JEFFERSON MATH PROJECT REGENTS BY TYPE

The NY Integrated Algebra Regents Exams
Fall 2007-August 2011
(Answer Key)

www.jmap.org

Dear Sir

I have to acknolege the reciept of your favor of May 14. in which you mention that you have finished the 6. first books of Euclid, plane trigonometry, surveying & algebra and ask whether I think a further pursuit of that branch of science would be useful to you. there are some propositions in the latter books of Euclid, & some of Archimedes, which are useful, & I have no doubt you have been made acquainted with them. trigonometry, so far as this, is most valuable to every man, there is scarcely a day in which he will not resort to it for some of the purposes of common life. the science of calculation also is indispensible as far as the extraction of the square & cube roots; Algebra as far as the quadratic equation & the use of logarithms are often of value in ordinary cases: but all beyond these is but a luxury; a delicious luxury indeed; but not to be indulged in by one who is to have a profession to follow for his subsistence. in this light I view the conic sections, curves of the higher orders, perhaps even spherical trigonometry, Algebraical operations beyond the 2d dimension, and fluxions.

Letter from Thomas Jefferson to William G. Munford, Monticello, June 18, 1799.

Integrated Algebra Multiple Choice Regents Exam Questions
Answer Section

1 ANS: 4 REF: fall0717ia STA: A.G.4 TOP: Families of Functions

2 ANS: 1

$$\frac{4}{3}x + 5 < 17$$

$$\frac{4}{3}x < 12$$

$$4x < 36$$

$$x < 9$$

REF: 060914ia STA: A.A.21 TOP: Interpreting Solutions

3 ANS: 4

$$16^2 + b^2 = 34^2$$

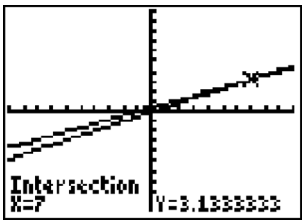
$$b^2 = 900$$

$$b = 30$$

REF: 080809ia STA: A.A.45 TOP: Pythagorean Theorem

4 ANS: 4

$$\frac{2x}{5} + \frac{1}{3} = \frac{7x-2}{15}$$



$$\frac{(2x \times 3) + (5 \times 1)}{5 \times 3} = \frac{7x-2}{15}$$

$$\frac{6x+5}{15} = \frac{7x-2}{15}$$

$$6x + 5 = 7x - 2$$

$$x = 7$$

REF: 080820ia STA: A.A.25 TOP: Solving Equations with Fractional Expressions

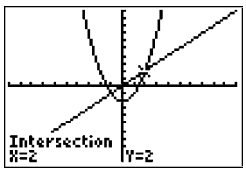
5 ANS: 2 REF: 010909ia STA: A.A.19
TOP: Factoring the Difference of Perfect Squares

6 ANS: 4 REF: fall0729ia STA: A.A.2 TOP: Expressions

7 ANS: 3 REF: fall0705ia STA: A.N.1 TOP: Identifying Properties

8 ANS: 1 REF: 010905ia STA: A.G.4 TOP: Families of Functions

9 ANS: 4



$x^2 - 2 = x$ Since $y = x$, the solutions are $(2,2)$ and $(-1,-1)$.

$x^2 - x - 2 = 0$

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

$x = 2 \text{ or } -1$

REF: 060810ia STA: A.A.11 TOP: Quadratic-Linear Systems

10 ANS: 3

$$\frac{(2x^3)(8x^5)}{4x^6} = \frac{16x^8}{4x^6} = 4x^2$$

REF: fall0703ia STA: A.A.12 TOP: Division of Powers

11 ANS: 4

$$\frac{344\,\text{m}}{\text{sec}} \times \frac{60\,\text{sec}}{1\,\text{min}} \times \frac{60\,\text{min}}{1\,\text{hr}} = 1{,}238{,}400\,\frac{\text{m}}{\text{hr}}$$

REF: 060911ia STA: A.M.2 TOP: Conversions

12 ANS: 2 REF: 080810ia STA: A.A.36 TOP: Parallel and Perpendicular Lines

13 ANS: 4

$A = \{2,4,6,8,10,12,14,16,18,20\}$

REF: 080912ia STA: A.A.30 TOP: Set Theory

14 ANS: 1

$x^2 + 7x + 10 = 0$

$(x+5)(x+2) = 0$

$x = -5 \text{ or } -2$

REF: 080918ia STA: A.A.15 TOP: Undefined Rationals

15 ANS: 2

$$\frac{6}{4a} - \frac{2}{3a} = \frac{18a - 8a}{12a^2} = \frac{10a}{12a^2} = \frac{5}{6a}$$

REF: 060929ia STA: A.A.17 TOP: Addition and Subtraction of Rationals

16 ANS: 1 REF: 060807ia STA: A.A.13 TOP: Multiplication of Polynomials

17 ANS: 1

$30^2 + 40^2 = c^2$. 30, 40, 50 is a multiple of 3, 4, 5.

$$2500 = c^2$$

$$50 = c$$

REF: fall0711ia STA: A.A.45 TOP: Pythagorean Theorem

18 ANS: 4

$$x^2 - 7x + 6 = 0$$

$$(x - 6)(x - 1) = 0$$

$$x = 6 \quad x = 1$$

REF: 060902ia STA: A.A.28 TOP: Roots of Quadratics

19 ANS: 1

$$x - 2y = 1$$

$$x + 4y = 7$$

$$-6y = -6$$

$$y = 1$$

REF: 080920ia STA: A.A.10 TOP: Solving Linear Systems

20 ANS: 4 REF: 060927ia STA: A.N.4 TOP: Operations with Scientific Notation

21 ANS: 3

$$\left|-5(5) + 12\right| = |-13| = 13$$

REF: 080923ia STA: A.N.6 TOP: Evaluating Expressions

22 ANS: 1

$$\frac{\sqrt{32}}{4} = \frac{\sqrt{16}\sqrt{2}}{4} = \sqrt{2}$$

REF: 060828ia STA: A.N.2 TOP: Simplifying Radicals

23 ANS: 1

$$0.07m + 19 \le 29.50$$

$$0.07m \le 10.50$$

$$m \le 150$$

REF: 010904ia STA: A.A.6 TOP: Modeling Inequalities

24 ANS: 1

$$\frac{1}{8} \times \frac{1}{8} = \frac{1}{64}$$

REF: 010928ia STA: A.S.23 TOP: Geometric Probability

25 ANS: 4

$\frac{2^6}{2^1} = 2^5$

REF: 060813ia STA: A.A.12 TOP: Division of Powers

26 ANS: 3 REF: 060924ia STA: A.G.8 TOP: Solving Quadratics by Graphing

27 ANS: 4 REF: 060916ia STA: A.A.15 TOP: Undefined Rationals

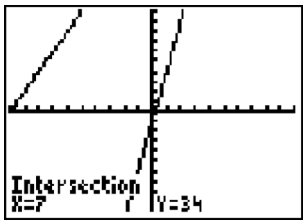
28 ANS: 2

If the car can travel 75 miles on 4 gallons, it can travel 300 miles on 16 gallons. $\frac{75}{4} = \frac{x}{16}$.

$x = 300$

REF: 080807ia STA: A.G.4 TOP: Graphing Linear Functions

29 ANS: 4

$5p - 1 = 2p + 20$ 

$3p = 21$

$p = 7$

REF: 080801ia STA: A.A.22 TOP: Solving Equations

30 ANS: 4

$SA = 2lw + 2hw + 2lh = 2(3)(1.5) + 2(2)(1.5) + 2(3)(2) = 27$

REF: 060827ia STA: A.G.2 TOP: Surface Area

31 ANS: 2

$1.5^3 = 3.375$

REF: 060809ia STA: A.G.2 TOP: Volume

32 ANS: 1

To determine student interest, survey the widest range of students.

REF: 060803ia STA: A.S.3 TOP: Analysis of Data

33 ANS: 4 REF: 010908ia STA: A.A.9 TOP: Exponential Functions

34 ANS: 4 REF: fall0715ia STA: A.A.5 TOP: Modeling Inequalities

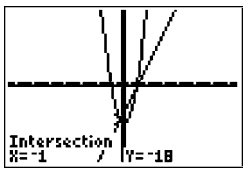
35 ANS: 3

The number of correct answers on a test causes the test score.

REF: 080908ia STA: A.S.13 TOP: Analysis of Data

36 ANS: 2

$x^2 - x - 20 = 3x - 15$. $y = 3x - 15$.



