Algebra 1 Final Exam Review 2016-2017

Multiple Choice
Identify the choice that best completes the statement or answers the question.

____ 1. Katalin drove 230 miles on her vacation. She drove an average of 1.2 times faster on the second 115 miles of her trip than she did on the first 115 miles of her trip. Which expression represents the time she spent driving. Let x = her speed on the first half of the trip.

  a. $\dfrac{210.83}{x}$ b. $\dfrac{253}{x}$ c. $\dfrac{421.67}{x}$ d. $210.83x$

Short Answer   (6-12 Eight points each   13=14 Seven points each)

Graph each system. Tell whether the system has *no solution*, *one solution*, or *infinitely many solutions*.

2. $y = 2x + 4$
    $y - 4 = 2x$

3. $y = -4x - 5$
    $y = -4x + 3$

Graph the inequality.

4. $y < 3x - 5$

5. $2x + 6y \geq 20$

Solve the system using elimination.

6. $x + 3y = 18$
   $3x - 3y = -6$

7. $x + 3y = -8$
   $3x + 6y = -15$

8. Mike and Kim invest $15,000 in equipment to print yearbooks for schools. Each yearbook costs $5 to print and sells for $20. How many yearbooks must they sell before their business breaks even?

Simplify the expression.

9. $(-7.3)^0$

10. $8^{-1} \cdot 9^0$

11. $7^8 \cdot 7^1 \cdot 7^{-2}$

12. $j^{-5} \cdot 5j^6$

13. $(-x^5) \cdot 3y^8 \cdot 5x^3$

14. $(y^{-4})^2$

15. $(6n^2)^3$

16. $(3xy^3)^2(xy)^6$

17. $\dfrac{2^{12}}{2^{10}}$

18. $\left(-\dfrac{11}{5}\right)^2$

19. $3\sqrt{3} + 5\sqrt{3}$

20. $4\sqrt{7} - 6\sqrt{112}$

21. $_{10}P_8$

22. Chase scored 9 points on Monday, and he doubled his score each day thereafter. How many points did he score on Friday?

Write the number in scientific notation.

23. 90.7

Simplify the expression. Write the answer using scientific notation.

24. $0.5\left(5.7 \times 10^{-7}\right)$

25. You drop a ball from a height of 0.5 meter. Each curved path has 70% of the height of the previous path.
    a. Write a rule for the sequence using centimeters. The initial height is given by the term $n = 1$.
    b. What height will the ball be at the top of the fifth path?

Factor the expression.

26. $d^2 + 13d + 30$

27. $21x^2 + 73x + 56$

28. $49g^2 + 7g - 30$

29. $20y^2 - 18y - 80$

30. $3g^2 - 13gh - 56h^2$

31. $d^2 + 10d + 25$

32. $4b^2 + 20b + 25$

33. $k^2 - 81h^2$

34. $64b^2 - 49$

35. $15g^3 + 18g^2 - 10g - 12$

36. $d^2 - 4d + 4$

37. $d^2 + 8d + 16$

38. A ball is thrown into the air with an upward velocity of 32 ft/s. Its height h in feet after t seconds is given by the function $h = -16t^2 + 32t + 8$.
    a. In how many seconds does the ball reach its maximum height? Round to the nearest hundredth if necessary.
    b. What is the ball's maximum height?
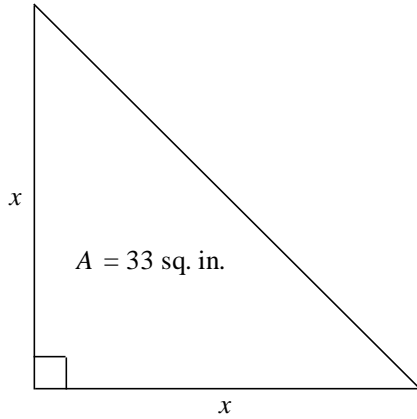
39. Graph $f(x) \le 2x^2 + 4x - 1$.

Solve the equation using square roots.

40. $x^2 - 14 = -10$

Solve the equation using the zero-product property.

41. $-n(5n + 5) = 0$

42. Find the value of x. If necessary, round to the nearest tenth.

x

$A = 33$ sq. in.

x

Solve the equation by factoring.

43. $z^2 + 6z - 27 = 0$

44. Tasha is planning an expansion of a square flower garden in a city park. If each side of the original garden is increased by 5 m, the new total area of the garden will be 144 m^2. Find the length of each side of the original garden.

Use the quadratic formula to solve the equation. If necessary, round to the nearest hundredth.

45. $-6y^2 - 9y = -5$

Use any method to solve the equation. If necessary, round to the nearest hundredth.

46. $6x^2 - 19x - 29 = 0$

Find the number of real number solutions for the equation.

47. $x^2 - 6x + 9 = 0$

Simplify the radical expression.

48. $\sqrt{27}$

49. $\sqrt{\dfrac{26}{25n^4}}$

50. $\sqrt{\dfrac{300}{3}}$

Simplify the radical expression by rationalizing the denominator.

51. $\dfrac{5\sqrt{192}}{\sqrt{128}}$

52. The formula $r = \sqrt{\dfrac{A}{P}} - 1$ gives the interest rate r that will allow principal P to grow into amount A in two years, if the interest is compounded annually. Suppose you have \$375 to deposit into an account. Find the interest rate you would need to have \$390 in the account at the end of the second year.

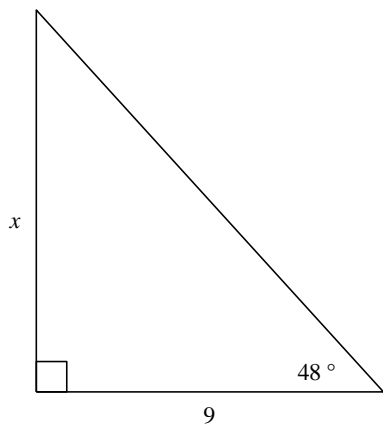**Solve the equation. Check your solution.**

53. $5 = \sqrt{g} + 4$

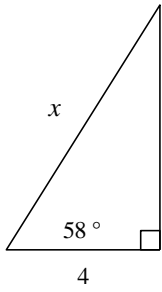54. Find the domain of $y = 4\sqrt{2x + 4}$.

