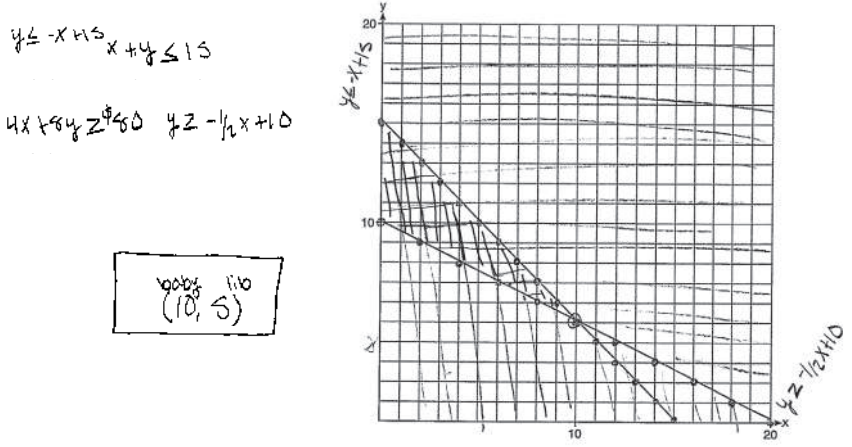


36. 60 and 100, and correct algebraic work is shown.



Part IV

37. $x + y \leq 15$ and $4x + 8y \geq 80$ are stated. Both inequalities are graphed and shaded correctly with at least one labeled correctly. A correct combination of babysitting hours and library hours is stated.



JANUARY 2015

Part I

1. 2	5. 3	9. 4	13. 3	17. 4	21. 1
2. 2	6. 2	10. 2	14. 4	18. 3	22. 3
3. 4	7. 1	11. 4	15. 3	19. 4	23. 4
4. 1	8. 1	12. 2	16. 1	20. 3	24. 1

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- **incorrect answer, but rest of work is appropriate**
- **appropriate work is shown, but one computational or rounding error is made**

Part II

25. Correct, and a correct justification is given.

Example: Patrick is correct.

4.2 is rational. $\sqrt{2}$ is irrational.

A rational number plus a irrational number always gives you a irrational.

26. 25%, and correct work is shown. Example: $33+12=45$

$\frac{45}{180} = .25 \Rightarrow$ 25%

27. (–4, 1), and a correct explanation is given.

Example: If (-4,1) is added to the table, then the relation would no longer be a function, because you can't have one input, with 2 different outputs.

28. $-2x^2 + 6x + 4$ or equivalent trinomial, and correct work is shown.

Example:

$$\begin{array}{r} 3x^2+9x-7 \\ +\quad -5x^2-2x+11 \\ \hline -2x^2+6x+4 \end{array}$$

29. $3\frac{1}{2}$ and $-\frac{1}{2}$, and correct algebraic work is shown.

Example:

