# Algebra 1a Final Exam 2016-2017 Review

## Short Answer

**Graph the inequality.**

1. $x < 1$

**Solve the inequality. Then graph your solution.**

2. $x - 2 \leq -9$

3. $q + 1 \leq 6$

4. $\frac{x}{7} > 7$

5. $\frac{5}{8}v < \frac{7}{5}$

6. $2x \geq 6$

7. $-8 \leq 2x - 4 < 6$

8. $-10 < 3x - 7 < 17$

9. $|6x + 3| < 15$

**Solve the inequality.**

10. $-\frac{2}{3}x - 3 < \frac{5}{6}$

11. $p + 8 - 2(p - 24) > 0$

12. $6(x - 12) > 18$

13. $6 + 20a \geq 14(a + 6)$

14. $2m - 3 \leq 3m + 18$

15. The French club is sponsoring a bake sale. If their goal is to raise at least $140, how many pastries must they sell at $3.50 each in order to meet that goal? Write and solve an inequality.

16. A plane that carries mail makes a round trip each day from Chicago to New York. It makes 3 intermediate stops on the way to New York and 1 intermediate stop on the way back to Chicago. Suppose you make a graph of the altitude of the plane for one day, with time on the horizontal axis and altitude on the vertical axis. How many times will the graph touch the horizontal axis?

17. Evaluate $f(x) = 2x + 4$ for $x = 3$.

18. Evaluate $f(x) = -\frac{1}{2}x$ for $x = -3$.

19. Evaluate $f(x) = -x^2 - 4$ for $x = -1$.

20. A taxi company charges passengers $1.25 for a ride, no matter how long the ride is, and an additional $0.25 for each mile traveled. The rule $c = 0.25m + 1.25$ describes the relationship between the number of miles $m$ and the total cost of the ride $c$.
**a.** What is the charge for a 1-mile ride?
**b.** What is the charge for a 2.7-mile ride?

**Graph the function.**

21. $y = -2x + 1$

22. $y = |x| - 2$

23. $y = x^2 - 2$

**Write a function rule for the table.**

24.

| $x$ | $f(x)$ |
|---|---|
| –1 | 3 |
| 0 | 4 |
| 1 | 5 |
| 2 | 6 |

25. A snail travels at a rate of 2.03 feet per minute.
**a.** Write a rule to describe the function.
**b.** How far will the snail travel in 9 minutes?

26. Write an equation of the direct variation that includes the point (–9, 14).

27. The distance a spring will stretch varies directly with how much weight is attached to the spring. If a spring stretches 7 inches with 50 pounds attached, how far will it stretch with 80 pounds attached? Round to the nearest tenth of an inch.

28. The time $t$ required to drive a certain distance varies inversely with the speed $r$. If it takes 4 hours to drive the distance at 35 miles per hour, how long will it take to drive the same distance at 50 miles per hour?

**Do the data in the table represent a direct variation or an inverse variation? Write an equation to model the data in the table.**

29.

| | | | | |
|---|---|---|---|---|
| $x$ | 6 | 8 | 12 | 20 |
| $y$ | 9 | 12 | 18 | 30 |

**Use inductive reasoning to describe the pattern. Then find the next two numbers in the pattern.**

30. 3, 6, 12, 24, . . .

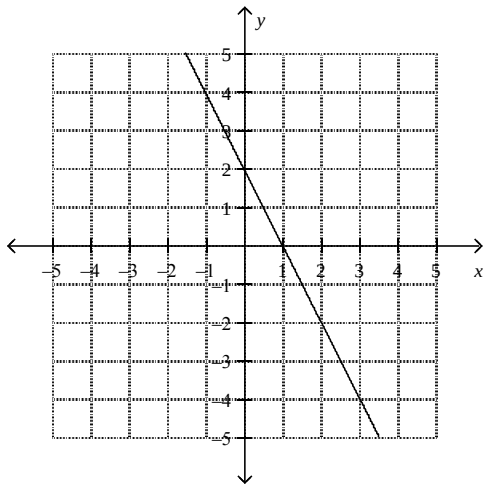
**Find the common difference of the arithmetic sequence.**

31. 2, –1, –4, –7, . . .

**Find the rate of change for the situation.**

32. You run 3 miles in one hour and 12 miles in four hours.

**Find the slope of the line.**

33. 


**Find the slope of the line that passes through the pair of points.**

34. (4, 5), (7, 1)

**Find the slope and *y*-intercept of the line.**

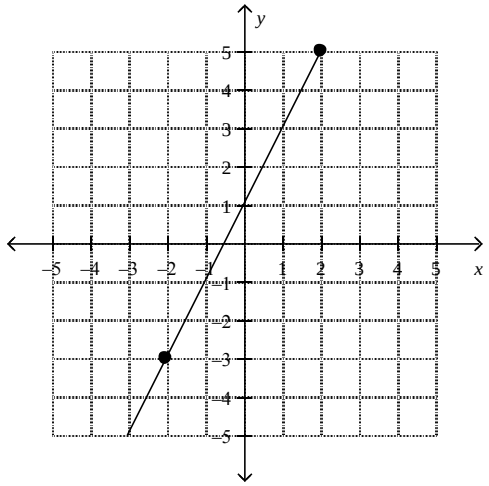
35. $y = \frac{7}{3}x + 4$

**Write an equation of a line with the given slope and *y*-intercept.**

36. $m = 2, b = -5$

**Write the slope-intercept form of the equation for the line.**

37.



38. Use the slope and $y$-intercept to graph the equation.

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

**Find the $x$- and $y$-intercept of the line.**

39. $2x + 3y = -18$

40. $3x - y = 12$

41. Write $y = \frac{4}{5}x + 5$ in standard form using integers.

**Graph the equation.**

42. $y + 2 = -(x - 4)$

43. $y = 2$

**Write an equation in point-slope form for the line through the given point with the given slope.**

44. $(4, -6)$; $m = \frac{3}{5}$

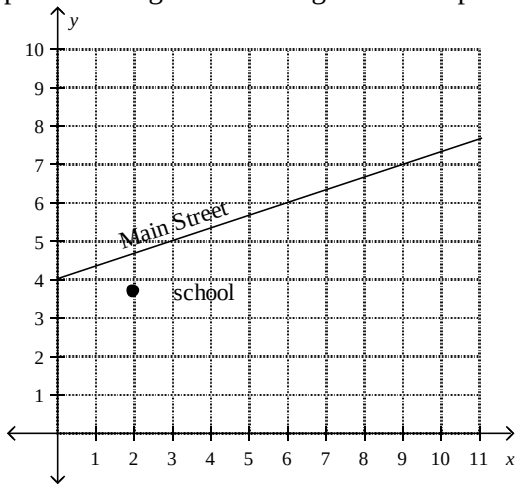
45. $(1, 8)$; $m = -\frac{1}{4}$

**Is the relationship shown by the data linear? If so, model the data with an equation.**

46.

| $x$ | $y$ |
|---|---|
| –1 | –4 |
| 5 | –5 |
| 11 | –6 |
| 17 | –7 |

47. The map shows Main Street and the construction site for the new school. Find the equation of a "street"that passes through the building site and is parallel to Main Street.