55. Find the value of tan 40°. Round to the nearest ten-thousandth.

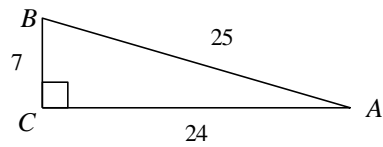**Find the value of x to the nearest tenth.**

56.

57.

58. An airplane over the Pacific Ocean sights an atoll at an 13° angle of depression. If the plane is 781 m above the water, how many kilometers is it from a point 781 m directly above the atoll?

59. Use $\triangle ABC$ to find the value of cos B.

Simplify the rational expression.

60. $\dfrac{7x^3}{x^3 - 5x^4}$

61. $\dfrac{x^2 - 10x + 21}{x^2 - 9x + 18}$

Divide.

62. $\dfrac{x^2 - 4}{x - 8} \div (x - 2)$

63. $\dfrac{s^2 - 3s}{s^2 - 5s + 6} \div \dfrac{s - 5}{s - 2}$

64. $(-16m^9 + 20m^7 - 6m^6) \div 2m^2$

Add or subtract.

65. $\dfrac{-8x}{x - 8} - \dfrac{6}{x - 8}$

66. Find the LCD of the pair of expressions.

$$\dfrac{7}{2x^5y^6} , \dfrac{7}{2x^6y^2}$$

67. A yogurt shop offers 7 different flavors of frozen yogurt and 11 different toppings. How many choices are possible for a single serving of frozen yogurt with one topping?

68. In how many ways can 13 basketball players be listed in a program?

69. Find a solution to the following system of equations.
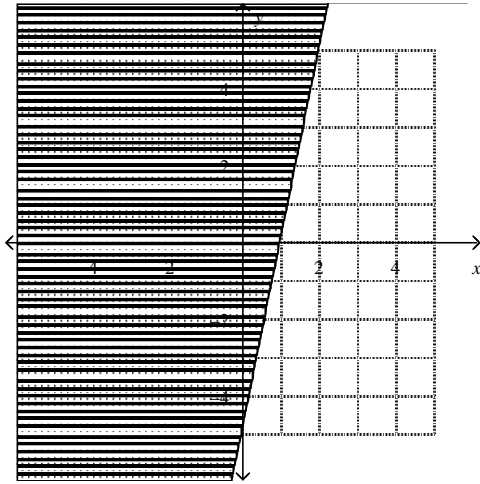$$3x + y = 9$$
$$2x + 2y = 2$$

Solve the system of equations using substitution.

70. $y = 4x - 10$
$y = 3x - 4$

Write the linear inequality shown in the graph.

71.

72. Tom has a collection of 30 CDs and Nita has a collection of 10 CDs. Tom is adding 3 CDs a month to his collection while Nita is adding 7 CDs a month to her collection. Write and graph a system to find the number of months after which they will have the same number of CDs. Let x represent the number of months and y the number of CDs.

73. The length of a rectangle is 4 cm more than four times the width. If the perimeter of the rectangle is 38 cm, what are its dimensions?

74. Mrs. Huang operates a soybean farm. She buys many supplies in bulk. Often the bulk products need to be custom mixed before Mrs. Huang can use them. To apply herbicide to a large field she must mix a solution of 67% herbicide with a solution of 46% herbicide to form 42 liters of a 55% solution. How much of the 67% solution must she use?

75. You have a gift certificate to a book store worth $95. Each paperback books is $5 and each hardcover books is $12. You must spend at least $20 in order to use the gift certificate. Write and graph a system of inequalities to model the number of each kind of books you can buy. Let x = the number of paperback books and y = the number of hardback books.
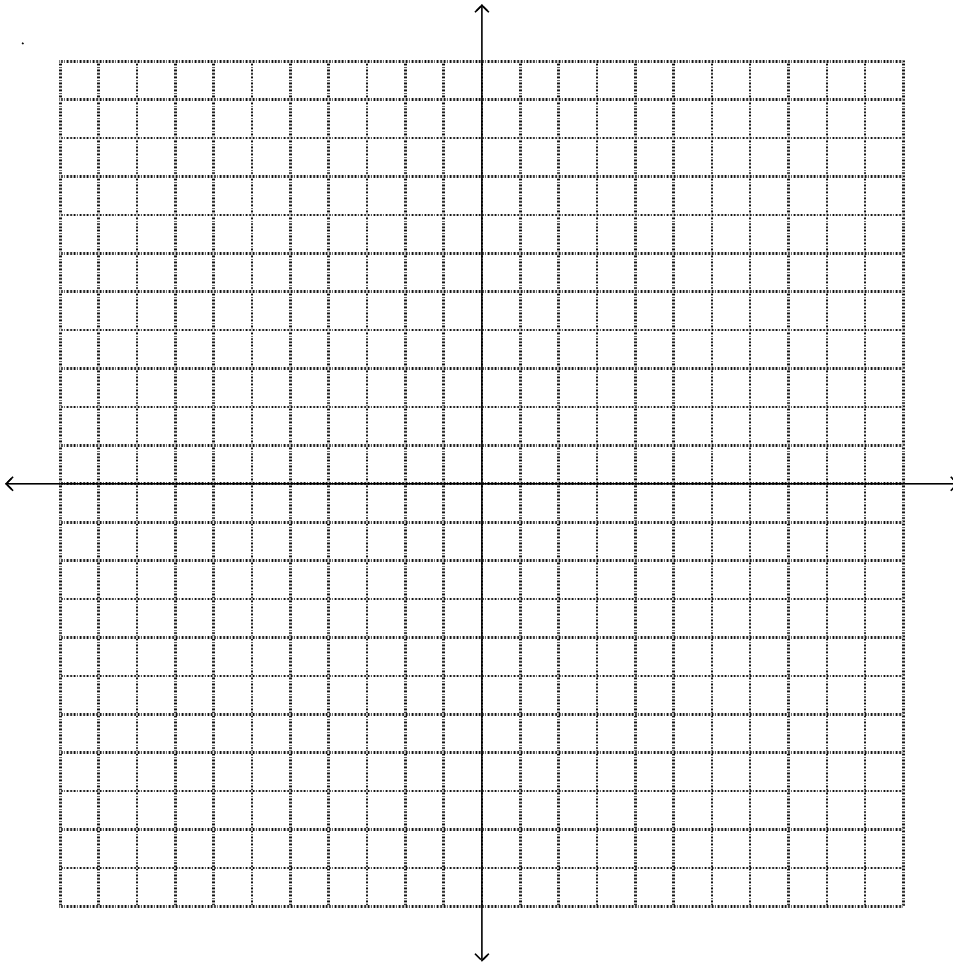
Algebra 1 Final Exam Review 2016-2017
**Answer Section**