$x^2 - 4x - 6 = 0$ $= 3(-1) - 15$

$(x = 5)(x + 1) = 0$ $= -18$

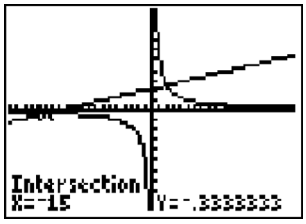
$x = 5 \text{ or } -1$

REF: 010922ia STA: A.A.11 TOP: Quadratic-Linear Systems

37 ANS: 3 REF: 060926ia STA: A.N.1 TOP: Properties of Reals

38 ANS: 4

$\frac{5}{x} = \frac{x+13}{6}$



$x^2 + 13x = 30$

$x^2 + 13x - 30 = 0$

$(x + 15)(x - 2) = 0$

$x = -15 \text{ or } 2$

REF: 060826ia STA: A.A.26 TOP: Solving Rationals

39 ANS: 2

The events are not mutually exclusive: P(prime) = $\frac{3}{6}$, P(even) = $\frac{3}{6}$, P(prime AND even) = $\frac{1}{6}$

P(prime OR even) = $\frac{3}{6} + \frac{3}{6} - \frac{1}{6} = \frac{5}{6}$

REF: 080830ia STA: A.S.23 TOP: Theoretical Probability
KEY: not mutually exclusive events

40 ANS: 2

$\frac{6}{5x} - \frac{2}{3x} = \frac{18x - 10x}{15x^2} = \frac{8x}{15x^2} = \frac{8}{15x}$

REF: 010921ia STA: A.A.17 TOP: Addition and Subtraction of Rationals

41 ANS: 2 REF: 060908ia STA: A.S.21 TOP: Empirical Probability

42 ANS: 2

$$l(l-5)=24$$

$$l^2-5l-24=0$$

$$(l-8)(l+3)=0$$

$$l=8$$

REF: 080817ia STA: A.A.8 TOP: Geometric Applications of Quadratics

43 ANS: 2

$$\frac{3}{5}(x+2)=x-4$$

$$3(x+2)=5(x-4)$$

$$3x+6=5x-20$$

$$26=2x$$

$$x=13$$

REF: 080909ia STA: A.A.25 TOP: Solving Equations with Fractional Expressions

44 ANS: 2

$$3c+4m=12.50$$

$$3c+2m=8.50$$

$$2m=4.00$$

$$m=2.00$$

REF: 060806ia STA: A.A.7 TOP: Writing Linear Systems

45 ANS: 1 REF: 080803ia STA: A.A.4 TOP: Modeling Inequalities

46 ANS: 1

$$\left|\frac{289-282}{289}\right| \approx 0.024$$

REF: 080828ia STA: A.M.3 TOP: Error KEY: volume and surface area

47 ANS: 3 REF: 060808ia STA: A.N.8 TOP: Permutations

48 ANS: 3

$$F=\frac{9}{5}C+32=\frac{9}{5}(15)+32=59$$

REF: 010901ia STA: A.M.2 TOP: Conversions

49 ANS: 4 REF: fall0704ia STA: A.A.29 TOP: Set Theory

50 ANS: 4

$$\frac{\text{distance}}{\text{time}}=\frac{24}{6}=4$$

REF: 010902ia STA: A.M.1 TOP: Speed

51 ANS: 2

$\frac{2x^2 - 12x}{x - 6} = \frac{2x(x - 6)}{x - 6} = 2x$

REF: 060824ia STA: A.A.16 TOP: Rational Expressions
KEY: a > 0

52 ANS: 4

$V = \pi r^2 h = \pi \cdot 6^2 \cdot 15 \approx 1696.5$

REF: fall0712ia STA: A.G.2 TOP: Volume

53 ANS: 3

$3ax + b = c$

$3ax = c - b$

$x = \frac{c - b}{3a}$

REF: 080808ia STA: A.A.23 TOP: Transforming Formulas

54 ANS: 2

$5\sqrt{20} = 5\sqrt{4}\sqrt{5} = 10\sqrt{5}$

REF: 080922ia STA: A.N.2 TOP: Simplifying Radicals

55 ANS: 1

${}_4P_4 = 4 \times 3 \times 2 \times 1 = 24$

REF: 080816ia STA: A.N.8 TOP: Permutations

56 ANS: 3

$\cos 30 = \frac{x}{24}$

$x \approx 21$

REF: 010912ia STA: A.A.44 TOP: Using Trigonometry to Find a Side

57 ANS: 3

$x^2 - 6x = 0$

$x(x - 6) = 0$

$x = 0 \quad x = 6$

REF: 080921ia STA: A.A.27 TOP: Solving Quadratics by Factoring

58 ANS: 4

The mean is $80.\overline{6}$, the median is 84.5 and the mode is 87.

REF: 010907ia STA: A.S.4 TOP: Central Tendency

59 ANS: 4

$\frac{5}{45} = \frac{8}{x}$

$5x = 360$

$x = 72$

REF: 060901ia STA: A.M.1 TOP: Speed

60 ANS: 1 REF: 080813ia STA: A.G.10

TOP: Identifying the Vertex of a Quadratic Given Graph

61 ANS: 2 REF: 060821ia STA: A.A.5 TOP: Modeling Inequalities

62 ANS: 3 REF: 080819ia STA: A.A.13 TOP: Addition and Subtraction of Polynomials

KEY: subtraction

63 ANS: 4

$\frac{x^2 - 1}{x + 1} \cdot \frac{x + 3}{3x - 3} = \frac{(x + 1)(x - 1)}{x + 1} \cdot \frac{x + 3}{3(x - 1)} = \frac{x + 3}{3}$

REF: 060815ia STA: A.A.18 TOP: Multiplication and Division of Rationals

64 ANS: 4 REF: 060829ia STA: A.G.5 TOP: Graphing Quadratic Functions

65 ANS: 4

$P(G \text{ or } W) = \frac{4}{8}$, $P(G \text{ or } B) = \frac{3}{8}$, $P(Y \text{ or } B) = \frac{4}{8}$, $P(Y \text{ or } G) = \frac{5}{8}$

REF: 060802ia STA: A.S.22 TOP: Geometric Probability

66 ANS: 1

$x = \frac{-b}{2a} = \frac{-(-16)}{2(1)} = 8.\ \ y = (8)^2 - 16(8) + 63 = -1$

REF: 060918ia STA: A.A.41 TOP: Identifying the Vertex of a Quadratic Given Equation

67 ANS: 3

$500(1 + 0.06)^3 \approx 596$

REF: 080929ia STA: A.A.9 TOP: Exponential Functions

68 ANS: 3

$3^2 + 5^2 = x^2$

$34 = x^2$

$\sqrt{34} = x$

REF: 060909ia STA: A.A.45 TOP: Pythagorean Theorem

69 ANS: 3 REF: 010917ia STA: A.A.29 TOP: Set Theory

70 ANS: 2

$L + S = 47$

$L - S = 15$

$2L = 62$

$L = 31$

REF: 060912ia STA: A.A.7 TOP: Writing Linear Systems

71 ANS: 3

0.75 hours = 45 minutes. $\frac{120}{1} = \frac{x}{45}$

$x = 5400$

REF: 080814ia STA: A.M.1 TOP: Using Rate

72 ANS: 1

The slope of both is −4.

REF: 060814ia STA: A.A.38 TOP: Parallel and Perpendicular Lines

73 ANS: 2

$\left|\frac{149.6 - 174.2}{149.6}\right| \approx 0.1644$

REF: 080926ia STA: A.M.3 TOP: Error KEY: area

74 ANS: 1

A rooster crows before sunrise, not because of the sun.

REF: fall0707ia STA: A.S.14 TOP: Analysis of Data

75 ANS: 3

$(3 - 1) \times 2 \times 3 = 12$

REF: 080905ia STA: A.N.7 TOP: Conditional Probability

76 ANS: 3

mean = 6, median = 6 and mode = 7

REF: 080804ia STA: A.S.4 TOP: Central Tendency

77 ANS: 2 REF: 010915ia STA: A.A.5 TOP: Modeling Equations

78 ANS: 4

$P(O) = \frac{3}{6}, P(E) = \frac{3}{6}, P(< 6) = \frac{5}{6}, P(> 4) = \frac{2}{6}$

REF: 010903ia STA: A.S.22 TOP: Theoretical Probability

79 ANS: 3 REF: 010910ia STA: A.A.35 TOP: Writing Linear Equations

80 ANS: 3

The other situations are quantitative.

REF: 060905ia STA: A.S.1 TOP: Analysis of Data

81 ANS: 2

$\sin A = \frac{8}{12}$

$A \approx 42$

REF: 060816ia STA: A.A.43 TOP: Using Trigonometry to Find an Angle

82 ANS: 2

$2x^2 + 10x - 12 = 2(x^2 + 5x - 6) = 2(x + 6)(x - 1)$

REF: 080806ia STA: A.A.20 TOP: Factoring Polynomials

83 ANS: 2 REF: 080815ia STA: A.G.1 TOP: Compositions of Polygons and Circles
KEY: area

84 ANS: 2

$\frac{x^2 - 2x - 15}{x^2 + 3x} = \frac{(x - 5)(x + 3)}{x(x + 3)} = \frac{x - 5}{x}$

REF: 060921ia STA: A.A.16 TOP: Rational Expressions
KEY: a > 0

85 ANS: 4 REF: 010929ia STA: A.S.6 TOP: Box-and-Whisker Plots

86 ANS: 3

$m = \frac{1 - (-4)}{-6 - 4} = -\frac{1}{2}$

REF: 060820ia STA: A.A.33 TOP: Slope

87 ANS: 4 REF: 080903ia STA: A.A.12 TOP: Multiplication of Powers

88 ANS: 3

$x^2 - 10x + 21 = 0$

$(x - 7)(x - 3) = 0$

$x = 7 \quad x = 3$

REF: 010914ia STA: A.A.28 TOP: Roots of Quadratics

89 ANS: 3

$m = \frac{4 - 10}{3 - (-6)} = -\frac{2}{3}$

REF: fall0716ia STA: A.A.33 TOP: Slope

90 ANS: 2

$x + 2y = 9$

$x - y = 3$

$3y = 6$

$y = 2$

REF: 060925ia STA: A.A.10 TOP: Solving Linear Systems

91 ANS: 3
An element of the domain, 1, is paired with two different elements of the range, 3 and 7.

REF: 080919ia STA: A.G.3 TOP: Defining Functions
92 ANS: 4 REF: 060930ia STA: A.A.29 TOP: Set Theory
93 ANS: 2 REF: fall0725ia STA: A.N.4 TOP: Operations with Scientific Notation
94 ANS: 1 REF: fall0723ia STA: A.M.3 TOP: Error
KEY: area
95 ANS: 4

$$y = mx + b$$

$$-1 = (2)(3) + b$$

$$b = -7$$

REF: 080927ia STA: A.A.34 TOP: Writing Linear Equations
96 ANS: 2
The median score, 10, is the vertical line in the center of the box.