**Write an equation for the line that is parallel to the given line and that passes through the given point.**

48. $y = -5x + 3$; $(-6, 3)$

49. Tom has a collection of 30 CDs and Nita has a collection of 12 CDs. Tom is adding 2 CDs a month to his collection while Nita is adding 4 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.

50. Find a solution to the following system of equations.
$x + y = 4$
$x + 5y = 8$

51. What is the solution of the system of equations?
$y = -2x + 1$
$y = 3x - 9$

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

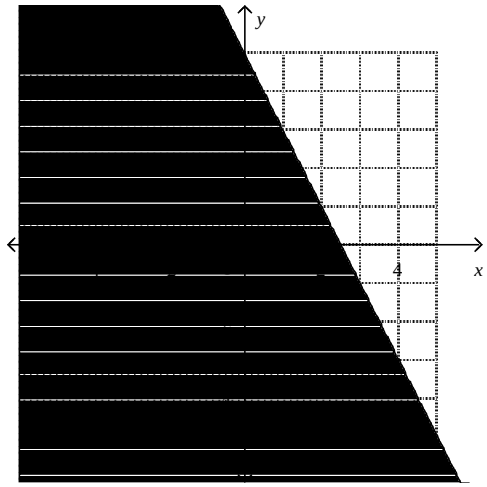
52. $y = -4x + 4$
$y = -4x + 2$

**Solve the system using elimination.**

53. $6x + 3y = -12$
$6x + 2y = -4$

54. 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?

**Write the linear inequality shown in the graph.**

55. 


56. You have $42 to spend at the music store. Each cassette tape costs $6 and each CD costs $10. Write and graph a linear inequality that represents this situation. Let *x* represent the number of tapes and *y* the number of CDs.

**Simplify the expression.**

57. $(-7.1)^0$

58. $\frac{8}{a^{-2}b^6}$

59. $4^{-1} \cdot 6^{0}$

60. $7^{7} \cdot 7^{10} \cdot 7^{5}$

61. $(n^{5})^{2}$

62. $\dfrac{8^{12}}{8^{10}}$

63. $\left(\frac{1}{5c}\right)^2$

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

**Write the number in scientific notation.**

65. 8,330

66. 0.0000744

**Simplify the expression. Write the answer using scientific notation.**

67. $3\left(5.2 \times 10^3\right)$

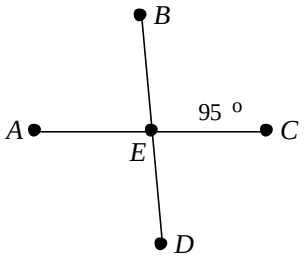
**Find the common ratio of the sequence.**

68. 3, –18, 108, –648, . . .

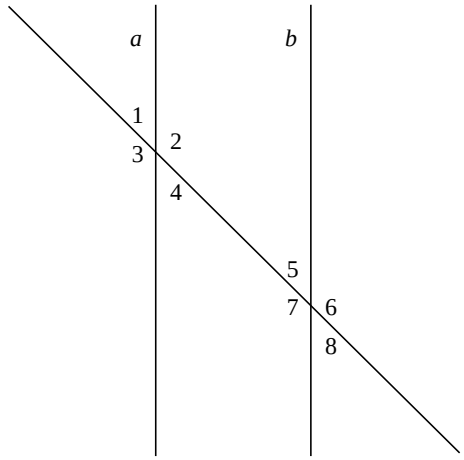
**Find the first, fourth, and eighth terms of the sequence.**

69. $A(n) = 2 \cdot 4^{n-1}$

70. Find the measure of $\angle CED$ for $m\angle BEC = 95°$.

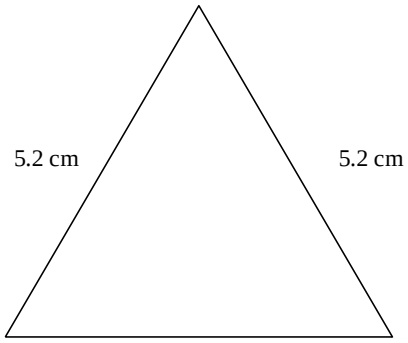


**In the diagram *a* || *b*. Use the diagram to answer the question.**
**(Diagram not to scale.)**



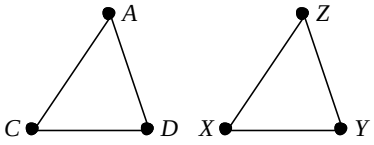

71. Name the corresponding angle to $\angle 2$.

72. Classify the triangle by its sides and angles.




not drawn to scale

**In the figures, $\triangle CDA \cong \triangle XYZ$.**




73. If *CD* = 31 mm, what is *XY*?

74. The diagram shows the dimensions of a triangular garden at the park. If another triangular garden spot is congruent to this triangle, what is the perimeter of the other garden?

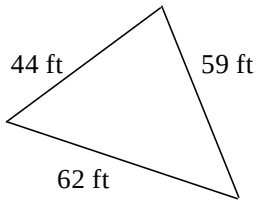
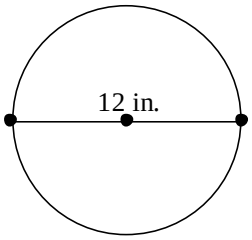



Diagram not to scale.

**Find the circumference of the circle. Use $\pi \approx 3.14$.**

75.



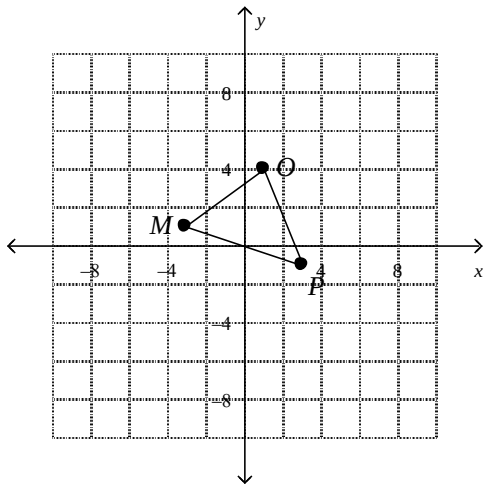

**Find the circumference of the circle with the given radius or diameter. Use $\pi \approx 3.14$.**

76. radius = 18 cm

77. diameter = 28 cm

78. Find the measure of the central angle that you would draw to represent 21% in a circle graph. Round your answer to the nearest degree.

**Graph the image of $\triangle MOP$ for the translation.**



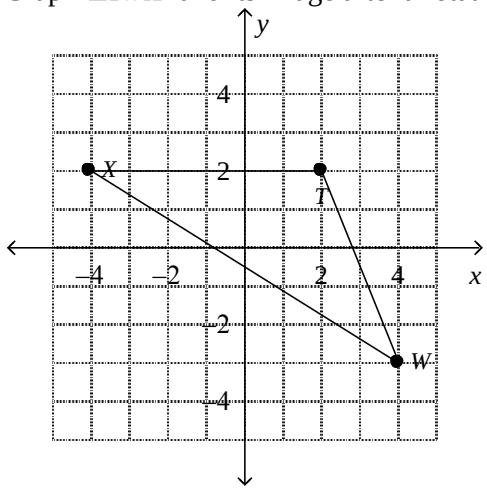

79. 3 units to the left

80. Use arrow notation to describe the translation of point $P(6, 6)$ to point $P'(7, 9)$.

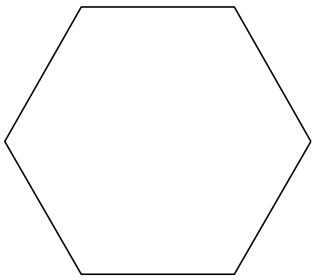
81. Graph $\triangle RST$ with vertices $R(0, 4)$, $S(–5, –1)$, and $T(5, 2)$ and its image after a reflection over $y = –1$.