MULTIPLE CHOICE

1. ANS: A   PTS: 1   DIF: L3
   REF: 12-5 Adding and Subtracting Rational Expressions
   OBJ: 12-5.2 Adding and Subtracting Rational Expressions With Unlike Denominators
   NAT: NAEP 2005 N5b | NAEP 2005 A3b | NAEP 2005 A3c | ADP J.1.5
   STA: NY A.A.17   TOP: 12-5 Example 5
   KEY: word problem | problem solving | rational expression

SHORT ANSWER

2. ANS:
   infinitely many solutions

   PTS: 1   DIF: L2   REF: 7-1 Solving Systems By Graphing
   OBJ: 7-1.2 Analyzing Special Types of Systems
   NAT: NAEP 2005 A4d | NAEP 2005 A4g | ADP J.3.3 | ADP J.4.3 | ADP J.5.2
   STA: NY A.PS.9 | NY A.A.7 | NY A.G.7 | NY A.G.9   TOP: 7-1 Example 4 | 7-1 Example 5
   KEY: system of linear equations | graphing a system of linear equations | no solution | infinitely many
   solutions
3. ANS:
   no solutions

   PTS: 1   DIF: L2   REF: 7-1 Solving Systems By Graphing
   OBJ: 7-1.2 Analyzing Special Types of Systems
   NAT: NAEP 2005 A4d | NAEP 2005 A4g | ADP J.3.3 | ADP J.4.3 | ADP J.5.2
   STA: NY A.PS.9 | NY A.A.7 | NY A.G.7 | NY A.G.9   TOP: 7-1 Example 4 | 7-1 Example 5
   KEY: system of linear equations | graphing a system of linear equations | no solution | infinitely many
   solutions
4. ANS:
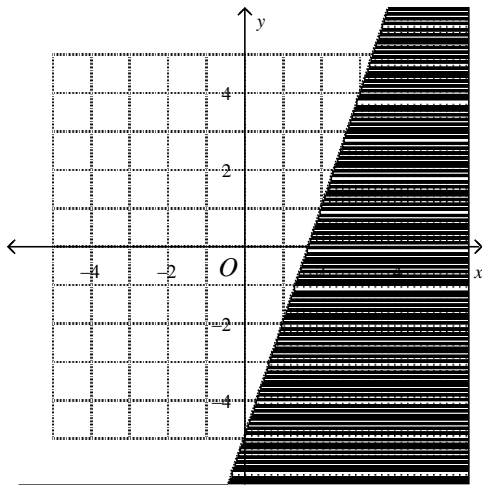
   PTS: 1   DIF: L2   REF: 7-5 Linear Inequalities

OBJ: 7-5.1 Graphing Linear Inequalities   NAT: NAEP 2005 A3a | ADP J.4.4
STA: NY A.A.6 | NY A.A.21 | NY A.A.24 | NY A.G.6   TOP: 7-5 Example 1
KEY: linear inequality | graphing

5. ANS:
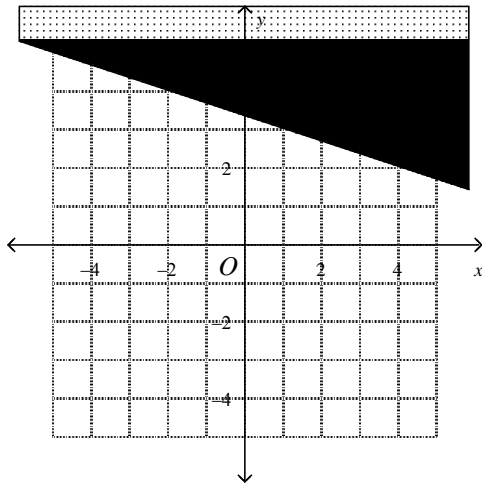
PTS: 1   DIF: L3   REF: 7-5 Linear Inequalities
OBJ: 7-5.1 Graphing Linear Inequalities   NAT: NAEP 2005 A3a | ADP J.4.4
STA: NY A.A.6 | NY A.A.21 | NY A.A.24 | NY A.G.6   TOP: 7-5 Example 2
KEY: linear inequality | graphing

6. ANS:
(3, 5)

PTS: 1   DIF: L2   REF: 7-3 Solving Systems Using Elimination
OBJ: 7-3.1 Adding or Subtracting to Solve Systems
NAT: NAEP 2005 A4g | ADP J.3.3 | ADP J.5.2   STA: NY A.A.7 | NY A.A.10 | NY A.G.7
TOP: 7-3 Example 1
KEY: system of linear equations | elimination method | adding or subtracting equations

7. ANS:
(1, –3)

PTS: 1   DIF: L2   REF: 7-3 Solving Systems Using Elimination
OBJ: 7-3.2 Multiplying First to Solve Systems
NAT: NAEP 2005 A4g | ADP J.3.3 | ADP J.5.2   STA: NY A.A.7 | NY A.A.10 | NY A.G.7
TOP: 7-3 Example 3
KEY: system of linear equations | elimination method | adding or subtracting equations

8. ANS:
1,000

PTS: 1   DIF: L2   REF: 7-4 Applications of Linear Systems
OBJ: 7-4.1 Writing Systems of Linear Equations
NAT: NAEP 2005 A4g | ADP J.3.3 | ADP J.4.3 | ADP J.5.2
STA: NY A.PS.4 | NY A.PS.10 | NY A.RP.1 | NY A.CN.6 | NY A.CN.7 | NY A.R.7 | NY A.A.7 | NY
A.A.10 | NY A.G.7   TOP: 7-4 Example 2
KEY: word problem | problem solving | system of linear equations | graphing a system of linear equations |
substitution method | elimination method

9. ANS:

1

PTS: 1 DIF: L2 REF: 8-1 Zero and Negative Exponents
OBJ: 8-1.1 Zero and Negative Exponents NAT: ADP J.1.1 | ADP J.1.6
STA: NY A.PS.1 | NY A.N.6 TOP: 8-1 Example 1
KEY: zero as an exponent | negative exponent | simplfying a power