REF: fall0709ia STA: A.S.5 TOP: Box-and-Whisker Plots
97 ANS: 3 REF: 080907ia STA: A.S.20 TOP: Geometric Probability
98 ANS: 4 REF: 010930ia STA: A.G.3 TOP: Defining Functions
99 ANS: 3

$$a + ar = b + r$$

$$a(1 + r) = b + r$$

$$a = \frac{b + r}{1 + r}$$

REF: 060913ia STA: A.A.23 TOP: Transforming Formulas
100 ANS: 3
The value of the third quartile is the last vertical line of the box.

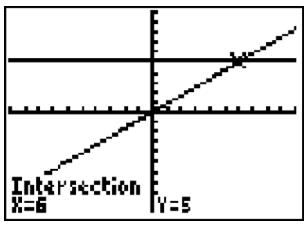
REF: 080818ia STA: A.S.6 TOP: Box-and-Whisker Plots
101 ANS: 1 REF: 080824ia STA: A.A.43 TOP: Using Trigonometry to Find an Angle
102 ANS: 4
The transformation is a reflection in the *x*-axis.

REF: fall0722ia STA: A.G.5 TOP: Graphing Absolute Value Functions
103 ANS: 2

$$\sin U = \frac{\text{opposite}}{\text{hypotenuse}} = \frac{15}{17}$$

REF: 010919ia STA: A.A.42 TOP: Trigonometric Ratios

104 ANS: 1



$$\frac{(2x \times 6) + (3 \times x)}{3 \times 6} = 5$$

$$\frac{12x + 3x}{18} = 5$$

$$15x = 90$$

$$x = 6$$

REF: 060907ia STA: A.A.25 TOP: Solving Equations with Fractional Expressions

105 ANS: 2 REF: 010925ia STA: A.A.15 TOP: Undefined Rationals

106 ANS: 3 REF: 060825ia STA: A.A.45 TOP: Pythagorean Theorem

107 ANS: 2 REF: 060830ia STA: A.A.9 TOP: Exponential Functions

108 ANS: 3 REF: 060919ia STA: A.G.3 TOP: Defining Functions

109 ANS: 4 REF: 060906ia STA: A.A.4 TOP: Modeling Inequalities

110 ANS: 4 REF: fall0730ia STA: A.G.3 TOP: Defining Functions

111 ANS: 4

Let x = youngest brother and $x + 4$ = oldest brother. $3x - (x + 4) = 48.$

$$2x - 4 = 48$$

$$x = 26$$

REF: 080928ia STA: A.A.6 TOP: Modeling Equations

112 ANS: 3 REF: 080925ia STA: A.G.4 TOP: Identifying the Equation of a Graph

113 ANS: 2

$$P = 2l + 2w$$

$$P - 2l = 2w$$

$$\frac{P - 2l}{2} = w$$

REF: 010911ia STA: A.A.23 TOP: Transforming Formulas

114 ANS: 1

The slope of $y = 3 - 2x$ is -2. Using $m = -\frac{A}{B}$, the slope of $4x + 2y = 5$ is $-\frac{4}{2} = -2$.

REF: 010926ia STA: A.A.38 TOP: Parallel and Perpendicular Lines

115 ANS: 4

$$\frac{25x-125}{x^2-25}=\frac{25(x-5)}{(x+5)(x-5)}=\frac{25}{x+5}$$

REF: 080821ia STA: A.A.16 TOP: Rational Expressions
KEY: a > 0

116 ANS: 2

$$\frac{3}{2x}+\frac{4}{3x}=\frac{9x+8x}{6x^2}=\frac{17x}{6x^2}=\frac{17}{6x}$$

REF: 080917ia STA: A.A.17 TOP: Addition and Subtraction of Rationals

117 ANS: 2 REF: 080823ia STA: A.A.32 TOP: Slope

118 ANS: 1

$$13.95+0.49s\le 50.00$$

$$0.49s\le 36.05$$

$$s\le 73.57$$

REF: 080904ia STA: A.A.6 TOP: Modeling Inequalities

119 ANS: 2 REF: 060904ia STA: A.A.1 TOP: Expressions

120 ANS: 4

$$-4x+2>10$$

$$-4x>8$$

$$x<-2$$

REF: 080805ia STA: A.A.21 TOP: Interpreting Solutions

121 ANS: 2

$s+o=126$. $s+2s=126$

$o=2s$ $s=42$

REF: 080811ia STA: A.A.7 TOP: Writing Linear Systems

122 ANS: 2 REF: 080930ia STA: A.S.17 TOP: Scatter Plots

123 ANS: 3 REF: fall0702ia STA: A.S.23 TOP: Theoretical Probability
KEY: mutually exclusive events

124 ANS: 2

The volume of the cube using Ezra's measurements is 8 (2^3). The actual volume is 9.261 (2.1^3). The relative error is $\left|\frac{9.261-8}{9.261}\right|\approx 0.14$.

REF: 060928ia STA: A.M.3 TOP: Error KEY: volume and surface area

125 ANS: 1 REF: fall0728ia STA: A.A.15 TOP: Undefined Rationals

126 ANS: 2 REF: 080916ia STA: A.G.8 TOP: Solving Quadratics by Graphing

127 ANS: 3 REF: fall0710ia STA: A.A.31 TOP: Set Theory

128 ANS: 3

$\sin A = \frac{10}{16}$ $B = 180 - (90 = 38.7) = 51.3.$ A 90º angle is not acute.

$A \approx 38.7$

REF: 080829ia STA: A.A.43 TOP: Using Trigonometry to Find an Angle

129 ANS: 4

$25(x - 3) = 25x - 75$

REF: 060823ia STA: A.A.1 TOP: Expressions

130 ANS: 1 REF: 060804ia STA: A.A.19

TOP: Factoring the Difference of Perfect Squares

131 ANS: 2

$\tan 32 = \frac{x}{25}$

$x \approx 15.6$

REF: 080914ia STA: A.A.44 TOP: Using Trigonometry to Find a Side

132 ANS: 4

$A = lw = (3w - 7)(w) = 3w^2 - 7w$

REF: 010924ia STA: A.A.1 TOP: Expressions

133 ANS: 3

$25 - 18 = 7$

REF: 060822ia STA: A.S.9 TOP: Frequency Histograms, Bar Graphs and Tables

134 ANS: 1

$y = mx + b$

$-6 = (-3)(4) + b$

$b = 6$

REF: 060922ia STA: A.A.34 TOP: Writing Linear Equations

135 ANS: 1

$m = \frac{3-0}{0-2} = -\frac{3}{2}$. Using the given y-intercept $(0, 3)$ to write the equation of the line $y = -\frac{3}{2}x + 3$.

REF: fall0713ia STA: A.A.35 TOP: Writing Linear Equations

136 ANS: 2 REF: fall0701ia STA: A.S.7 TOP: Scatter Plots

137 ANS: 3

The other situations are quantitative.

REF: 060819ia STA: A.S.1 TOP: Analysis of Data

138 ANS: 1

$-2x + 5 > 17$

$-2x > 12$

$x < -6$

REF: fall0724ia STA: A.A.21 TOP: Interpreting Solutions

139 ANS: 1 REF: 080911ia STA: A.A.36 TOP: Parallel and Perpendicular Lines

140 ANS: 4 REF: 080825ia STA: A.A.40 TOP: Systems of Linear Inequalities

141 ANS: 1 REF: 060920ia STA: A.G.6 TOP: Linear Inequalities

142 ANS: 1

$so = f + 60$ $j = 2f - 50$ $se = 3f$. $f + (f + 60) + (2f - 50) + 3f = 1424$

$7f + 10 = 1424$

$f = 202$

REF: 060917ia STA: A.A.7 TOP: Writing Linear Systems

143 ANS: 1 REF: 060903ia STA: A.A.12 TOP: Division of Powers

144 ANS: 1

$8^2 + 15^2 = c^2$

$c^2 = 289$

$c = 17$

REF: 080906ia STA: A.A.45 TOP: Pythagorean Theorem

145 ANS: 4

$-2(x - 5) < 4$

$-2x + 10 < 4$

$-2x < -6$

$x > 3$

REF: 080913ia STA: A.A.21 TOP: Interpreting Solutions

146 ANS: 3

$b = 42 - r$ $r = 2b + 3$

$r = 2b + 3$ $r = 2(42 - r) + 3$

$r = 84 - 2r + 3$

$3r = 87$

$r = 29$

REF: 060812ia STA: A.A.7 TOP: Writing Linear Systems

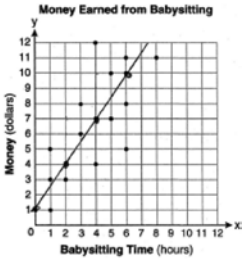
147 ANS: 1 REF: 080902ia STA: A.A.19

TOP: Factoring the Difference of Perfect Squares

148 ANS: 3
The value of the upper quartile is the last vertical line of the box.

REF: 060915ia STA: A.S.6 TOP: Box-and-Whisker Plots

149 ANS: 4



REF: 080822ia STA: A.S.8 TOP: Scatter Plots

150 ANS: 3

$5x + 2y = 48$

$3x + 2y = 32$

$2x = 16$

$x = 8$

REF: fall0708ia STA: A.A.10 TOP: Solving Linear Systems

151 ANS: 4 REF: 080827ia STA: A.A.12 TOP: Powers of Powers

152 ANS: 1 REF: 060801ia STA: A.G.4 TOP: Families of Functions

153 ANS: 4 REF: 060805ia STA: A.S.12 TOP: Scatter Plots

154 ANS: 4

$$\frac{(d \times 3) + (2 \times 2d)}{2 \times 3} = \frac{3d + 4d}{6} = \frac{7d}{6}$$