82. Graph $\triangle RST$ with vertices $R(9, 6)$, $S(3, –6)$, and $T(2, –2)$ and its image after a reflection over the $y$-axis.

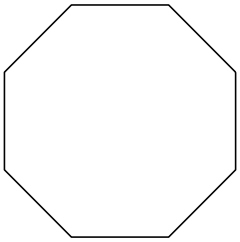
83. Graph $\Delta TWX$ and its image after a rotation of 90° counterclockwise about the origin.




84. State whether the figure has rotational symmetry. If so, what is the angle of rotation? Round your answer to the nearest tenth of a degree, if necessary.



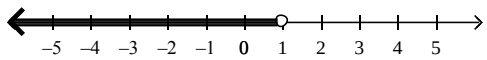
85. How many lines of symmetry does the figure have?



# Algebra 1a Final Exam 2016-2017 Review
# Answer Section

## SHORT ANSWER

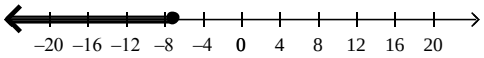
1. ANS:




PTS: 1 DIF: L2 REF: 4-1 Inequalities and Their Graphs
OBJ: 4-1.2 Graphing and Writing Inequalities in One Variable NAT: NAEP 2005 A3a | ADP J.3.1
STA: NY A.PS.1 | NY A.CM.12 | NY A.CN.1 | NY A.A.4 | NY A.A.21 | NY A.R.1
TOP: 4-1 Example 3 KEY: graphing | inequality

2. ANS:

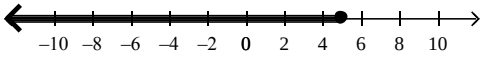
$x \leq -7$




PTS: 1 DIF: L2 REF: 4-2 Solving Inequalities Using Addition and Subtraction
OBJ: 4-2.1 Using Addition to Solve Inequalities
NAT: NAEP 2005 N5e | NAEP 2005 A4a | NAEP 2005 A4c | ADP J.3.1
STA: NY A.PS.4 | NY A.RP.9 | NY A.A.4 | NY A.A.5 | NY A.A.6 | NY A.A.21 | NY A.A.24
TOP: 4-2 Example 1
KEY: Addition Property of Inequality | solving inequalities | graphing

3. ANS:

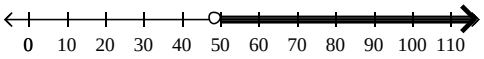
$q \leq 5$




PTS: 1 DIF: L2 REF: 4-2 Solving Inequalities Using Addition and Subtraction
OBJ: 4-2.2 Using Subtraction to Solve Inequalities
NAT: NAEP 2005 N5e | NAEP 2005 A4a | NAEP 2005 A4c | ADP J.3.1
STA: NY A.PS.4 | NY A.RP.9 | NY A.A.4 | NY A.A.5 | NY A.A.6 | NY A.A.21 | NY A.A.24
TOP: 4-2 Example 3 KEY: Subtraction Property of Inequality | solving inequalities

4. ANS:

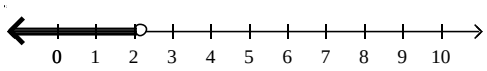
$x > 49$




PTS: 1 DIF: L2
REF: 4-3 Solving Inequalities Using Multiplication and Division
OBJ: 4-3.1 Using Multiplication to Solve Inequalities
NAT: NAEP 2005 A4a | NAEP 2005 A4c | ADP J.3.1
STA: NY A.A.4 | NY A.A.5 | NY A.A.6 | NY A.A.24 TOP: 4-3 Example 1
KEY: Multiplication Property of Inequality for c > 0 | graphing | solving inequalities

5. ANS:

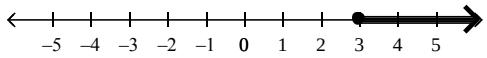
$v < 2\frac{6}{25}$




PTS: 1 DIF: L3
REF: 4-3 Solving Inequalities Using Multiplication and Division
OBJ: 4-3.1 Using Multiplication to Solve Inequalities
NAT: NAEP 2005 A4a | NAEP 2005 A4c | ADP J.3.1
STA: NY A.A.4 | NY A.A.5 | NY A.A.6 | NY A.A.24 TOP: 4-3 Example 1
KEY: Multiplication Property of Inequality for c > 0 | solving inequalities

6. ANS:

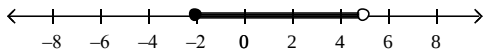
$x \geq 3$




PTS: 1 DIF: L2
REF: 4-3 Solving Inequalities Using Multiplication and Division
OBJ: 4-3.2 Using Division to Solve Inequalities
NAT: NAEP 2005 A4a | NAEP 2005 A4c | ADP J.3.1
STA: NY A.A.4 | NY A.A.5 | NY A.A.6 | NY A.A.24 TOP: 4-3 Example 3
KEY: Division Property of Inequality | solving inequalities

7. ANS:

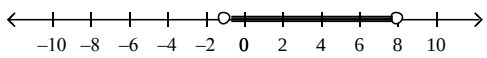
$-2 \leq x < 5$




PTS: 1 DIF: L2 REF: 4-5 Compound Inequalities
OBJ: 4-5.1 Solving Compound Inequalities Containing And
NAT: NAEP 2005 A3a | NAEP 2005 A4c | ADP J.3.1
STA: NY A.CM.12 | NY A.A.4 | NY A.A.5 | NY A.A.6 | NY A.A.24
TOP: 4-5 Example 2
KEY: solving a compound inequality containing AND | compound inequality

8. ANS:

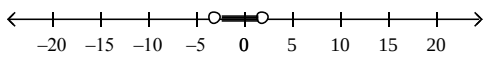
$-1 < x < 8$




PTS: 1 DIF: L2 REF: 4-5 Compound Inequalities
OBJ: 4-5.1 Solving Compound Inequalities Containing And
NAT: NAEP 2005 A3a | NAEP 2005 A4c | ADP J.3.1
STA: NY A.CM.12 | NY A.A.4 | NY A.A.5 | NY A.A.6 | NY A.A.24
TOP: 4-5 Example 2
KEY: solving a compound inequality containing AND | compound inequality

9. ANS:

$-3 < x < 2$




PTS: 1 DIF: L3 REF: 4-6 Absolute Value Equations and Inequalities
OBJ: 4-6.2 Solving Absolute Value Inequalities