10. ANS:
$\dfrac{1}{8}$

PTS: 1 DIF: L3 REF: 8-1 Zero and Negative Exponents
OBJ: 8-1.1 Zero and Negative Exponents NAT: ADP J.1.1 | ADP J.1.6
STA: NY A.PS.1 | NY A.N.6 TOP: 8-1 Example 1
KEY: simplifying an exponential expression | zero as an exponent | simplfying a power

11. ANS:
7^7

PTS: 1 DIF: L2 REF: 8-3 Mulitplication Properties of Exponents
OBJ: 8-3.1 Multiplying Powers NAT: ADP I.1.5 | ADP J.1.1
STA: NY A.CM.3 | NY A.CM.11 | NY A.N.4 | NY A.A.12 TOP: 8-3 Example 1
KEY: multiplying powers with the same base | exponential expression | simplifying an exponential expression

12. ANS:
$5j$

PTS: 1 DIF: L2 REF: 8-3 Mulitplication Properties of Exponents
OBJ: 8-3.1 Multiplying Powers NAT: ADP I.1.5 | ADP J.1.1
STA: NY A.CM.3 | NY A.CM.11 | NY A.N.4 | NY A.A.12 TOP: 8-3 Example 2
KEY: exponential expression | simplifying an exponential expression | multiplying powers with the same base

13. ANS:
$-15x^8y^8$

PTS: 1 DIF: L2 REF: 8-3 Mulitplication Properties of Exponents
OBJ: 8-3.1 Multiplying Powers NAT: ADP I.1.5 | ADP J.1.1
STA: NY A.CM.3 | NY A.CM.11 | NY A.N.4 | NY A.A.12 TOP: 8-3 Example 2
KEY: exponential expression | simplifying an exponential expression | multiplying powers with the same base

14. ANS:
$\dfrac{1}{y^8}$

PTS: 1 DIF: L2 REF: 8-4 More Multiplication Properties of Exponents
OBJ: 8-4.1 Raising a Power to a Power NAT: ADP I.1.5 | ADP J.1.1
STA: NY A.N.4 | NY A.A.12 TOP: 8-4 Example 1
KEY: raising a power to a power | exponential expression | simplifying an exponential expression

15. ANS:
$216n^6$

PTS: 1   DIF: L2   REF: 8-4 More Multiplication Properties of Exponents
OBJ: 8-4.2 Raising a Product to a Power   NAT: ADP I.1.5 | ADP J.1.1
STA: NY A.N.4 | NY A.A.12   TOP: 8-4 Example 3
KEY: raising a product to a power | exponential expression | simplifying an exponential expression

16. ANS:
$9x^8y^{12}$

PTS: 1   DIF: L2   REF: 8-4 More Multiplication Properties of Exponents
OBJ: 8-4.2 Raising a Product to a Power   NAT: ADP I.1.5 | ADP J.1.1
STA: NY A.N.4 | NY A.A.12   TOP: 8-4 Example 4
KEY: raising a product to a power | exponential expression | simplifying an exponential expression

17. ANS:
4

PTS: 1   DIF: L2   REF: 8-5 Division Properties of Exponents
OBJ: 8-5.1 Dividing Powers With the Same Base   NAT: ADP I.1.5 | ADP I.2.2 | ADP J.1.1
STA: NY A.N.4 | NY A.A.12   TOP: 8-5 Example 1
KEY: dividing powers with the same base | exponential expression

18. ANS:
$\frac{121}{25}$

PTS: 1   DIF: L2   REF: 8-5 Division Properties of Exponents
OBJ: 8-5.2 Raising a Quotient to a Power   NAT: ADP I.1.5 | ADP I.2.2 | ADP J.1.1
STA: NY A.N.4 | NY A.A.12   TOP: 8-5 Example 3
KEY: raising a quotient to a power | exponential expression

19. ANS:
$8\sqrt{3}$

PTS: 1   DIF: L2   REF: 11-2 Operations With Radical Expressions
OBJ: 11-2.1 Simplifying Sums and Differences
NAT: NAEP 2005 A3b | ADP I.4.1 | ADP J.1.1   STA: NY A.N.3
TOP: 11-2 Example 1   KEY: like radicals | combining like radicals

20. ANS:
$-20\sqrt{7}$

PTS: 1   DIF: L2   REF: 11-2 Operations With Radical Expressions
OBJ: 11-2.1 Simplifying Sums and Differences
NAT: NAEP 2005 A3b | ADP I.4.1 | ADP J.1.1   STA: NY A.N.3
TOP: 11-2 Example 2   KEY: like radicals | combining like radicals | radical expressions

21. ANS:
1,814,400

PTS: 1   DIF: L2   REF: 12-7 Counting Methods and Permutations
OBJ: 12-7.2 Finding Permutations   NAT: ADP I.4.2   STA: NY A.R.4 | NY A.N.7 | NY A.N.8
TOP: 12-7 Example 4   KEY: permutation

22. ANS:
144 points

PTS: 1   DIF: L3   REF: 8-1 Zero and Negative Exponents
OBJ: 8-1.2 Evaluating Exponential Expressions   NAT: ADP J.1.1 | ADP J.1.6
STA: NY A.PS.1 | NY A.N.6   TOP: 8-1 Example 4
KEY: evaluating exponential expression | simplfying a power | word problem | problem solving

23. ANS:

9.07×10^1

PTS: 1   DIF: L2   REF: 8-2 Scientific Notation
OBJ: 8-2.1 Writing Numbers in Scientific and Standard Notations
NAT: NAEP 2005 N1d | NAEP 2005 N1f | ADP I.1.5 | ADP I.2.2
STA: NY A.CM.3 | NY A.CM.11 | NY A.N.4   TOP: 8-2 Example 2
KEY: scientific notation

24. ANS:

2.85×10^{-7}

PTS: 1   DIF: L2   REF: 8-2 Scientific Notation
OBJ: 8-2.2 Using Scientific Notation
NAT: NAEP 2005 N1d | NAEP 2005 N1f | ADP I.1.5 | ADP I.2.2
STA: NY A.CM.3 | NY A.CM.11 | NY A.N.4   TOP: 8-2 Example 6
KEY: scientific notation | multiply a number using scientific notation