REF: fall0727ia STA: A.A.17 TOP: Addition and Subtraction of Rationals

155 ANS: 2 REF: 080802ia STA: A.N.1 TOP: Identifying Properties

156 ANS: 1 REF: 080924ia STA: A.G.1 TOP: Compositions of Polygons and Circles
KEY: perimeter

157 ANS: 3

$\sqrt{72} = \sqrt{36}\sqrt{2} = 6\sqrt{2}$

REF: 010920ia STA: A.N.2 TOP: Simplifying Radicals

158 ANS: 2 REF: 060923ia STA: A.A.13 TOP: Addition and Subtraction of Polynomials
KEY: subtraction

159 ANS: 1

$$\frac{2}{x} - 3 = \frac{26}{x}$$

$$-3 = \frac{24}{x}$$

$$x = -8$$

REF: 010918ia STA: A.A.26 TOP: Solving Rationals

160 ANS: 2

$$m = \frac{5-3}{2-7} = -\frac{2}{5}$$

REF: 010913ia STA: A.A.33 TOP: Slope

161 ANS: 3

$$35000(1-0.05)^4 \approx 28507.72$$

REF: fall0719ia STA: A.A.9 TOP: Exponential Functions

162 ANS: 2

$$\sqrt{32} = \sqrt{16}\sqrt{2} = 4\sqrt{2}$$

REF: 060910ia STA: A.N.2 TOP: Simplifying Radicals

163 ANS: 1

Everyone eats, can shop in malls and wear clothes. People who work in a sporting goods store probably watch more sports television than most.

REF: 010923ia STA: A.S.3 TOP: Analysis of Data

164 ANS: 1

$$m = \frac{4-(-4)}{-5-15} = -\frac{2}{5}$$

REF: 080915ia STA: A.A.33 TOP: Slope

165 ANS: 4

$$w(w+5) = 36$$

$$w^2 + 5w - 36 = 0$$

REF: fall0726ia STA: A.A.5 TOP: Modeling Equations

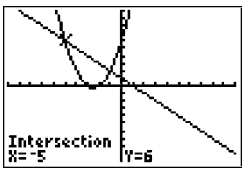
166 ANS: 1

$$\frac{4x}{x-1} \cdot \frac{x^2-1}{3x+3} = \frac{4x}{x-1} \cdot \frac{(x+1)(x-1)}{3(x+1)} = \frac{4x}{3}$$

REF: 080826ia STA: A.A.18 TOP: Multiplication and Division of Rationals

167 ANS: 3 REF: 060817ia STA: A.A.15 TOP: Undefined Rationals

168 ANS: 2



$x^2 + 5x + 6 = -x + 1.$ $y = -x + 1$

$x^2 + 6x + 5 = 0$ $= -(-5) + 1$

$(x + 5)(x + 1) = 0$ $= 6$

$x = -5$ or -1

REF: 080812ia STA: A.A.11 TOP: Quadratic-Linear Systems

169 ANS: 1

$\sin C = \frac{\text{opposite}}{\text{hypotenuse}} = \frac{13}{85}$

REF: fall0721ia STA: A.A.42 TOP: Trigonometric Ratios

170 ANS: 2 REF: 010916ia STA: A.G.10

TOP: Identifying the Vertex of a Quadratic Given Graph

171 ANS: 2

The two values are shoe size and height.

REF: fall0714ia STA: A.S.2 TOP: Analysis of Data

172 ANS: 1 REF: 060811ia STA: A.G.10

TOP: Identifying the Vertex of a Quadratic Given Graph

173 ANS: 2

The slope of the inequality is $-\frac{1}{2}$.

REF: fall0720ia STA: A.G.6 TOP: Linear Inequalities

174 ANS: 3 REF: fall0706ia STA: A.A.19

TOP: Factoring the Difference of Perfect Squares

175 ANS: 2 REF: 080901ia STA: A.A.4 TOP: Modeling Equations

176 ANS: 4

Surveying persons leaving a football game about a sports budget contains the most bias.

REF: 080910ia STA: A.S.3 TOP: Analysis of Data

177 ANS: 2

The set of integers greater than -2 and less than 6 is $\{-1, 0, 1, 2, 3, 4, 5\}$. The subset of this set that is the positive factors of 5 is $\{1, 5\}$. The complement of this subset is $\{-1, 0, 2, 3, 4\}$.

REF: 060818ia STA: A.A.30 TOP: Set Theory

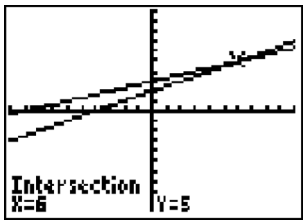
178 ANS: 2

$$\frac{9x^4 - 27x^6}{3x^3} = \frac{9x^4(1 - 3x^2)}{3x^3} = 3x(1 - 3x^2)$$

REF: fall0718ia STA: A.A.16 TOP: Rational Expressions
KEY: a > 0

179 ANS: 4 REF: 010927ia STA: A.N.4 TOP: Operations with Scientific Notation

180 ANS: 3



$$\frac{k+4}{2} = \frac{k+9}{3}$$

$$3(k+4) = 2(k+9)$$

$$3k + 12 = 2k + 18$$

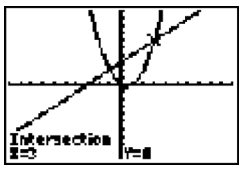
$$k = 6$$

REF: 010906ia STA: A.A.26 TOP: Solving Rationals

Integrated Algebra Multiple Choice Regents Exam Questions
Answer Section

181 ANS: 3 REF: 081117ia STA: A.A.29 TOP: Set Theory
182 ANS: 2 REF: 061113ia STA: A.G.5 TOP: Graphing Quadratic Functions
183 ANS: 2

$x^2 - x = x + 3$. Since $y = x + 3$, the solutions are $(3,6)$ and $(-1,2)$.



$x^2 - 2x - 3 = 0$

$(x - 3)(x + 1) = 0$

$x = 3 \text{ or } -1$

REF: 061118ia STA: A.A.11 TOP: Quadratic-Linear Systems
184 ANS: 3

$$\frac{x}{3} + \frac{x+1}{2} = x$$

$$\frac{2x + 3(x+1)}{6} = x$$

$$5x + 3 = 6x$$

$$3 = x$$

REF: 061019ia STA: A.A.25 TOP: Solving Equations with Fractional Expressions
185 ANS: 4 REF: 061016ia STA: A.A.2 TOP: Expressions
186 ANS: 3

$V = \pi r^2 h = \pi \cdot 5^2 \cdot 2.3 \approx 180.6$

REF: 081105ia STA: A.G.2 TOP: Volume
187 ANS: 4 REF: 061001ia STA: A.A.30 TOP: Set Theory
188 ANS: 2 REF: 061115ia STA: A.S.7 TOP: Scatter Plots
189 ANS: 1 REF: 061021ia STA: A.A.29 TOP: Set Theory
190 ANS: 3 REF: 061003ia STA: A.A.13 TOP: Addition and Subtraction of Polynomials
KEY: addition
191 ANS: 1 REF: 061010ia STA: A.A.40 TOP: Systems of Linear Inequalities
192 ANS: 2 REF: 061128ia STA: A.A.29 TOP: Set Theory
193 ANS: 2

$$\left|\frac{55.42 - 50.27}{55.42}\right| \approx 0.093$$

REF: 081023ia STA: A.M.3 TOP: Error KEY: area

194 ANS: 2

$20000(.88)^3 = 13629.44$

REF: 061124ia STA: A.A.9 TOP: Exponential Functions

195 ANS: 1

$\sin x = \dfrac{\text{opposite}}{\text{hypotenuse}} = \dfrac{28}{53}$

REF: 011109ia STA: A.A.42 TOP: Trigonometric Ratios

196 ANS: 1 REF: 011101ia STA: A.A.31 TOP: Set Theory

197 ANS: 3 REF: 061017ia STA: A.S.11 TOP: Quartiles and Percentiles

198 ANS: 1 REF: 081110ia STA: A.A.1 TOP: Expressions

199 ANS: 3 REF: 011017ia STA: A.G.5 TOP: Graphing Absolute Value Functions

200 ANS: 1 REF: 061114ia STA: A.A.43 TOP: Using Trigonometry to Find an Angle

201 ANS: 2

$\tan A = \dfrac{\text{opposite}}{\text{adjacent}} = \dfrac{14}{48}$

REF: 061009ia STA: A.A.42 TOP: Trigonometric Ratios

202 ANS: 4

$s = \dfrac{d}{t} = \dfrac{150\,\text{m}}{1.5\,\text{min}} \cdot \dfrac{60\,\text{min}}{1\,\text{hr}} = 6{,}000\,\dfrac{\text{m}}{\text{hr}}$