NAT: NAEP 2005 N1g | NAEP 2005 A4a | NAEP 2005 A4c | ADP J.3.1
STA: NY A.G.4 TOP: 4-6 Example 3
KEY: solving absolute value inequalities | graphing | solving a compound inequality containing AND

10. ANS:
$x > -5\frac{3}{4}$

PTS: 1 DIF: L3 REF: 4-4 Solving Multi-Step Inequalities
OBJ: 4-4.1 Solving Inequalities With Variables on One Side
NAT: NAEP 2005 A3b | NAEP 2005 A3c | NAEP 2005 A4a | ADP J.3.1
STA: NY A.A.4 | NY A.A.5 | NY A.A.6 | NY A.A.24 TOP: 4-4 Example 1
KEY: multi-step inequality with variables on one side | solving inequalities

11. ANS:
$p < -40$

PTS: 1 DIF: L3 REF: 4-4 Solving Multi-Step Inequalities
OBJ: 4-4.1 Solving Inequalities With Variables on One Side | 4-1.1 Identifying Solutions of Inequalities
NAT: NAEP 2005 A3b | NAEP 2005 A3c | NAEP 2005 A4a | ADP J.3.1 | NAEP 2005 A3a | ADP J.3.1
STA: NY A.A.4 | NY A.A.5 | NY A.A.6 | NY A.A.24 | NY A.PS.1 | NY A.CM.12 | NY A.CN.1 | NY A.A.4 | NY A.A.21 | NY A.R.1 TOP: 4-4 Example 3
KEY: solving inequalities using the Distributive Property | solving inequalities | like terms

12. ANS:
$x > 15$

PTS: 1 DIF: L2 REF: 4-4 Solving Multi-Step Inequalities
OBJ: 4-4.1 Solving Inequalities With Variables on One Side
NAT: NAEP 2005 A3b | NAEP 2005 A3c | NAEP 2005 A4a | ADP J.3.1
STA: NY A.A.4 | NY A.A.5 | NY A.A.6 | NY A.A.24 TOP: 4-4 Example 3
KEY: solving inequalities using the Distributive Property | like terms | solving inequalities

13. ANS:
$a \geq 13$

PTS: 1 DIF: L2 REF: 4-4 Solving Multi-Step Inequalities
OBJ: 4-4.2 Solving Inequalities With Variables on Both Sides
NAT: NAEP 2005 A3b | NAEP 2005 A3c | NAEP 2005 A4a | ADP J.3.1
STA: NY A.A.4 | NY A.A.5 | NY A.A.6 | NY A.A.24 TOP: 4-4 Example 5
KEY: multi-step inequality | solving inequalities using the Distributive Property

14. ANS:
$m \geq -21$

PTS: 1 DIF: L2 REF: 4-4 Solving Multi-Step Inequalities
OBJ: 4-4.2 Solving Inequalities With Variables on Both Sides
NAT: NAEP 2005 A3b | NAEP 2005 A3c | NAEP 2005 A4a | ADP J.3.1
STA: NY A.A.4 | NY A.A.5 | NY A.A.6 | NY A.A.24 TOP: 4-4 Example 4
KEY: solving inequalities

15. ANS:
$3.50p \geq 140;\ p \geq 40$

PTS: 1 DIF: L3
REF: 4-3 Solving Inequalities Using Multiplication and Division

OBJ: 4-3.2 Using Division to Solve Inequalities
NAT: NAEP 2005 A4a | NAEP 2005 A4c | ADP J.3.1
STA: NY A.A.4 | NY A.A.5 | NY A.A.6 | NY A.A.24 TOP: 4-3 Example 4
KEY: Division Property of Inequality | problem solving | word problem | solving inequalities

16. ANS:
7

PTS: 1 DIF: L3 REF: 5-1 Relating Graphs to Events
OBJ: 5-1.1 Interpreting, Sketching, and Analyzing Graphs
NAT: NAEP 2005 A2a | NAEP 2005 A2c | ADP J.4.8
STA: NY A.CM.2 | NY A.CN.3 | NY A.R.6 TOP: 5-1 Example 2
KEY: graphing | sketch a graph | problem solving | word problem

17. ANS:
10

PTS: 1 DIF: L2 REF: 5-2 Relations and Functions
OBJ: 5-2.2 Evaluating Functions NAT: NAEP 2005 A1g | ADP J.2.1 | ADP J.2.3
STA: NY A.G.3 TOP: 5-2 Example 4 KEY: function

18. ANS:
$1\frac{1}{2}$

PTS: 1 DIF: L2 REF: 5-2 Relations and Functions
OBJ: 5-2.2 Evaluating Functions NAT: NAEP 2005 A1g | ADP J.2.1 | ADP J.2.3
STA: NY A.G.3 TOP: 5-2 Example 4 KEY: function

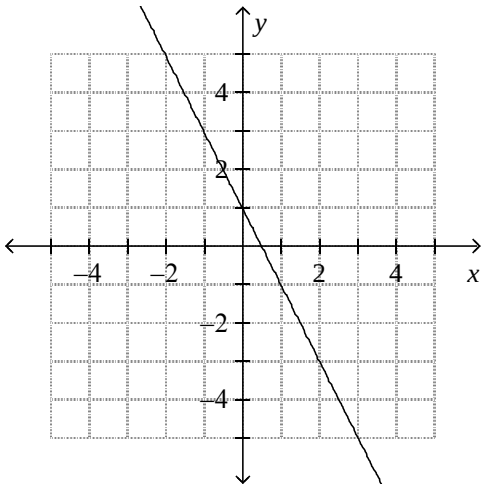
19. ANS:
–5

PTS: 1 DIF: L2 REF: 5-2 Relations and Functions
OBJ: 5-2.2 Evaluating Functions NAT: NAEP 2005 A1g | ADP J.2.1 | ADP J.2.3
STA: NY A.G.3 TOP: 5-2 Example 4 KEY: function |

20. ANS:
$1.50; $1.93

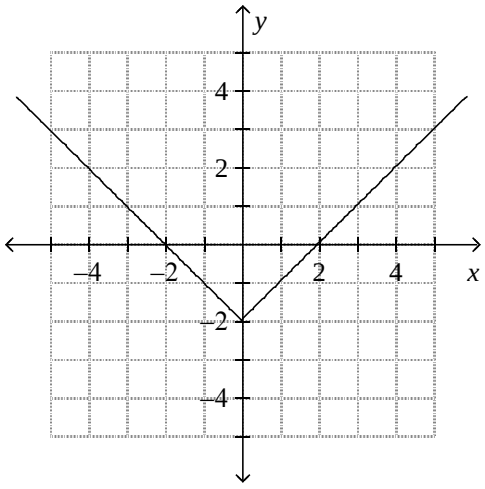
PTS: 1 DIF: L3 REF: 5-2 Relations and Functions
OBJ: 5-2.2 Evaluating Functions NAT: NAEP 2005 A1g | ADP J.2.1 | ADP J.2.3
STA: NY A.G.3 KEY: function | multi-part question