25. ANS:

$A(n) = 50 \cdot (0.7)^{n-1}$; 12.01 cm

PTS: 1   DIF: L3   REF: 8-6 Geometric Sequences
OBJ: 8-6.2 Using a Formula   NAT: NAEP 2005 A1a | NAEP 2005 A1i | ADP I.1.2
STA: NY A.PS.3 | NY A.R.6   TOP: 8-6 Example 5
KEY: geometric sequence | problem solving | word problem | multi-part question

26. ANS:
$(d + 10)(d + 3)$

PTS: 1   DIF: L3   REF: 9-5 Factoring Trinomials of the Type x^2 + bx + c
OBJ: 9-5.1 Factoring Trinomials   NAT: NAEP 2005 A3c | ADP J.1.4
STA: NY A.A.20   TOP: 9-5 Example 1   KEY: polynomial | factoring trinomials

27. ANS:
$(3x + 7)(7x + 8)$

PTS: 1   DIF: L3   REF: 9-6 Factoring Trinomials of the Type ax^2 + bx + c
OBJ: 9-6.1 Factoring ax^2 + bx + c   NAT: NAEP 2005 A3c | ADP J.1.4
STA: NY A.A.20   TOP: 9-6 Example 1   KEY: polynomial | factoring trinomials

28. ANS:
$(7g - 5)(7g + 6)$

PTS: 1   DIF: L2   REF: 9-6 Factoring Trinomials of the Type ax^2 + bx + c
OBJ: 9-6.1 Factoring ax^2 + bx + c   NAT: NAEP 2005 A3c | ADP J.1.4
STA: NY A.A.20   TOP: 9-6 Example 2   KEY: polynomial | factoring trinomials

29. ANS:
$2(2y - 5)(5y + 8)$

PTS: 1   DIF: L3   REF: 9-6 Factoring Trinomials of the Type ax^2 + bx + c
OBJ: 9-6.1 Factoring ax^2 + bx + c   NAT: NAEP 2005 A3c | ADP J.1.4
STA: NY A.A.20   TOP: 9-6 Example 3
KEY: polynomial | factoring trinomials | factoring out a monomial

30. ANS:
$(g - 7h)(3g + 8h)$

PTS: 1   DIF: L3   REF: 9-6 Factoring Trinomials of the Type ax^2 + bx + c
OBJ: 9-6.1 Factoring ax^2 + bx + c   NAT: NAEP 2005 A3c | ADP J.1.4
STA: NY A.A.20   TOP: 9-6 Example 2   KEY: polynomial | factoring trinomials

31. ANS:
$(d + 5)^2$

PTS: 1   DIF: L2   REF: 9-7 Factoring Special Cases
OBJ: 9-7.1 Factoring Perfect-Square Trinomials   NAT: ADP J.1.4
STA: NY A.A.19 | NY A.A.20   TOP: 9-7 Example 1
KEY: polynomial | factoring trinomials | perfect-square trinomial

32. ANS:
$(2b + 5)^2$

PTS: 1   DIF: L3   REF: 9-7 Factoring Special Cases
OBJ: 9-7.1 Factoring Perfect-Square Trinomials   NAT: ADP J.1.4
STA: NY A.A.19 | NY A.A.20   TOP: 9-7 Example 2
KEY: polynomial | factoring trinomials | perfect-square trinomial

33. ANS:
$(k + 9h)(k - 9h)$

PTS: 1   DIF: L3   REF: 9-7 Factoring Special Cases
OBJ: 9-7.2 Factoring the Difference of Squares   NAT: ADP J.1.4
STA: NY A.A.19 | NY A.A.20   TOP: 9-7 Example 3
KEY: polynomial | factoring trinomials | difference of squares

34. ANS:
$(8b + 7)(8b - 7)$

PTS: 1   DIF: L3   REF: 9-7 Factoring Special Cases
OBJ: 9-7.2 Factoring the Difference of Squares   NAT: ADP J.1.4
STA: NY A.A.19 | NY A.A.20   TOP: 9-7 Example 4
KEY: polynomial | factoring trinomials | difference of squares

35. ANS:
$(3g^2 - 2)(5g + 6)$

PTS: 1   DIF: L3   REF: 9-8 Factoring by Grouping
OBJ: 9-8.1 Factoring Polynomials With Four Terms   NAT: NAEP 2005 A3c | ADP J.1.4
STA: NY A.CN.4 | NY A.A.20   TOP: 9-8 Example 1
KEY: polynomial | factoring a polynomial

36. ANS:
$(d - 2)^2$

PTS: 1   DIF: L2   REF: 9-7 Factoring Special Cases

OBJ: 9-7.1 Factoring Perfect-Square Trinomials   NAT: ADP J.1.4
STA: NY A.A.19 | NY A.A.20   TOP: 9-7 Example 1
KEY: polynomial | factoring trinomials | perfect-square trinomial

37. ANS:
$(d + 4)^2$

PTS: 1   DIF: L2   REF: 9-7 Factoring Special Cases
OBJ: 9-7.1 Factoring Perfect-Square Trinomials   NAT: ADP J.1.4
STA: NY A.A.19 | NY A.A.20   TOP: 9-7 Example 1
KEY: polynomial | factoring trinomials | perfect-square trinomial

38. ANS:
1 s; 24 ft

PTS: 1   DIF: L2   REF: 10-2 Quadratic Functions
OBJ: 10-2.1 Graphing $y = ax^2 + bx + c$
NAT: NAEP 2005 A4a | NAEP 2005 A4c | ADP J.1.6 | ADP J.4.5 | ADP J.5.3
STA: NY A.RP.6 | NY A.A.8 | NY A.A.41 | NY A.G.4   TOP: 10-2 Example 2
KEY: quadratic function | maximum | vertex | problem solving | word problem | multi-part question