REF: 061025ia STA: A.M.1 TOP: Speed

203 ANS: 3 REF: 081103ia STA: A.A.30 TOP: Set Theory

204 ANS: 4

$A(-3,4)$ and $B(5,8)$. $m = \dfrac{4-8}{-3-5} = \dfrac{-4}{-8} = \dfrac{1}{2}$

REF: 011007ia STA: A.A.33 TOP: Slope

205 ANS: 1

$-3(-4)^2(2) + 4(-4) = -96 - 16 = -112$

REF: 081113ia STA: A.N.6 TOP: Evaluating Expressions

206 ANS: 4

$\dfrac{2+3+0+1+3+2+4+0+2+3}{10} = \dfrac{20}{10} = 2 \quad \dfrac{x}{10} = 2 + 0.5$

$x = 25$

REF: 081020ia STA: A.S.16 TOP: Average Known with Missing Data

207 ANS: 2 REF: 011002ia STA: A.S.20 TOP: Theoretical Probability

208 ANS: 4

$$\frac{x}{x+4} \div \frac{2x}{x^2-16} = \frac{x}{x+4} \cdot \frac{x^2-16}{2x} = \frac{1}{x+4} \cdot \frac{(x+4)(x-4)}{2} = \frac{x-4}{2}$$

REF: 081130ia STA: A.A.18 TOP: Multiplication and Division of Rationals

209 ANS: 1 REF: 081102ia STA: A.S.12 TOP: Scatter Plots

210 ANS: 4

$$\frac{7}{12x} - \frac{y}{6x^2} = \frac{42x^2 - 12xy}{72x^3} = \frac{6x(7x-2y)}{72x^3} = \frac{7x-2y}{12x^2}$$

REF: 061129ia STA: A.A.17 TOP: Addition and Subtraction of Rationals

211 ANS: 3 REF: 081001ia STA: A.S.7 TOP: Scatter Plots

212 ANS: 2

$$\sqrt{5^2+7^2} \approx 8.6$$

REF: 081004ia STA: A.A.45 TOP: Pythagorean Theorem

213 ANS: 4 REF: 061112ia STA: A.A.36 TOP: Parallel and Perpendicular Lines

214 ANS: 2 REF: 061121ia STA: A.A.3 TOP: Expressions

215 ANS: 1

$$x = \frac{-b}{2a} = \frac{-6}{2(-1)} = 3.$$

REF: 011127ia STA: A.A.41 TOP: Identifying the Vertex of a Quadratic Given Equation

216 ANS: 1

$15000(1.2)^{\frac{6}{3}} = 21,600.\ \ 21,600 - 15,000 = 6,600$

REF: 061030ia STA: A.A.9 TOP: Exponential Functions

217 ANS: 2

Candidate *B* received 45%. $45\% \times 1860 = 837$

REF: 081007ia STA: A.N.5 TOP: Percents

218 ANS: 2

$$m = \frac{5-3}{8-1} = \frac{2}{7} \quad y - y_1 = m(x - x_i)$$

$$y - 5 = \frac{2}{7}(x - 8)$$

REF: 081029ia STA: A.A.35 TOP: Writing Linear Equations

219 ANS: 3

2(1)+3=5

REF: 061007ia STA: A.A.39 TOP: Linear Equations

220 ANS: 2

$A = lw + \frac{\pi r^2}{2} = 6 \cdot 5 + \frac{\pi \cdot 3^2}{2} \approx 44.1$

REF: 061029ia STA: A.G.1 TOP: Compositions of Polygons and Circles
KEY: area

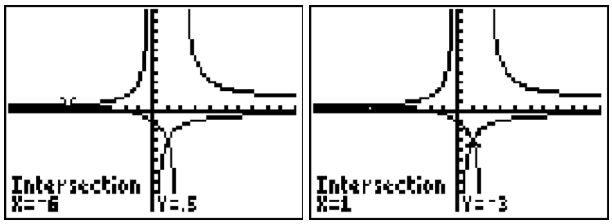
221 ANS: 2 REF: 011027ia STA: A.A.3 TOP: Expressions

222 ANS: 3

$3\sqrt{2} + \sqrt{8} = 3\sqrt{2} + \sqrt{4}\sqrt{2} = 3\sqrt{2} + 2\sqrt{2} = 5\sqrt{2}$

REF: 011121ia STA: A.N.3 TOP: Operations with Radicals
KEY: addition

223 ANS: 4



$\frac{x+2}{x-2} = \frac{-3}{x}$

$x(x+2) = -3(x-2)$

$x^2 + 2x = -3x + 6$

$x^2 + 5x - 6 = 0$

$(x+6)(x-1) = 0$

$x = -6 \text{ or } 1$

REF: 011028ia STA: A.A.26 TOP: Solving Rationals

224 ANS: 2

$36x^2 - 100y^6 = 4(9x^2 - 25y^6) = 4(3x + 5y^3)(3x - 5y^3)$

REF: 081129ia STA: A.A.19 TOP: Factoring the Difference of Perfect Squares

225 ANS: 2

$l(l-3) = 40$

$l^2 - 3l - 40 = 0$

$(l-8)(l+5) = 0$

$l = 8$

REF: 081116ia STA: A.A.8 TOP: Geometric Applications of Quadratics

226 ANS: 4

$5 \times 2 \times 3 = 30$

REF: 061002ia STA: A.N.7 TOP: Multiplication Counting Principle

227 ANS: 1

$7 + 8 + 7 + \frac{12\pi}{2} = 22 + 6\pi$

REF: 081128ia STA: A.G.1 TOP: Compositions of Polygons and Circles
KEY: perimeter

228 ANS: 4

In (4), each element in the domain corresponds to a unique element in the range.

REF: 011018ia STA: A.G.3 TOP: Defining Functions

229 ANS: 2 REF: 081106ia STA: A.S.6 TOP: Box-and-Whisker Plots

230 ANS: 4 REF: 081107ia STA: A.A.5 TOP: Modeling Inequalities

231 ANS: 2 REF: 061105ia STA: A.A.20 TOP: Factoring Polynomials

232 ANS: 3 REF: 061119ia STA: A.A.2 TOP: Expressions

233 ANS: 3

$c + 3d = 8 \quad c = 4d - 6$

$4d - 6 + 3d = 8 \quad c = 4(2) - 6$

$7d = 14 \quad c = 2$

$d = 2$

REF: 061012ia STA: A.A.10 TOP: Solving Linear Systems

234 ANS: 3

$x^2 - 9 = 0$

$(x + 3)(x - 3) = 0$

$x = \pm 3$

REF: 061014ia STA: A.A.15 TOP: Undefined Rationals

235 ANS: 3

The age of a child does not cause the number of siblings he has, or vice versa.

REF: 011030ia STA: A.S.14 TOP: Analysis of Data

236 ANS: 4 REF: 081022ia STA: A.A.29 TOP: Set Theory

237 ANS: 2

$m = \frac{5 - 2}{3 - (-2)} = \frac{3}{5}$

REF: 061004ia STA: A.A.33 TOP: Slope

238 ANS: 3 REF: 081017a STA: A.S.14 TOP: Analysis of Data

239 ANS: 2

$\sqrt{18.4^2 - 7^2} \approx 17$

REF: 011107ia STA: A.A.45 TOP: Pythagorean Theorem

240 ANS: 4 REF: 061130ia STA: A.A.13 TOP: Addition and Subtraction of Polynomials
KEY: subtraction

241 ANS: 2 REF: 011015ia STA: A.G.10
TOP: Identifying the Vertex of a Quadratic Given Graph
242 ANS: 2 REF: 061122ia STA: A.S.14 TOP: Analysis of Data
243 ANS: 1

$2y - 2x = 10$ axis of symmetry: $x = \frac{-b}{2a} = \frac{-2}{2(1)} = -1$

$2y = 2x + 10$

$y = x + 5$

REF: 081010ia STA: A.G.9 TOP: Quadratic-Linear Systems
244 ANS: 4 REF: 061022ia STA: A.S.3 TOP: Analysis of Data
245 ANS: 2 REF: 061027ia STA: A.A.20 TOP: Factoring Polynomials
246 ANS: 4

$SA = 2lw + 2hw + 2lh = 2(2)(3) + 2(4)(3) + 2(2)(4) = 52$

REF: 011029ia STA: A.G.2 TOP: Surface Area
247 ANS: 2 REF: 061023ia STA: A.A.23 TOP: Transforming Formulas
248 ANS: 3

$P(odd) = \frac{3}{6}, P(prime) = \frac{3}{6}, P(perfect\ square) = \frac{2}{6}, P(even) = \frac{3}{6}$

REF: 061104ia STA: A.S.22 TOP: Geometric Probability
249 ANS: 2 REF: 011019ia STA: A.S.12 TOP: Scatter Plots
250 ANS: 2 REF: 081014ia STA: A.A.36 TOP: Parallel and Perpendicular Lines
251 ANS: 1

$y = mx + b$

$5 = (-2)(1) + b$

$b = 7$

REF: 081108ia STA: A.A.34 TOP: Writing Linear Equations
252 ANS: 3

$2x - 5y = 11 \quad 2x - 5(-1) = 11$

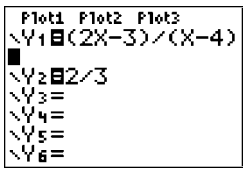
$-2x + 3y = -9 \qquad 2x = 6$

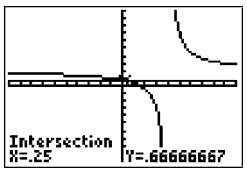
$-2y = 2 \qquad x = 3$

$y = -1$

REF: 081109ia STA: A.A.10 TOP: Solving Linear Systems

253 ANS: 2





$$\frac{2x-3}{x-4}=\frac{2}{3}$$

$$3(2x-3)=2(x-4)$$

$$6x-9=2x-8$$

$$4x=1$$

$$x=\frac{1}{4}$$

REF: 081012ia STA: A.A.26 TOP: Solving Rationals

254 ANS: 2 REF: 081003ia STA: A.A.31 TOP: Set Theory

255 ANS: 4 REF: 011025ia STA: A.A.17 TOP: Addition and Subtraction of Rationals

256 ANS: 2

In (2), each element in the domain corresponds to a unique element in the range.