21. ANS:



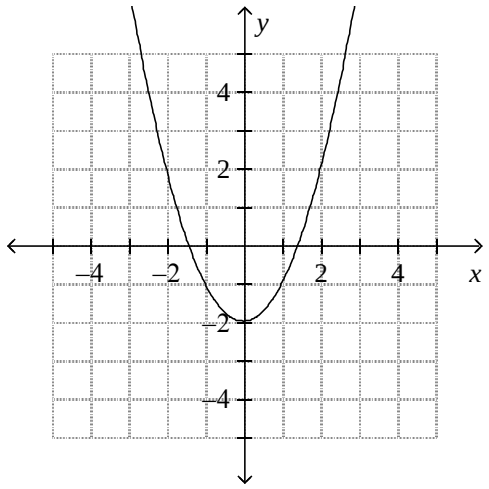

PTS: 1 DIF: L2 REF: 5-3 Function Rules, Tables, and Graphs
OBJ: 5-3.1 Modeling Functions
NAT: NAEP 2005 A1e | NAEP 2005 A2a | ADP J.2.3 | ADP L.1.1
STA: NY A.PS.2 | NY A.PS.9 | NY A.CM.4 | NY A.CN.1 | NY A.R.1 | NY A.R.2 | NY A.R.3 | NY A.R.4 | NY A.R.5 | NY A.R.7 | NY A.G.4 TOP: 5-3 Example 1
KEY: graphing | function

22. ANS:




PTS: 1 DIF: L2 REF: 5-3 Function Rules, Tables, and Graphs
OBJ: 5-3.1 Modeling Functions
NAT: NAEP 2005 A1e | NAEP 2005 A2a | ADP J.2.3 | ADP L.1.1
STA: NY A.PS.2 | NY A.PS.9 | NY A.CM.4 | NY A.CN.1 | NY A.R.1 | NY A.R.2 | NY A.R.3 | NY A.R.4 | NY A.R.5 | NY A.R.7 | NY A.G.4 TOP: 5-3 Example 4
KEY: graphing | function | absolute value

23. ANS:




PTS: 1 DIF: L2 REF: 5-3 Function Rules, Tables, and Graphs
OBJ: 5-3.1 Modeling Functions
NAT: NAEP 2005 A1e | NAEP 2005 A2a | ADP J.2.3 | ADP L.1.1
STA: NY A.PS.2 | NY A.PS.9 | NY A.CM.4 | NY A.CN.1 | NY A.R.1 | NY A.R.2 | NY A.R.3 | NY A.R.4 | NY A.R.5 | NY A.R.7 | NY A.G.4 TOP: 5-3 Example 4
KEY: graphing | function | quadratic function

24. ANS:
$f(x) = x + 4$

PTS: 1 DIF: L2 REF: 5-4 Writing a Function Rule
OBJ: 5-4.1 Writing Function Rules NAT: NAEP 2005 A1e | NAEP 2005 A3a
STA: NY A.PS.2 | NY A.PS.3 | NY A.PS.4 | NY A.CM.3 | NY A.CM.11 | NY A.A.5 | NY A.R.7
TOP: 5-4 Example 1 KEY: rule | function

25. ANS:
$d(t) = 2.03t$; 18.27 ft

PTS: 1 DIF: L2 REF: 5-4 Writing a Function Rule
OBJ: 5-4.1 Writing Function Rules NAT: NAEP 2005 A1e | NAEP 2005 A3a
STA: NY A.PS.2 | NY A.PS.3 | NY A.PS.4 | NY A.CM.3 | NY A.CM.11 | NY A.A.5 | NY A.R.7
TOP: 5-4 Example 3 KEY: function | multi-part question

26. ANS:
$y = -1\frac{5}{9}x$

PTS: 1 DIF: L2 REF: 5-5 Direct Variation
OBJ: 5-5.1 Writing the Equation of a Direct Variation
NAT: NAEP 2005 A2a | NAEP 2005 A2b | ADP I.1.2
STA: NY A.CM.2 | NY A.CM.11 | NY A.CM.12 | NY A.A.5 | NY A.N.5
TOP: 5-5 Example 2 KEY: direct and inverse variation

27. ANS:
11.2 in.

PTS: 1 DIF: L2 REF: 5-5 Direct Variation
OBJ: 5-5.2 Proportions and Equations of Direct Variations
NAT: NAEP 2005 A2a | NAEP 2005 A2b | ADP I.1.2

STA: NY A.CM.2 | NY A.CM.11 | NY A.CM.12 | NY A.A.5 | NY A.N.5
TOP: 5-5 Example 5
KEY: direct and inverse variation | word problem | problem solving

28. ANS:
2.8 hours

PTS: 1 DIF: L3 REF: 5-6 Inverse Variation
OBJ: 5-6.1 Solving Inverse Variations NAT: NAEP 2005 A1e | NAEP 2005 A1h
STA: NY A.CM.11 | NY A.CM.12 | NY A.CM.13 | NY A.CN.6 | NY A.CN.7 | NY A.R.6
TOP: 5-6 Example 3
KEY: word problem | problem solving | constant of variation | inverse variation

29. ANS:
direct variation; $y = 1.5x$

PTS: 1 DIF: L2 REF: 5-6 Inverse Variation
OBJ: 5-6.2 Comparing Direct and Inverse Variation NAT: NAEP 2005 A1e | NAEP 2005 A1h
STA: NY A.CM.11 | NY A.CM.12 | NY A.CM.13 | NY A.CN.6 | NY A.CN.7 | NY A.R.6
TOP: 5-6 Example 4
KEY: constant of variation | inverse variation | direct and inverse variation

30. ANS:
multiply the previous term by 2; 48, 96

PTS: 1 DIF: L2 REF: 5-7 Describing Number Patterns
OBJ: 5-7.1 Inductive Reasoning and Number Patterns NAT: NAEP 2005 A1a | NAEP 2005 A1b
STA: NY A.PS.3 | NY A.RP.12 TOP: 5-7 Example 1
KEY: inductive reasoning | conjecture | geometric sequence

31. ANS:
–3

PTS: 1 DIF: L2 REF: 5-7 Describing Number Patterns
OBJ: 5-7.2 Writing Rules for Arithmetic Sequences NAT: NAEP 2005 A1a | NAEP 2005 A1b
STA: NY A.PS.3 | NY A.RP.12 TOP: 5-7 Example 2
KEY: arithmetic sequence | sequence | common difference

32. ANS:
3 miles per hour

PTS: 1 DIF: L3 REF: 6-1 Rate of Change and Slope
OBJ: 6-1.1 Finding Rates of Change
NAT: NAEP 2005 A2a | NAEP 2005 A2b | ADP J.4.1 | ADP K.10.1
STA: NY A.PS.1 | NY A.RP.5 | NY A.RP.9 | NY A.R.1 | NY A.A.32 | NY A.A.33
KEY: rate of change

33. ANS:
–2

PTS: 1 DIF: L2 REF: 6-1 Rate of Change and Slope
OBJ: 6-1.2 Finding Slope
NAT: NAEP 2005 A2a | NAEP 2005 A2b | ADP J.4.1 | ADP K.10.1
STA: NY A.PS.1 | NY A.RP.5 | NY A.RP.9 | NY A.R.1 | NY A.A.32 | NY A.A.33
TOP: 6-1 Example 3 KEY: graphing | finding slope using a graph | slope