39. ANS:
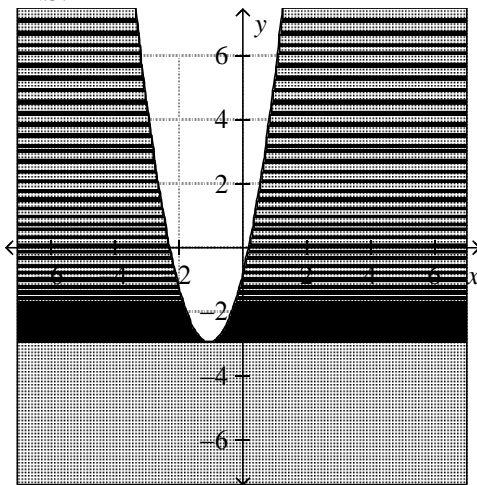
PTS: 1   DIF: L2   REF: 10-2 Quadratic Functions
OBJ: 10-2.2 Graphing Quadratic Inequalities
NAT: NAEP 2005 A4a | NAEP 2005 A4c | ADP J.1.6 | ADP J.4.5 | ADP J.5.3
STA: NY A.RP.6 | NY A.A.8 | NY A.A.41 | NY A.G.4   TOP: 10-2 Example 3
KEY: graphing | quadratic inequality

40. ANS:
± 2

PTS: 1   DIF: L2   REF: 10-3 Solving Quadratic Equations
OBJ: 10-3.2 Solving Quadratic Equations Using Square Roots
NAT: NAEP 2005 A4a | NAEP 2005 A4c | ADP I.4.1 | ADP J.3.5 | ADP J.4.5 | ADP J.5.3
STA: NY A.RP.6 | NY A.A.8 | NY A.A.28 | NY A.G.8   TOP: 10-3 Example 2
KEY: solving quadratic equations | square root

41. ANS:
$n = 0$ or $n = -1$

PTS: 1 DIF: L2 REF: 10-4 Factoring to Solve Quadratic Equations
OBJ: 10-4.1 Solving Quadratic Equations
NAT: NAEP 2005 A4a | NAEP 2005 A4c | ADP J.3.5 | ADP J.5.3
STA: NY A.PS.9 | NY A.A.8 | NY A.A.27 | NY A.A.28 TOP: 10-4 Example 1
KEY: zero-product property | solving quadratic equations

42. ANS:
8.1 in.

PTS: 1 DIF: L3 REF: 10-3 Solving Quadratic Equations
OBJ: 10-3.2 Solving Quadratic Equations Using Square Roots
NAT: NAEP 2005 A4a | NAEP 2005 A4c | ADP I.4.1 | ADP J.3.5 | ADP J.4.5 | ADP J.5.3
STA: NY A.RP.6 | NY A.A.8 | NY A.A.28 | NY A.G.8 TOP: 10-3 Example 3
KEY: solving quadratic equations | square root | word problem | problem solving

43. ANS:
$z = -9$ or $z = 3$

PTS: 1 DIF: L2 REF: 10-4 Factoring to Solve Quadratic Equations
OBJ: 10-4.1 Solving Quadratic Equations
NAT: NAEP 2005 A4a | NAEP 2005 A4c | ADP J.3.5 | ADP J.5.3
STA: NY A.PS.9 | NY A.A.8 | NY A.A.27 | NY A.A.28 TOP: 10-4 Example 2
KEY: factoring | solving quadratic equations

44. ANS:
7 m

PTS: 1 DIF: L2 REF: 10-4 Factoring to Solve Quadratic Equations
OBJ: 10-4.1 Solving Quadratic Equations
NAT: NAEP 2005 A4a | NAEP 2005 A4c | ADP J.3.5 | ADP J.5.3
STA: NY A.PS.9 | NY A.A.8 | NY A.A.27 | NY A.A.28 TOP: 10-4 Example 4
KEY: factoring | solving quadratic equations | word problem | problem solving

45. ANS:
$-1.93, 0.43$

PTS: 1 DIF: L2 REF: 10-6 Using the Quadratic Formula
OBJ: 10-6.1 Using the Quadratic Formula NAT: ADP I.4.1 | ADP J.3.5 | ADP J.5.3
TOP: 10-6 Example 2 KEY: quadratic formula | solving quadratic equations

46. ANS:
$4.29, -1.13$

PTS: 1 DIF: L3 REF: 10-6 Using the Quadratic Formula
OBJ: 10-6.2 Choosing an Appropriate Method for Solving NAT: ADP I.4.1 | ADP J.3.5 | ADP J.5.3
TOP: 10-6 Example 4 KEY: solving quadratic equations

47. ANS:
1

PTS: 1 DIF: L2 REF: 10-7 Using the Discriminant
OBJ: 10-7.1 Number of Real Solutions of a Quadratic Equation
NAT: NAEP 2005 D1e | NAEP 2005 A2g | ADP J.4.5 | ADP J.5.3
TOP: 10-7 Example 1
KEY: solving quadratic equations | one solution | two solutions | discriminant

48. ANS:

$3\sqrt{3}$

PTS: 1   DIF: L2   REF: 11-1 Simplifying Radicals
OBJ: 11-1.1 Simplifying Radical Expressions Involving Products
NAT: NAEP 2005 N3a | NAEP 2005 N5b | NAEP 2005 A3b | NAEP 2005 A3c | ADP J.1.1 | ADP J.1.6
STA: NY A.N.2 | NY A.N.3   TOP: 11-1 Example 1
KEY: radical expressions | Multiplication Property of Square Roots | square root

49. ANS:
$$\frac{\sqrt{26}}{5n^2}$$

PTS: 1   DIF: L2   REF: 11-1 Simplifying Radicals
OBJ: 11-1.2 Simplifying Radical Expressions Involving Quotients
NAT: NAEP 2005 N3a | NAEP 2005 N5b | NAEP 2005 A3b | NAEP 2005 A3c | ADP J.1.1 | ADP J.1.6
STA: NY A.N.2 | NY A.N.3   TOP: 11-1 Example 5
KEY: Division Property of Square Roots | radical expressions | fractions within a radical

50. ANS:
10

PTS: 1   DIF: L2   REF: 11-1 Simplifying Radicals
OBJ: 11-1.2 Simplifying Radical Expressions Involving Quotients
NAT: NAEP 2005 N3a | NAEP 2005 N5b | NAEP 2005 A3b | NAEP 2005 A3c | ADP J.1.1 | ADP J.1.6
STA: NY A.N.2 | NY A.N.3   TOP: 11-1 Example 6
KEY: simpling radicals by dividing | square root | radical expressions | fractions within a radical