REF: 061116ia STA: A.G.3 TOP: Defining Functions

257 ANS: 1

$$2(x-4)=4(2x+1)$$

$$2x-8=8x+4$$

$$-12=6x$$

$$-2=x$$

REF: 011106ia STA: A.A.22 TOP: Solving Equations

258 ANS: 1

The slope of $2x-4y=16$ is $\frac{-A}{B}=\frac{-2}{-4}=\frac{1}{2}$

REF: 011026ia STA: A.A.38 TOP: Parallel and Perpendicular Lines

259 ANS: 4 REF: 011020ia STA: A.A.12 TOP: Multiplication of Powers

260 ANS: 3

$x=\frac{-b}{2a}=\frac{-10}{2(-1)}=5.$

REF: 081018ia STA: A.A.41 TOP: Identifying the Vertex of a Quadratic Given Equation

261 ANS: 2 REF: 081111ia STA: A.G.10

TOP: Identifying the Vertex of a Quadratic Given Graph

262 ANS: 2

$\tan B = \dfrac{\text{opposite}}{\text{adjacent}} = \dfrac{8}{15} = 0.5\overline{3}$

REF: 081026ia STA: A.A.42 TOP: Trigonometric Ratios

263 ANS: 4 REF: 081025ia STA: A.G.4 TOP: Families of Functions

264 ANS: 4

$6\sqrt{50} + 6\sqrt{2} = 6\sqrt{25}\sqrt{2} + 6\sqrt{2} = 30\sqrt{2} + 6\sqrt{2} = 36\sqrt{2}$

REF: 011024ia STA: A.N.3 TOP: Operations with Radicals
KEY: addition

265 ANS: 3

$\dfrac{12x^3 - 6x^2 + 2x}{2x} = \dfrac{2x(6x^2 - 3x + 1)}{2x} = 6x^2 - 3x + 1$

REF: 011011ia STA: A.A.14 TOP: Division of Polynomials

266 ANS: 1

$4y - 2x = 0$

$4(-1) - 2(-2) = 0$

$-4 + 4 = 0$

REF: 011021ia STA: A.A.39 TOP: Identifying Points on a Line

267 ANS: 4

The other situations are quantitative.

REF: 081122ia STA: A.S.1 TOP: Analysis of Data

268 ANS: 2

$\left|\dfrac{13.5 - 12.8}{13.5}\right| \approx 0.093$

REF: 081123ia STA: A.M.3 TOP: Error KEY: area

269 ANS: 4 REF: 011116ia STA: A.S.1 TOP: Analysis of Data

270 ANS: 1 REF: 081115ia STA: A.A.32 TOP: Slope

271 ANS: 3

$\dfrac{(12.3 \times 11.9) - (12.2 \times 11.8)}{12.3 \times 11.9} \approx 0.0165$

REF: 061120ia STA: A.M.3 TOP: Error KEY: area

272 ANS: 3

$75 - 15 = 60$

REF: 011113ia STA: A.S.6 TOP: Box-and-Whisker Plots

273 ANS: 2

$J - M = 3$

$8J + 8M = 120$

$8J - 8M = 24$

$16J = 144$

$J = 9$

REF: 011115ia STA: A.A.7 TOP: Writing Linear Systems

274 ANS: 2

$y - kx = 7$ may be rewritten as $y = kx + 7$

REF: 061015ia STA: A.A.38 TOP: Parallel and Perpendicular Lines

275 ANS: 4 REF: 061111ia STA: A.G.4 TOP: Families of Functions

276 ANS: 1 REF: 061024ia STA: A.A.17 TOP: Addition and Subtraction of Rationals

277 ANS: 3

$\sqrt{72} - 3\sqrt{2} = \sqrt{36}\sqrt{2} - 3\sqrt{2} = 6\sqrt{2} - 3\sqrt{2} = 3\sqrt{2}$

REF: 061008ia STA: A.N.3 TOP: Operations with Radicals

KEY: subtraction

278 ANS: 1

$\dfrac{x^2 - x - 6}{x^2 - 5x + 6} = \dfrac{(x-3)(x+2)}{(x-3)(x+2)} = \dfrac{x+2}{x-2}$

REF: 011130ia STA: A.A.16 TOP: Rational Expressions

KEY: a > 0

279 ANS: 1

$3(2m - 1) \le 4m + 7$

$6m - 3 \le 4m + 7$

$2m \le 10$

$m \le 5$

REF: 081002ia STA: A.A.24 TOP: Solving Inequalities

280 ANS: 4

$2x - 3y = 9$

$2(0) - 3(-3) = 9$

$0 + 9 = 9$

REF: 081016ia STA: A.A.39 TOP: Identifying Points on a Line

281 ANS: 2

$2(x - 3y = -3)$

$2x + y = 8$

$2x - 6y = -6$

$7y = 14$

$y = 2$

REF: 081021ia STA: A.A.10 TOP: Solving Linear Systems

282 ANS: 2

$\sin 57 = \frac{x}{8}$

$x \approx 6.7$

REF: 061108ia STA: A.A.44 TOP: Using Trigonometry to Find a Side

283 ANS: 3

$3\sqrt{250} = 3\sqrt{25}\sqrt{10} = 15\sqrt{10}$

REF: 061106ia STA: A.N.2 TOP: Simplifying Radicals

284 ANS: 2 REF: 011023ia STA: A.A.40 TOP: Systems of Linear Inequalities

285 ANS: 1

$\frac{2x}{3} + \frac{1}{2} = \frac{5}{6}$

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

$6x = 3$

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

REF: 011112ia STA: A.A.25 TOP: Solving Equations with Fractional Expressions

286 ANS: 3 REF: 011103ia STA: A.S.12 TOP: Scatter Plots

287 ANS: 1

$x^2 - 36 = 5x$

$x^2 - 5x - 36 = 0$

$(x - 9)(x + 4) = 0$

$x = 9$

REF: 061020ia STA: A.A.8 TOP: Writing Quadratics

288 ANS: 1 REF: 061005ia STA: A.G.10
TOP: Identifying the Vertex of a Quadratic Given Graph

289 ANS: 2

$\tan ABC = \dfrac{\text{opposite}}{\text{adjacent}} = \dfrac{5}{12}$

REF: 081112ia STA: A.A.42 TOP: Trigonometric Ratios

290 ANS: 2

$A(-3,8)$ and $B(3,6)$. $m = \dfrac{8-6}{-3-3} = \dfrac{2}{-6} = -\dfrac{1}{3}$

REF: 081005ia STA: A.A.33 TOP: Slope

291 ANS: 3 REF: 061011ia STA: A.S.2 TOP: Analysis of Data

292 ANS: 1

$f + m = 53$

$f - m = 25$

$2m = 28$

$m = 14$

REF: 061126ia STA: A.A.7 TOP: Writing Linear Systems

293 ANS: 3

$\dfrac{(10w^3)^2}{5w} = \dfrac{100w^6}{5w} = 20w^5$

REF: 011124ia STA: A.A.12 TOP: Powers of Powers

294 ANS: 3 REF: 011104ia STA: A.A.1 TOP: Expressions

295 ANS: 2

$\dfrac{3}{2x} + \dfrac{7}{4x} = \dfrac{12x + 14x}{8x^2} = \dfrac{26x}{8x^2} = \dfrac{13}{4x}$

REF: 011120ia STA: A.A.17 TOP: Addition and Subtraction of Rationals

296 ANS: 2 REF: 011005ia STA: A.A.5 TOP: Modeling Inequalities

297 ANS: 3

$\dfrac{15}{15+13+12} = \dfrac{15}{40} = \dfrac{3}{8}$

REF: 061006ia STA: A.S.21 TOP: Experimental Probability

298 ANS: 4

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

$(x-6)(x+2) = 0$

$x = 6 \; x = -2$

REF: 061125ia STA: A.A.15 TOP: Undefined Rationals

299 ANS: 3 REF: 011117ia STA: A.G.4 TOP: Graphing Absolute Value Functions

300 ANS: 1

$b = 2j + 4 \quad 2j + 4 = 31 - j$

$b + j = 31 \qquad 3j = 27$

$b = 31 - j \qquad j = 9$

REF: 081119ia STA: A.A.7 TOP: Writing Linear Systems

301 ANS: 1 REF: 011004ia STA: A.A.31 TOP: Set Theory

302 ANS: 3

$\frac{2+x}{5x} - \frac{x-2}{5x} = \frac{2+x-x+2}{5x} = \frac{4}{5x}$

REF: 081027ia STA: A.A.17 TOP: Addition and Subtraction of Rationals

303 ANS: 2

$2000(1 + 0.04)^3 \approx 2249$

REF: 081124ia STA: A.A.9 TOP: Exponential Functions

304 ANS: 4 REF: 061123ia STA: A.A.31 TOP: Set Theory

305 ANS: 2 REF: 081104ia STA: A.S.14 TOP: Analysis of Data

306 ANS: 4

$\frac{9.2 \times 10^6}{2.3 \times 10^2} = 4 \times 10^4$

REF: 081006ia STA: A.N.4 TOP: Operations with Scientific Notation

307 ANS: 2

Debbie failed to distribute the 3 properly.