34. ANS:

$-\frac{4}{3}$

PTS: 1 DIF: L2 REF: 6-1 Rate of Change and Slope
OBJ: 6-1.2 Finding Slope
NAT: NAEP 2005 A2a | NAEP 2005 A2b | ADP J.4.1 | ADP K.10.1
STA: NY A.PS.1 | NY A.RP.5 | NY A.RP.9 | NY A.R.1 | NY A.A.32 | NY A.A.33
TOP: 6-1 Example 4 KEY: finding slope using points | slope

35. ANS:
$\frac{7}{3}$; 4

PTS: 1 DIF: L2 REF: 6-2 Slope-Intercept Form
OBJ: 6-2.1 Writing Linear Equations NAT: NAEP 2005 A1h | ADP J.4.1 | ADP J.4.2 | ADP K.10.2
STA: NY A.A.34 | NY A.A.35 | NY A.A.37 | NY A.G.4 TOP: 6-2 Example 1
KEY: linear equation | y-intercept | slope

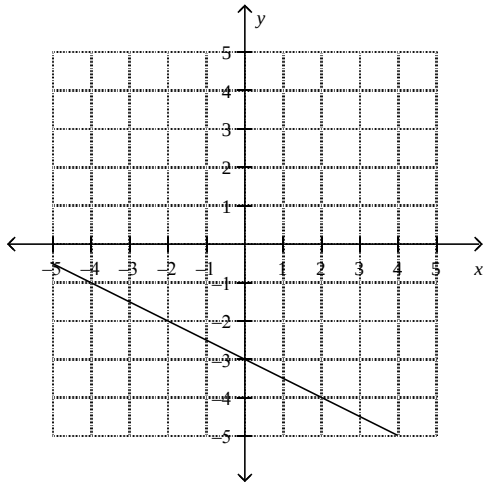
36. ANS:
$y = 2x - 5$

PTS: 1 DIF: L2 REF: 6-2 Slope-Intercept Form
OBJ: 6-2.1 Writing Linear Equations NAT: NAEP 2005 A1h | ADP J.4.1 | ADP J.4.2 | ADP K.10.2
STA: NY A.A.34 | NY A.A.35 | NY A.A.37 | NY A.G.4 TOP: 6-2 Example 2
KEY: linear equation | slope | y-intercept

37. ANS:
$y = 2x + 1$

PTS: 1 DIF: L2 REF: 6-2 Slope-Intercept Form
OBJ: 6-2.1 Writing Linear Equations NAT: NAEP 2005 A1h | ADP J.4.1 | ADP J.4.2 | ADP K.10.2
STA: NY A.A.34 | NY A.A.35 | NY A.A.37 | NY A.G.4 TOP: 6-2 Example 3
KEY: graphing | slope | y-intercept | slope-intercept form | finding slope using a graph

38. ANS:




PTS: 1 DIF: L2 REF: 6-2 Slope-Intercept Form
OBJ: 6-2.2 Graphing Linear Equations NAT: NAEP 2005 A1h | ADP J.4.1 | ADP J.4.2 | ADP K.10.2
STA: NY A.A.34 | NY A.A.35 | NY A.A.37 | NY A.G.4 TOP: 6-2 Example 4
KEY: linear equation | graphing equations | slope | y-intercept

39. ANS:
*x*-intercept is –9; *y*-intercept is –6.

PTS: 1 DIF: L2 REF: 6-4 Standard Form
OBJ: 6-4.1 Graphing Equations Using Intercepts
NAT: NAEP 2005 A1h | ADP J.4.1 | ADP J.4.2 | ADP K.10.2
STA: NY A.CM.11 | NY A.A.36 | NY A.G.4 TOP: 6-4 Example 1
KEY: standard form of a linear equation | x-intercept | y-intercept

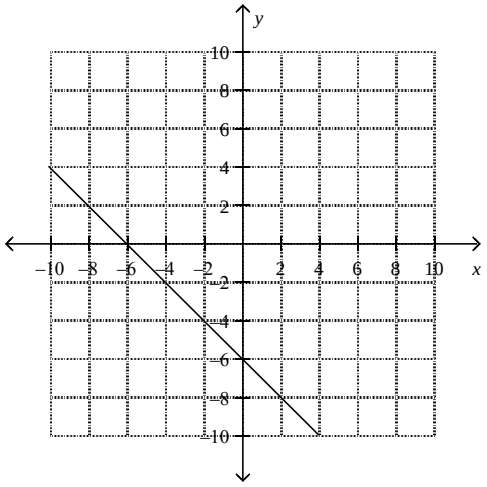
40. ANS:
*x*-intercept is 4; *y*-intercept is –12.

PTS: 1 DIF: L2 REF: 6-4 Standard Form
OBJ: 6-4.1 Graphing Equations Using Intercepts
NAT: NAEP 2005 A1h | ADP J.4.1 | ADP J.4.2 | ADP K.10.2
STA: NY A.CM.11 | NY A.A.36 | NY A.G.4 TOP: 6-4 Example 1
KEY: x-intercept | y-intercept | standard form of a linear equation

41. ANS:
$-4x + 5y = 25$

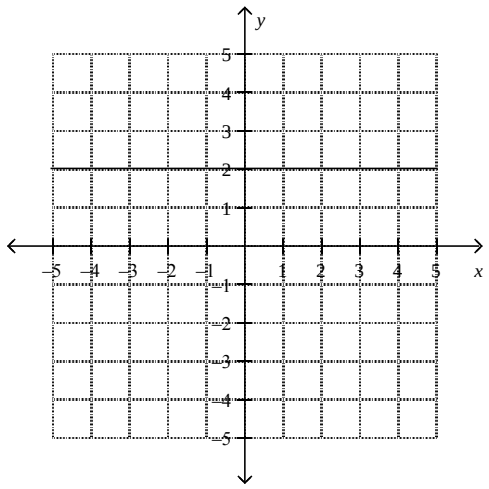
PTS: 1 DIF: L2 REF: 6-4 Standard Form
OBJ: 6-4.2 Writing Equations in Standard Form
NAT: NAEP 2005 A1h | ADP J.4.1 | ADP J.4.2 | ADP K.10.2
STA: NY A.CM.11 | NY A.A.36 | NY A.G.4 TOP: 6-4 Example 4
KEY: standard form of a linear equation | transforming equations

42. ANS:




PTS: 1 DIF: L2 REF: 6-5 Point-Slope Form and Writing Linear Equations
OBJ: 6-5.1 Using Point-Slope Form
NAT: NAEP 2005 A1h | NAEP 2005 A1i | NAEP 2005 A2a | NAEP 2005 A2b | NAEP 2005 A3a | ADP J.4.1 | ADP J.4.2 | ADP K.10.1 | ADP K.10.2
STA: NY A.R.5 | NY A.A.34 | NY A.A.35 | NY A.G.4 TOP: 6-5 Example 1
KEY: point-slope form | graphing | linear equation