51. ANS:
$$\frac{5\sqrt{6}}{2}$$

PTS: 1   DIF: L3   REF: 11-1 Simplifying Radicals
OBJ: 11-1.2 Simplifying Radical Expressions Involving Quotients
NAT: NAEP 2005 N3a | NAEP 2005 N5b | NAEP 2005 A3b | NAEP 2005 A3c | ADP J.1.1 | ADP J.1.6
STA: NY A.N.2 | NY A.N.3   TOP: 11-1 Example 7
KEY: Division Property of Square Roots | rationalize | radicand in the denominator | radical expressions

52. ANS:
2%

PTS: 1   DIF: L3   REF: 11-2 Operations With Radical Expressions
OBJ: 11-2.2 Simplifying Products and Quotients
NAT: NAEP 2005 A3b | ADP I.4.1 | ADP J.1.1   STA: NY A.N.3
KEY: radical equation | word problem | problem solving | Division Property of Square Roots

53. ANS:
1

PTS: 1   DIF: L2   REF: 11-3 Solving Radical Equations
OBJ: 11-3.1 Solving Radical Equations   STA: NY A.PS.9   TOP: 11-3 Example 1
KEY: radical | radical equation | solving equations

54. ANS:
$x \geq -2$

PTS: 1   DIF: L2   REF: 11-4 Graphing Square Root Functions
OBJ: 11-4.1 Graphing Square Root Functions
NAT: NAEP 2005 M1e | ADP J.1.6 | ADP J.2.2 | ADP J.2.3 | ADP K.6
STA: NY A.R.8   TOP: 11-4 Example 1
KEY: radical expressions | graphing | function | square root | domain

55. ANS:
0.8391

PTS: 1   DIF: L2   REF: 11-5 Trigonometric Ratios
OBJ: 11-5.1 Finding Trigonometric Ratios
NAT: ADP I.1.2 | ADP I.4.1 | ADP K.11.1 | ADP K.11.2   STA: NY A.A.42 | NY A.A.44
TOP: 11-5 Example 2   KEY: sine | cosine | tangent | trigonometric ratios | calculator

56. ANS:
10

PTS: 1   DIF: L2   REF: 11-5 Trigonometric Ratios
OBJ: 11-5.1 Finding Trigonometric Ratios
NAT: ADP I.1.2 | ADP I.4.1 | ADP K.11.1 | ADP K.11.2   STA: NY A.A.42 | NY A.A.44
TOP: 11-5 Example 3   KEY: tangent | sine | cosine | trigonometric ratios | right triangle

57. ANS:
7.5

PTS: 1   DIF: L2   REF: 11-5 Trigonometric Ratios
OBJ: 11-5.1 Finding Trigonometric Ratios
NAT: ADP I.1.2 | ADP I.4.1 | ADP K.11.1 | ADP K.11.2   STA: NY A.A.42 | NY A.A.44
TOP: 11-5 Example 3   KEY: cosine | right triangle | sine | tangent | trigonometric ratios

58. ANS:
3.38 km

PTS: 1   DIF: L3   REF: 11-6 Angles of Elevation and Depression
OBJ: 11-6.1 Solving Problems Using Trigonometric Ratios
NAT: NAEP 2005 M1f | NAEP 2005 M1m | ADP I.1.2 | ADP I.4.1 | ADP K.2.3 | ADP K.11.1 | ADP K.11.2
STA: NY A.PS.4 | NY A.A.44   TOP: 11-6 Example 2
KEY: angle of elevation | trigonometric ratios | tangent | word problem | problem solving

59. ANS:
$\dfrac{7}{25}$

PTS: 1   DIF: L2   REF: 11-5 Trigonometric Ratios
OBJ: 11-5.1 Finding Trigonometric Ratios
NAT: ADP I.1.2 | ADP I.4.1 | ADP K.11.1 | ADP K.11.2   STA: NY A.A.42 | NY A.A.44
TOP: 11-5 Example 3   KEY: trigonometric ratios | sine | cosine | tangent | right triangle

60. ANS:
$\dfrac{7}{1-5x}$

PTS: 1   DIF: L2   REF: 12-2 Simplifying Rational Functions
OBJ: 12-2.1 Simplifying Rational Expressions
NAT: NAEP 2005 A3c | ADP J.1.5 | ADP J.1.6
STA: NY A.CM.2 | NY A.CM.13 | NY A.R.2   TOP: 12-2 Example 2

KEY: rational expression
61. ANS:

$$\frac{x - 7}{x - 6}$$

PTS: 1   DIF: L2   REF: 12-2 Simplifying Rational Functions
OBJ: 12-2.1 Simplifying Rational Expressions
NAT: NAEP 2005 A3c | ADP J.1.5 | ADP J.1.6
STA: NY A.CM.2 | NY A.CM.13 | NY A.R.2   TOP: 12-2 Example 2
KEY: rational expression
62. ANS:

$$\frac{x + 2}{x - 8}$$

PTS: 1   DIF: L2   REF: 12-3 Multiplying and Dividing Rational Expressions
OBJ: 12-3.2 Dividing Rational Expressions
NAT: NAEP 2005 A3b | NAEP 2005 A3c | ADP J.1.5   STA: NY A.A.18
TOP: 12-3 Example 5   KEY: rational expression
63. ANS:

$$\frac{s}{s - 5}$$

PTS: 1   DIF: L2   REF: 12-3 Multiplying and Dividing Rational Expressions
OBJ: 12-3.2 Dividing Rational Expressions
NAT: NAEP 2005 A3b | NAEP 2005 A3c | ADP J.1.5   STA: NY A.A.18
TOP: 12-3 Example 4   KEY: rational expression
64. ANS:
$-8m^7 + 10m^5 - 3m^4$

PTS: 1   DIF: L2   REF: 12-4 Dividing Polynomials
OBJ: 12-4.1 Dividing Polynomials   NAT: NAEP 2005 A3b | NAEP 2005 A3c | ADP J.1.3
STA: NY A.A.14   TOP: 12-4 Example 1   KEY: rational expression
65. ANS:

$$\frac{-8x - 6}{x - 8}$$

PTS: 1   DIF: L2   REF: 12-5 Adding and Subtracting Rational Expressions
OBJ: 12-5.1 Adding and Subtracting Rational Expressions With Like Denominators
NAT: NAEP 2005 N5b | NAEP 2005 A3b | NAEP 2005 A3c | ADP J.1.5
STA: NY A.A.17   TOP: 12-5 Example 2   KEY: rational expression
66. ANS:
$2x^6y^6$