$4x^2-12x=7$

$-7 \quad -7$

$4x^2-12x-7=0$

$(2x+1)(2x-7)=0$

$2x+1=0 \quad -1 \quad -1$

$\frac{2x}{2} = \frac{-1}{2}$

$2x-7=0 \quad +7 \quad +7$

$\frac{2x}{2} = \frac{7}{2}$

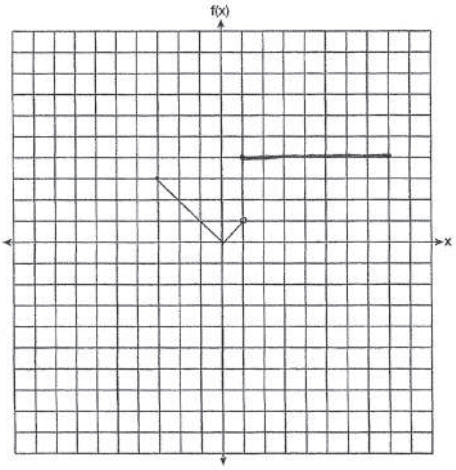
$x = \frac{-1}{2}, x = 3\frac{1}{2}$

$4x^2-12x-28=0$

$(4)(x+1)(4x-14)$

$(2x+1)(2x-7)$

30. A correct graph is drawn.



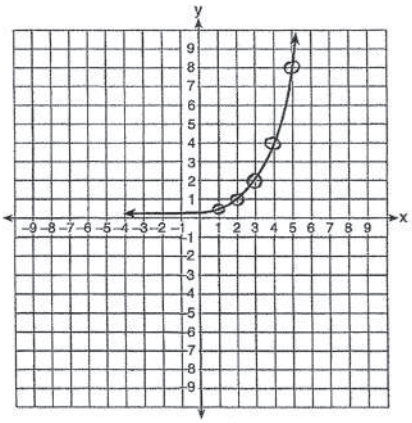
31. $\frac{12}{5}$ or 2.4, and correct algebraic work is shown.

Example: let x = number of years
~~that each~~ take for each tree to be the same height

$36_{inc} + 15_{in}x = 48_{in} + 10x$
$-10x \quad -10x$
$5_{in}x = 12$
$x = 2.4$

32. $y = 0.25(2)^x$ or an equivalent equation is written, and a correct explanation is given.

Example: $y = .25 \times 2^{\wedge}x$



I did this by taking the y-values of the domains 1-5 (x) and putting them into my calculator. Then I used ExpReg under STATISTICS and used that equation

Part III

33. A correct system of equations is written, popcorn = \$5.75, drink = \$2.25 and correct work is shown.

Example:

$2p + 2d = 18.25 - 2$
$4p + 2d = 27.50$
$-6d = -36.50$
$+2d = 27.50$
$-4d = -9$
$d = 2.25$

drink is \$2.25

$4p + 4.50 = 27.50$
$4p = 23$

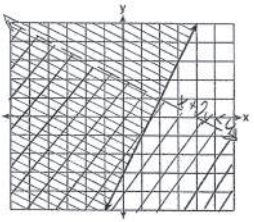
popcorn is \$5.75

34. $y \geq 2x - 3$, a correct graph, and disagree, and a correct explanation is written.

Example:

a) $y \geq 2x - 3$

b) $x + 2y < 4$
$2y < 4 - x$
$y < 2 - \frac{1}{2}x$



c) I disagree with Oscar. While it would make $y \geq 2x - 3$ true $(1 \geq 2(2) - 3)$ the other cant be on the line of $y < 2 - \frac{1}{2}x$ $(1 < 2 - \frac{1}{2}(2))$.

35. 0.94 and a correct explanation is written.

the line is a good model which shows as the calories increase so does the milligrams of Sodium

36. Maximum is stated, a correct explanation is written, and $f(x) = -(x - 4)^2 + 25$, and correct work is shown using completing the square.

a) $y = -x^2 + 8x + 9$

The vertex represents a maximum point for the function because the function is negative as stated by the $-x^2$. Therefore, we know that the parabola opens downward making the vertex a maximum and not a minimum.

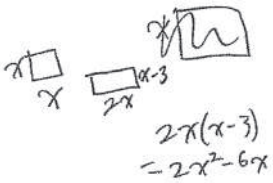
b) $y = -x^2 + 8x + 9$ $\quad -\frac{8}{2} = -4^2 = 16$

$y = -(x^2 - 8x) + 9$
$y = -(x^2 - 8x + 16) - (-16) + 9$
$y = -(x - 4)^2 + 16 + 9$
$y = -(x - 4)^2 + 25$ $\quad (h, k)$

Part IV

37. $(x - 3)(2x) = 1.25x^2$ or an equivalent quadratic in one variable is written, a correct explanation is written, 80, and correct work is shown.

Example:



$2x^2 - 6x = 1.25x^2$

My equation models the situation because

It shows $2x^2 - 6x$, the area of the new garden, is 1.25 times larger than the area of the original garden, x^2 with x being the length of a side of the original square garden.

$2x^2 - 6x = 1.25x^2$

$0.75x^2 - 6x = 0$

$x(0.75x - 6) = 0$

$x = 0$ | $0.75x = 6$, $x = 8$

$6 \div 0.75 = 8$

$2(8)^2 - 6(8) = 2(64) - 48$

$= 128 - 48$

$= 80$

80 square units