43. ANS:




PTS: 1 DIF: L2 REF: 6-4 Standard Form
OBJ: 6-4.1 Graphing Equations Using Intercepts
NAT: NAEP 2005 A1h | ADP J.4.1 | ADP J.4.2 | ADP K.10.2
STA: NY A.CM.11 | NY A.A.36 | NY A.G.4 TOP: 6-4 Example 3
KEY: graphing | horizontal and vertical lines

44. ANS:

$y + 6 = \frac{3}{5}(x - 4)$

PTS: 1 DIF: L2 REF: 6-5 Point-Slope Form and Writing Linear Equations
OBJ: 6-5.1 Using Point-Slope Form
NAT: NAEP 2005 A1h | NAEP 2005 A1i | NAEP 2005 A2a | NAEP 2005 A2b | NAEP 2005 A3a | ADP J.4.1 | ADP J.4.2 | ADP K.10.1 | ADP K.10.2
STA: NY A.R.5 | NY A.A.34 | NY A.A.35 | NY A.G.4 TOP: 6-5 Example 2
KEY: slope-intercept form | linear equation

45. ANS:

$y - 8 = -\frac{1}{4}(x - 1)$

PTS: 1 DIF: L2 REF: 6-5 Point-Slope Form and Writing Linear Equations
OBJ: 6-5.1 Using Point-Slope Form
NAT: NAEP 2005 A1h | NAEP 2005 A1i | NAEP 2005 A2a | NAEP 2005 A2b | NAEP 2005 A3a | ADP J.4.1 | ADP J.4.2 | ADP K.10.1 | ADP K.10.2
STA: NY A.R.5 | NY A.A.34 | NY A.A.35 | NY A.G.4 TOP: 6-5 Example 2
KEY: slope-intercept form | linear equation

46. ANS:

The relationship is linear; $y + 4 = -\frac{1}{6}(x + 1)$.

PTS: 1 DIF: L2 REF: 6-5 Point-Slope Form and Writing Linear Equations
OBJ: 6-5.2 Writing Linear Equations Using a Table
NAT: NAEP 2005 A1h | NAEP 2005 A1i | NAEP 2005 A2a | NAEP 2005 A2b | NAEP 2005 A3a | ADP J.4.1 | ADP J.4.2 | ADP K.10.1 | ADP K.10.2
STA: NY A.R.5 | NY A.A.34 | NY A.A.35 | NY A.G.4 TOP: 6-5 Example 4
KEY: linear equation | linear data

47. ANS:

$y = \frac{1}{3}x + 3$

PTS: 1 DIF: L3 REF: 6-6 Parallel and Perpendicular Lines
OBJ: 6-6.1 Parallel Lines
NAT: NAEP 2005 G3g | NAEP 2005 A2e | ADP K.2.1 | ADP K.2.2 | ADP K.10.1 | ADP K.10.2
STA: NY A.R.8 | NY A.A.34 | NY A.A.37 | NY A.A.38 TOP: 6-6 Example 2
KEY: parallel lines | problem solving | word problem

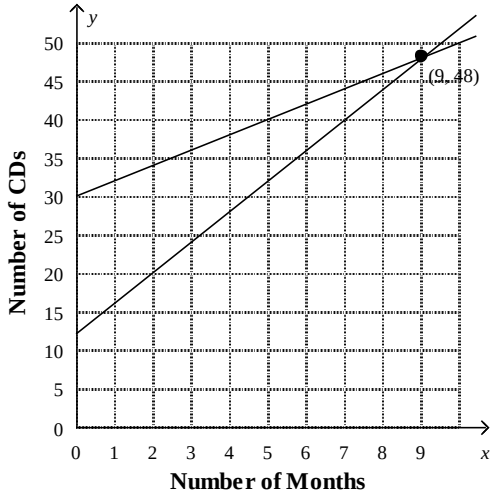
48. ANS:

$y = -5x - 27$

PTS: 1 DIF: L2 REF: 6-6 Parallel and Perpendicular Lines
OBJ: 6-6.1 Parallel Lines
NAT: NAEP 2005 G3g | NAEP 2005 A2e | ADP K.2.1 | ADP K.2.2 | ADP K.10.1 | ADP K.10.2
STA: NY A.R.8 | NY A.A.34 | NY A.A.37 | NY A.A.38 TOP: 6-6 Example 2
KEY: parallel lines | linear equation

49. ANS:

$y = 2x + 30$
$y = 4x + 12$




9 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

50. ANS:

(3, 1)

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

51. ANS:
(2, –3)

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 1
KEY: system of linear equations | graphing a system of linear equations

52. 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

53. ANS:
(2, –8)

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

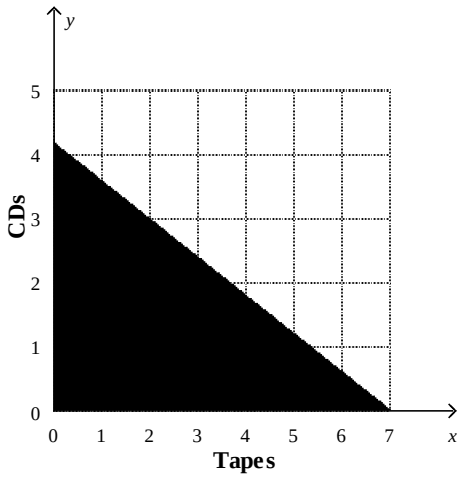
54. ANS:
18 L

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

55. ANS:
$y \leq -2x + 5$

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

56. ANS:
$6x + 10y \leq 42$




PTS: 1 DIF: L2 REF: 7-5 Linear Inequalities
OBJ: 7-5.2 Modeling Real-World Situations 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 3
KEY: word problem | problem solving | linear inequality | graphing

57. 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

58. ANS:
$\frac{8a^2}{b^6}$

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 2
KEY: negative exponent | simplifying an exponential expression

59. ANS:
$\frac{1}{4}$

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

60. ANS:
$7^{22}$

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

61. ANS:
$n^{10}$

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

62. ANS:
64

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

63. ANS:
$\frac{1}{25c^2}$

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

64. ANS:
72 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

65. ANS:
$8.33 \times 10^3$

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

66. ANS:
$7.44 \times 10^{-5}$

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

67. ANS:
$1.56 \times 10^4$

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

68. ANS:
–6

PTS: 1 DIF: L2 REF: 8-6 Geometric Sequences
OBJ: 8-6.1 Geometric Sequences NAT: NAEP 2005 A1a | NAEP 2005 A1i | ADP I.1.2
STA: NY A.PS.3 | NY A.R.6 TOP: 8-6 Example 1
KEY: geometric sequence | common ratio

69. ANS:
2; 128; 32,768

PTS: 1 DIF: L2 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 4
KEY: geometric sequence | common ratio | formula

70. ANS:
85°

PTS: 1 DIF: L2 REF: 9-2 Angle Relationships and Parallel Lines
OBJ: 9-2.1 Adjacent and Vertical Angles NAT: NAEP 2005 G3g
TOP: 9-2 Example 1
KEY: adjacent angles | supplementary angles | measure of an angle

71. ANS:
$\angle 6$

PTS: 1 DIF: L2 REF: 9-2 Angle Relationships and Parallel Lines
OBJ: 9-2.2 Relating Angles and Parallel Lines NAT: NAEP 2005 G3g
TOP: 9-2 Example 2 KEY: congruent angles | corresponding angles | parallel lines