PTS: 1   DIF: L2   REF: 12-5 Adding and Subtracting Rational Expressions
OBJ: 12-5.2 Adding and Subtracting Rational Expressions With Unlike Denominators
NAT: NAEP 2005 N5b | NAEP 2005 A3b | NAEP 2005 A3c | ADP J.1.5
STA: NY A.A.17   TOP: 12-5 Example 3   KEY: rational expression
67. ANS:
77

PTS: 1   DIF: L2   REF: 12-7 Counting Methods and Permutations
OBJ: 12-7.1 Using the Multiplication Counting Principle   NAT: ADP I.4.2
STA: NY A.R.4 | NY A.N.7 | NY A.N.8   TOP: 12-7 Example 2
KEY: word problem | problem solving | multiplication counting principle

68. ANS:
6,227,020,800

PTS: 1   DIF: L2   REF: 12-7 Counting Methods and Permutations
OBJ: 12-7.2 Finding Permutations   NAT: ADP I.4.2   STA: NY A.R.4 | NY A.N.7 | NY A.N.8
TOP: 12-7 Example 3   KEY: word problem | problem solving | permutation

69. ANS:
(4, –3)

PTS: 1   DIF: L3   REF: 7-1 Solving Systems By Graphing
OBJ: 7-1.1 Solving Systems By Graphing
NAT: NAEP 2005 A4d | NAEP 2005 A4g | ADP J.3.3 | ADP J.4.3 | ADP J.5.2
STA: NY A.PS.9 | NY A.A.7 | NY A.G.7 | NY A.G.9   TOP: 7-1 Example 1
KEY: system of linear equations | graphing a system of linear equations
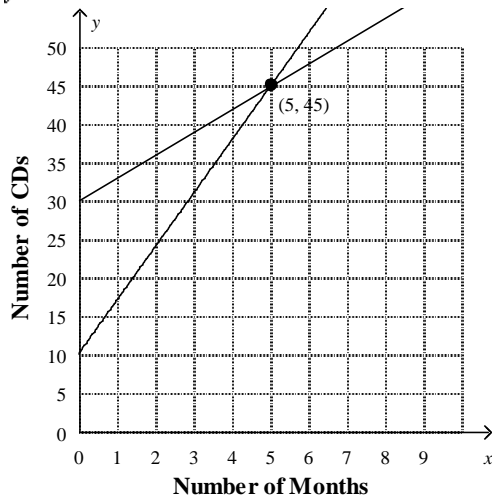
70. ANS:
(6, 14)

PTS: 1   DIF: L2   REF: 7-2 Solving Systems Using Substitution
OBJ: 7-2.1 Using Substitution   NAT: NAEP 2005 A4g | ADP J.3.3 | ADP J.5.2
STA: NY A.A.7 | NY A.A.10 | NY A.G.7   TOP: 7-2 Example 1
KEY: system of linear equations | substitution method

71. ANS:
$y \geq 5x - 5$

PTS: 1   DIF: L3   REF: 7-5 Linear Inequalities
OBJ: 7-5.1 Graphing Linear Inequalities   NAT: NAEP 2005 A3a | ADP J.4.4
STA: NY A.A.6 | NY A.A.21 | NY A.A.24 | NY A.G.6   TOP: 7-5 Example 1
KEY: linear inequality | graphing

72. ANS:
$y = 3x + 30$
$y = 7x + 10$

5 months

PTS: 1   DIF: L2   REF: 7-1 Solving Systems By Graphing
OBJ: 7-1.1 Solving Systems By Graphing
NAT: NAEP 2005 A4d | NAEP 2005 A4g | ADP J.3.3 | ADP J.4.3 | ADP J.5.2
STA: NY A.PS.9 | NY A.A.7 | NY A.G.7 | NY A.G.9   TOP: 7-1 Example 2
KEY: word problem | problem solving | system of linear equations | graphing a system of linear equations

73. ANS:
length = 16 cm; width = 3 cm

PTS: 1   DIF: L2   REF: 7-2 Solving Systems Using Substitution
OBJ: 7-2.1 Using Substitution   NAT: NAEP 2005 A4g | ADP J.3.3 | ADP J.5.2
STA: NY A.A.7 | NY A.A.10 | NY A.G.7   TOP: 7-2 Example 3
KEY: word problem | problem solving | system of linear equations | substitution method

74. ANS:
18 L

PTS: 1   DIF: L2   REF: 7-4 Applications of Linear Systems
OBJ: 7-4.1 Writing Systems of Linear Equations
NAT: NAEP 2005 A4g | ADP J.3.3 | ADP J.4.3 | ADP J.5.2
STA: NY A.PS.4 | NY A.PS.10 | NY A.RP.1 | NY A.CN.6 | NY A.CN.7 | NY A.R.7 | NY A.A.7 | NY
A.A.10 | NY A.G.7   TOP: 7-4 Example 1
KEY: word problem | problem solving | system of linear equations | graphing a system of linear equations |
substitution method | elimination method | mixture problem

75. ANS:
$5x + 12y \geq 20$
$5x + 12y \leq 95$
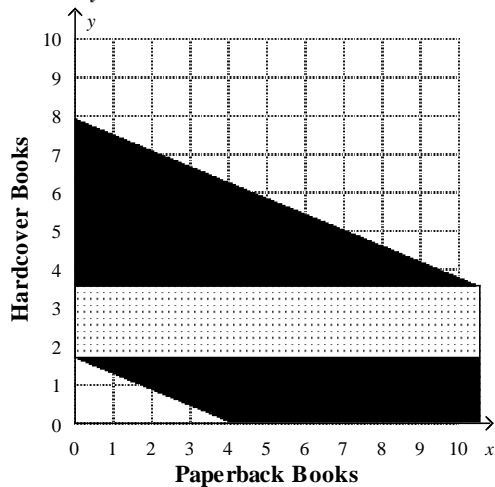
PTS: 1   DIF: L2   REF: 7-6 Systems of Linear Inequalities
OBJ: 7-6.2 Writing and Using Systems of Linear Inequalities   NAT: NAEP 2005 A4g | ADP J.4.4
STA: NY A.A.40 | NY A.G.7   TOP: 7-6 Example 4
KEY: word problem | problem solving | linear inequality | graphing | system of linear inequalities | graphing a
system of linear inequalities