REF: 011009ia STA: A.A.22 TOP: Solving Equations

308 ANS: 2

$a^3 - 4a = a(a^2 - 4) = a(a - 2)(a + 2)$

REF: 011108ia STA: A.A.19 TOP: Factoring the Difference of Perfect Squares

309 ANS: 2 REF: 011012ia STA: A.G.9 TOP: Quadratic-Linear Systems

310 ANS: 4

${}_8P_3 = 336$

REF: 061026ia STA: A.N.8 TOP: Permutations

311 ANS: 1 REF: 011001ia STA: A.S.6 TOP: Box-and-Whisker Plots

312 ANS: 4 REF: 061018ia STA: A.A.12 TOP: Division of Powers

313 ANS: 4 REF: 011016ia STA: A.A.23 TOP: Transforming Formulas

314 ANS: 2

$m = \frac{-A}{B} = \frac{-3}{-7} = \frac{3}{7}$

REF: 011122ia STA: A.A.37 TOP: Slope

315 ANS: 3 REF: 081009ia STA: A.A.30 TOP: Set Theory

316 ANS: 3

$m = \dfrac{6-4}{3-(-2)} = \dfrac{2}{5}$

REF: 061110ia STA: A.A.33 TOP: Slope

317 ANS: 4 REF: 011114ia STA: A.N.1 TOP: Properties of Reals

318 ANS: 3

mean = $81\dfrac{7}{11}$, median = 81 and mode = 76

REF: 011118ia STA: A.S.4 TOP: Central Tendency

319 ANS: 1

$\dfrac{12.8+17.2}{3+5} = 3.75$

REF: 061117ia STA: A.M.1 TOP: Speed

320 ANS: 2

$x^2 - 2x - 15 = 0$

$(x-5)(x+3) = 0$

$x = 5 \;\; x = -3$

REF: 011128ia STA: A.A.28 TOP: Roots of Quadratics

321 ANS: 1 REF: 061103ia STA: A.A.12 TOP: Division of Powers

322 ANS: 2 REF: 061127ia STA: A.N.4 TOP: Operations with Scientific Notation

323 ANS: 3

Frequency is not a variable.

REF: 011014ia STA: A.S.2 TOP: Analysis of Data

324 ANS: 1 REF: 081015ia STA: A.G.5 TOP: Graphing Quadratic Functions

325 ANS: 2

$x^2 - 5x + 6 = 0$

$(x-3)(x-2) = 0$

$x = 3 \;\; x = 2$

REF: 081120ia STA: A.A.28 TOP: Roots of Quadratics

326 ANS: 3 REF: 081118ia STA: A.G.4 TOP: Families of Functions

327 ANS: 2 REF: 011110ia STA: A.N.6 TOP: Evaluating Expressions

328 ANS: 2

shaded = whole − unshaded

$= \text{rectangle-triangle}$

$= lw - \frac{1}{2}bh$

$= 15 \times 6 - \frac{1}{2} \times 15 \times 4.6$

$= 90 - 34.5$

$= 55.5$

REF: 081019ia STA: A.G.1 TOP: Compositions of Polygons and Circles
KEY: area

329 ANS: 3 REF: 061101ia STA: A.A.19
TOP: Factoring the Difference of Perfect Squares

330 ANS: 1 REF: 011126ia STA: A.A.13 TOP: Addition and Subtraction of Polynomials
KEY: subtraction

331 ANS: 1

Asking school district employees about a school board candidate produces the most bias.

REF: 061107ia STA: A.S.3 TOP: Analysis of Data

332 ANS: 4

${}_5P_5 = 5 \times 4 \times 3 \times 2 \times 1 = 120$

REF: 061109ia STA: A.N.8 TOP: Permutations

333 ANS: 1 REF: 081030ia STA: A.A.3 TOP: Expressions

334 ANS: 4 REF: 061028ia STA: A.G.6 TOP: Linear Inequalities

335 ANS: 2 REF: 011119ia STA: A.A.29 TOP: Set Theory

336 ANS: 3

$m = \frac{7-3}{-3-3} = \frac{4}{-6} = -\frac{2}{3}$ $y = mx + b$

$3 = -\frac{2}{3}(3) + b$

$3 = -2 + b$

$5 = b$

REF: 011013ia STA: A.A.35 TOP: Writing Linear Equations

337 ANS: 2 REF: 011022ia STA: A.A.19
TOP: Factoring the Difference of Perfect Squares

338 ANS: 2

$A = lw + lw + \frac{\pi r^2}{4} = 5 \cdot 3 + 5 \cdot 3 + \frac{\pi \cdot 3^2}{4} \approx 37$

REF: 011123ia STA: A.G.1 TOP: Compositions of Polygons and Circles
KEY: area

339 ANS: 3

$\cos A = \dfrac{\text{adjacent}}{\text{hypotenuse}} = \dfrac{15}{17}$

REF: 011008ia STA: A.A.42 TOP: Trigonometric Ratios

340 ANS: 4

$5(x + 4) = 5x + 20$

REF: 081013ia STA: A.A.1 TOP: Expressions

341 ANS: 3

$\dfrac{3 + 2 + 4 + 3}{20} = \dfrac{12}{20}$

REF: 011129ia STA: A.S.21 TOP: Experimental Probability

342 ANS: 3 REF: 081008ia STA: A.A.19
TOP: Factoring the Difference of Perfect Squares

343 ANS: 2

$R = 0.5^{d-1}$

REF: 011006ia STA: A.A.9 TOP: Exponential Functions

344 ANS: 4

$-6x - 17 \geq 8x + 25$

$-42 \geq 14x$

$-3 \geq x$

REF: 081121ia STA: A.A.24 TOP: Solving Inequalities

345 ANS: 3

$P(S) \cdot P(M) = P(S \text{ and } M)$

$\dfrac{3}{5} \cdot P(M) = \dfrac{3}{10}$

$P(M) = \dfrac{1}{2}$

REF: 081024ia STA: A.S.23 TOP: Theoretical Probability
KEY: independent events

346 ANS: 2

$\cos 38 = \dfrac{10}{x}$

$x = \dfrac{10}{\cos 38} \approx 12.69$

REF: 081126ia STA: A.A.44 TOP: Using Trigonometry to Find a Side

347 ANS: 3
${}_6P_4 = 360$

REF: 081028ia STA: A.N.8 TOP: Permutations
348 ANS: 1
$-|a-b| = -|7-(-3)| = -|-10| = -10$

REF: 011010ia STA: A.N.6 TOP: Evaluating Expressions
349 ANS: 3
$10^2 + 10^2 = c^2$

$c^2 = 200$

$c \approx 14.1$

REF: 061102ia STA: A.A.45 TOP: Pythagorean Theorem
350 ANS: 4
$-3x(x-4) - 2x(x+3) = -3x^2 + 12x - 2x^2 - 6x = -5x^2 + 6x$

REF: 081114ia STA: A.A.13 TOP: Addition and Subtraction of Monomials
351 ANS: 1
$1P + 2C = 5$

$1P + 4C = 6$

$2C = 1$

$C = 0.5$

REF: 011003ia STA: A.A.7 TOP: Writing Linear Systems
352 ANS: 4
$\frac{150}{20} = \frac{x}{30}$

$20x = 4500$

$x = 225$

REF: 081101ia STA: A.N.5 TOP: Direct Variation
353 ANS: 4 REF: 011102ia STA: A.G.9 TOP: Quadratic-Linear Systems
354 ANS: 4
In (4), each element in the domain corresponds to a unique element in the range.

REF: 011105ia STA: A.G.3 TOP: Defining Functions
355 ANS: 4 REF: 011111ia STA: A.G.8 TOP: Solving Quadratics by Graphing
356 ANS: 3
$P(O) = \frac{5}{10}, P(P) = \frac{4}{10}, P(\leq 5) = \frac{6}{10}, P(/3) = \frac{4}{10}$

REF: 081125ia STA: A.S.22 TOP: Theoretical Probability

357 ANS: 2 REF: 081127ia STA: A.A.40 TOP: Systems of Linear Inequalities
358 ANS: 4 REF: 061013ia STA: A.G.3 TOP: Defining Functions
359 ANS: 4

$$\frac{ey}{n} + k = t$$

$$\frac{ey}{n} = t - k$$

$$y = \frac{n(t-k)}{e}$$

REF: 011125ia STA: A.A.23 TOP: Transforming Formulas
360 ANS: 4 REF: 081011ia STA: A.A.5 TOP: Modeling Equations

Integrated Algebra 2 Point Regents Exam Questions
Answer Section

361 ANS:
33.4. Serena needs 24 $(9+6+9)$ feet of fencing to surround the rectangular portion of the garden. The length of the fencing needed for the semicircular portion of the garden is $\frac{1}{2}\pi d = 3\pi \approx 9.4$ feet.