72. ANS:
equilateral, acute

PTS: 1 DIF: L2 REF: 9-3 Classifying Polygons
OBJ: 9-3.1 Classifying Triangles NAT: NAEP 2005 G1b | NAEP 2005 G3f
TOP: 9-3 Example 1 KEY: classifying triangles | acute triangle | equilateral triangle

73. ANS:
31 mm

PTS: 1 DIF: L2 REF: 9-5 Congruence
OBJ: 9-5.1 Identifying Corresponding Parts NAT: NAEP 2005 G2e
TOP: 9-5 Example 1 KEY: congruent figures | corresponding sides | congruent sides

74. ANS:
165 feet

PTS: 1 DIF: L3 REF: 9-5 Congruence
OBJ: 9-5.2 Identifying Congruent Triangles NAT: NAEP 2005 G2e
KEY: congruent figures | perimeter | problem solving |

75. ANS:
37.68 in.

PTS: 1 DIF: L2 REF: 9-6 Circles OBJ: 9-6.1 Finding Circumference
NAT: NAEP 2005 M1h TOP: 9-6 Example 1
KEY: circle | circumference | diameter

76. ANS:
113.04 cm

PTS: 1 DIF: L2 REF: 9-6 Circles OBJ: 9-6.1 Finding Circumference
NAT: NAEP 2005 M1h TOP: 9-6 Example 1
KEY: circle | circumference | radius

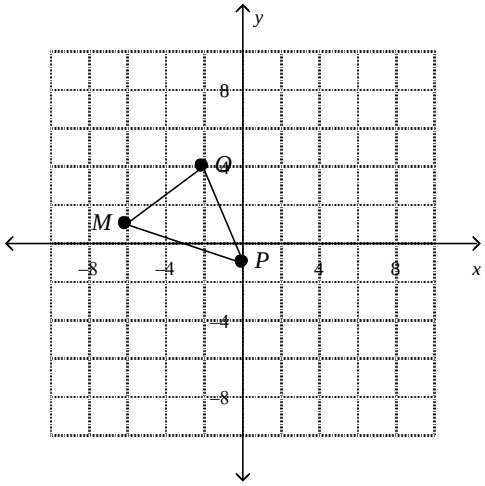
77. ANS:
87.92 cm

PTS: 1 DIF: L2 REF: 9-6 Circles OBJ: 9-6.1 Finding Circumference
NAT: NAEP 2005 M1h TOP: 9-6 Example 1
KEY: circle | circumference | radius

78. ANS:
76°

PTS: 1 DIF: L2 REF: 9-6 Circles OBJ: 9-6.2 Making Circle Graphs
NAT: NAEP 2005 M1h TOP: 9-6 Example 2
KEY: circle graph | percent | central angle

79. ANS:

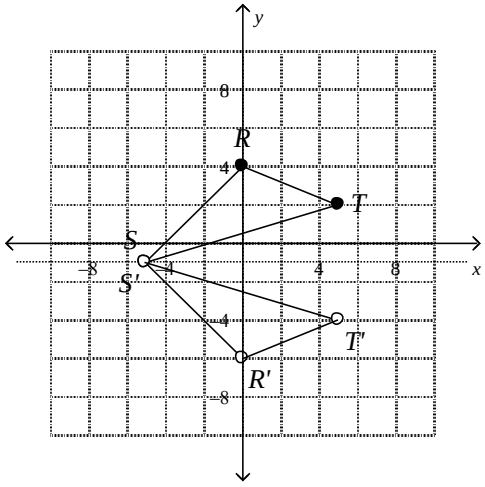



PTS: 1 DIF: L2 REF: 9-8 Translations
OBJ: 9-8.1 Graphing Translations NAT: NAEP 2005 G2c
TOP: 9-8 Example 1 KEY: transformation | translation | image | prime notation

80. ANS:
$(x, y) \rightarrow (x + 1, y + 3)$

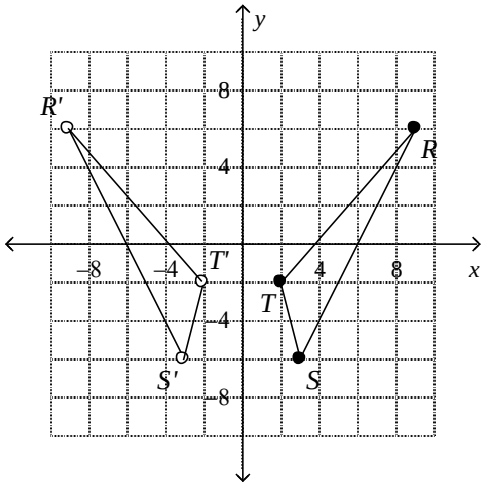
PTS: 1 DIF: L2 REF: 9-8 Translations
OBJ: 9-8.2 Describing Translations NAT: NAEP 2005 G2c
TOP: 9-8 Example 2 KEY: translation | prime notation | transformation | translation

81. ANS:



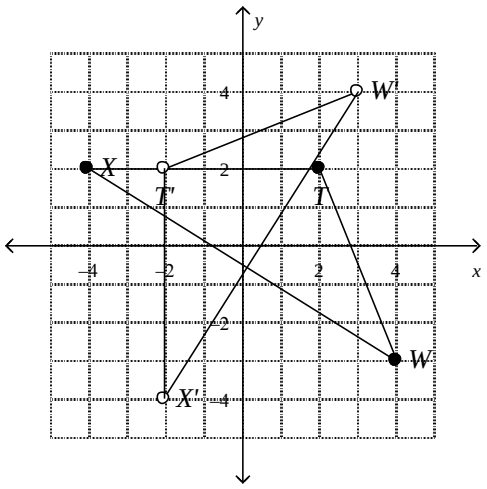

PTS: 1 DIF: L2 REF: 9-9 Symmetry and Reflections
OBJ: 9-9.2 Graphing Reflections NAT: NAEP 2005 G2c
TOP: 9-9 Example 3 KEY: reflection | line of reflection

82. ANS:




PTS: 1 DIF: L2 REF: 9-9 Symmetry and Reflections
OBJ: 9-9.2 Graphing Reflections NAT: NAEP 2005 G2c
TOP: 9-9 Example 2 KEY: reflection | line of reflection

83. ANS:




PTS: 1 DIF: L2 REF: 9-10 Rotations
OBJ: 9-10.1 Graphing Rotations NAT: NAEP 2005 G2c
TOP: 9-10 Example 1 KEY: rotation | center of rotation | angle of rotation | rotation

84. ANS:
yes; 60°

PTS: 1 DIF: L2 REF: 9-10 Rotations
OBJ: 9-10.2 Identifying Rotational Symmetry NAT: NAEP 2005 G2c
TOP: 9-10 Example 2 KEY: angle of rotation | rotational symmetry

85. ANS:
8 lines of symmetry

PTS: 1 DIF: L2 REF: 9-9 Symmetry and Reflections
OBJ: 9-9.1 Identifying Lines of Symmetry NAT: NAEP 2005 G2c
TOP: 9-9 Example 1 KEY: reflectional symmetry | line of reflection