PTS: 2 REF: fall0733ia STA: A.G.1 TOP: Compositions of Polygons and Circles
KEY: perimeter

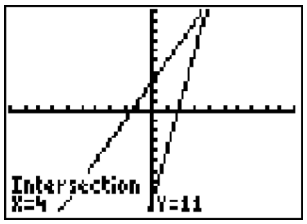
362 ANS:
$d = 6.25h$, 250. $d = 6.25(40) = 250$

PTS: 2 REF: 010933ia STA: A.N.5 TOP: Direct Variation

363 ANS:
$3a^2b^2 - 6a$. $\frac{45a^4b^3 - 90a^3b}{15a^2b} = \frac{45a^4b^3}{15a^2b} - \frac{90a^3b}{15a^2b} = 3a^2b^2 - 6a$

PTS: 2 REF: 081031ia STA: A.A.14 TOP: Division of Polynomials

364 ANS:
4. $3 + 2g = 5g - 9$



$12 = 3g$

$g = 4$

PTS: 2 REF: fall0732ia STA: A.A.22 TOP: Solving Equations

365 ANS:
$\frac{600 - 592}{592} \approx 0.014$

PTS: 2 REF: 061031ia STA: A.M.3 TOP: Error
KEY: volume and surface area

366 ANS:
111.25. $\frac{\text{distance}}{\text{time}} = \frac{89}{0.8} = 111.25$

PTS: 2 REF: 080831ia STA: A.M.1 TOP: Speed

367 ANS:
Ann's. $\frac{225}{15} = 15$ mpg is greater than $\frac{290}{23.2} = 12.5$ mpg

PTS: 2 REF: 060831ia STA: A.M.1 TOP: Using Rate

368 ANS:
{1,2,4,5,9,10,12}

PTS: 2 REF: 080833ia STA: A.A.30 TOP: Set Theory

369 ANS:
$36 - 9\pi$. 15.6. Area of square–area of 4 quarter circles. $(3+3)^2 - 3^2\pi = 36 - 9\pi$

PTS: 2 REF: 060832ia STA: A.G.1 TOP: Compositions of Polygons and Circles
KEY: area

370 ANS:
$x = 1;\ (1, -5)$

PTS: 2 REF: 061133ia STA: A.G.10
TOP: Identifying the Vertex of a Quadratic Given Graph

371 ANS:
$\frac{3k^2m^6}{4}$

PTS: 2 REF: 010932ia STA: A.A.12 TOP: Division of Powers

372 ANS:
Not all of the homework problems are equations. The first problem is an expression.

PTS: 2 REF: 080931ia STA: A.A.3 TOP: Expressions

373 ANS:
(1) Distributive; (2) Commutative

PTS: 2 REF: 061132ia STA: A.N.1 TOP: Identifying Properties

374 ANS:
$bc + ac = ab$

$c(b + a) = ab$

$$c = \frac{ab}{b+a}$$

PTS: 2 REF: 081131ia STA: A.A.23 TOP: Transforming Formulas

375 ANS:
$\sin x = \frac{30}{50}$

$x = \sin^{-1}\frac{3}{5}$

$x \approx 37$

PTS: 2 REF: 061033ia STA: A.A.43 TOP: Using Trigonometry to Find an Angle

376 ANS:
$-3\sqrt{48} = -3\sqrt{16}\sqrt{3} = -12\sqrt{3}$

PTS: 2 REF: 081033ia STA: A.N.2 TOP: Simplifying Radicals

377 ANS:
2,160 $\frac{1,200}{25} = \frac{x}{45}$

$25x = 54,000$

$x = 2,160$

PTS: 2 REF: 081032ia STA: A.M.1 TOP: Using Rate

378 ANS:
$4x(x+3)(x-3)$. $4x^3 - 36x = 4x(x^2 - 9) = 4x(x+3)(x-3)$

PTS: 2 REF: 060932ia STA: A.A.19
TOP: Factoring the Difference of Perfect Squares

379 ANS:
53. $\sin A = \frac{16}{20}$

$A \approx 53$

PTS: 2 REF: 011032ia STA: A.A.43 TOP: Using Trigonometry to Find an Angle

380 ANS:
$\frac{3}{8}$. (H,H,H), (H,H,T), (H,T,H), **(H,T,T)**, (T,H,H), **(T,H,T)**, **(T,T,H)**, (T,T,T)

PTS: 2 REF: 080933ia STA: A.S.19 TOP: Sample Space

381 ANS:
$\frac{x^2 - 5x - 24}{x - 8} = \frac{(x-8)(x+3)}{x-8} = x + 3$

PTS: 2 REF: 061131ia STA: A.A.14 TOP: Division of Polynomials

382 ANS:
$30\sqrt{2}$. $5\sqrt{72} = 5\sqrt{36}\sqrt{2} = 30\sqrt{2}$

PTS: 2 REF: fall0731ia STA: A.N.2 TOP: Simplifying Radicals

383 ANS:
60. ${}_5P_3 = 60$

PTS: 2 REF: 060931ia STA: A.N.8 TOP: Permutations

384 ANS:
$0 \le t \le 40$

PTS: 2 REF: 060833ia STA: A.A.31 TOP: Set Theory

385 ANS:

50. $12 + 10 + 12 + \frac{1}{2}(10\pi) \approx 50$

PTS: 2 REF: 010931ia STA: A.G.1 TOP: Compositions of Polygons and Circles
KEY: perimeter

386 ANS:

$77120 + 33500 = 110620 \text{ sq. ft.} \times \frac{1 \text{ acre}}{43560 \text{ sq. ft.}} \approx 2.54 \text{ acres}$

PTS: 2 REF: 081133ia STA: A.M.2 TOP: Conversions

387 ANS:

$\frac{1}{8}$. After the English and social studies books are taken, 8 books are left and 1 is an English book.

PTS: 2 REF: 060933ia STA: A.S.18 TOP: Conditional Probability

388 ANS:

2.1. $\cos 65 = \frac{x}{5}$

$x \approx 2.1$

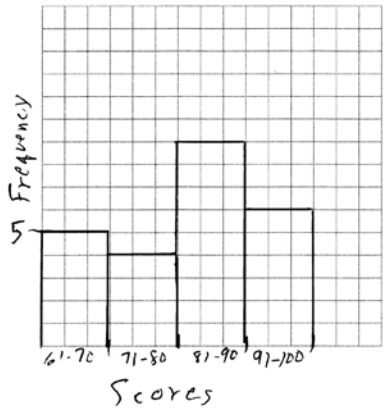
PTS: 2 REF: 011133ia STA: A.A.44 TOP: Using Trigonometry to Find a Side

389 ANS:

orchestra: $\frac{3}{26} > \frac{4}{36}$

PTS: 2 REF: 011033ia STA: A.S.22 TOP: Theoretical Probability

390 ANS:



PTS: 2 REF: 081132ia STA: A.S.5
TOP: Frequency Histograms, Bar Graphs and Tables KEY: frequency histograms

391 ANS:

5,112. $(12 \times 30 \times 16) - (6 \times 12 \times 9) = 5112$

PTS: 2 REF: 080932ia STA: A.G.2 TOP: Volume

392 ANS:

$\frac{3}{8}$. $P(s_1 < 4) \times P(s_2 = \text{back}) = \frac{3}{4} \times \frac{1}{2} = \frac{3}{8}$

PTS: 2 REF: 080832ia STA: A.S.23 TOP: Geometric Probability

393 ANS:

16. 12 feet equals 4 yards. $4 \times 4 = 16$.

PTS: 2 REF: 011031ia STA: A.M.2 TOP: Conversions

394 ANS:

5. $48 \text{ inches} \times \frac{1 \text{ yard}}{36 \text{ inches}} = \frac{4}{3} \text{ yards} \times \$3.75 = \$5.00$

PTS: 2 REF: 011131ia STA: A.M.2 TOP: Conversions

395 ANS:

$-6a + 42$. distributive

PTS: 2 REF: 061032ia STA: A.N.1 TOP: Properties of Reals

396 ANS:

$\frac{1375}{1600}$. $\frac{40^2 - 15^2}{40^2} = \frac{1375}{1600}$

PTS: 2 REF: 011132ia STA: A.S.20 TOP: Geometric Probability

Integrated Algebra 3 Point Regents Exam Questions
Answer Section

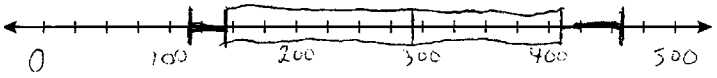
397 ANS:

(S,S), (S,K), **(S,D)**, (K,S), (K,K), **(K,D)**, **(D,S)**, **(D,K)**, (D,D), $\frac{4}{9}$

PTS: 3 REF: fall0736ia STA: A.S.19 TOP: Sample Space

398 ANS:

minimum is 120, 1st quartile is 145, median is 292, 3rd quartile is 407, and maximum is 452



PTS: 3 REF: 081034ia STA: A.S.5 TOP: Box-and-Whisker Plots

399 ANS:

7. $15x + 22 \geq 120$

$x \geq 6.5\overline{3}$

PTS: 3 REF: fall0735ia STA: A.A.6 TOP: Modeling Inequalities

400 ANS:

–12. $3\left(\frac{2}{3}x + 3 < -2x - 7\right)$

$x + 9 < -6x - 21$

$7x < -30$

$x < \frac{-30}{7}$

PTS: 3 REF: 061034ia STA: A.A.21 TOP: Interpreting Solutions

401 ANS:

$\frac{38}{\pi}$, 2. $V = \pi r^2 h$. $\frac{36}{\left(\frac{38}{\pi}\right)} \approx 2.97$. Three cans will not fit. The maximum number is 2.

$342 = \pi\left(\frac{6}{2}\right)^2 h$

$\frac{342}{9\pi} = h$

$\frac{38}{\pi} = h$

PTS: 3 REF: 010936ia STA: A.G.2 TOP: Volume

402 ANS:

$60 - 42\sqrt{5}$. $3\sqrt{20}(2\sqrt{5} - 7) = 6\sqrt{100} - 21\sqrt{20} = 60 - 21\sqrt{4}\sqrt{5} = 60 - 42\sqrt{5}$

PTS: 3 REF: 080834ia STA: A.N.3 TOP: Operations with Radicals
KEY: multiplication

403 ANS:

$10 + 2d \geq 75$, 33. $10 + 2d \geq 75$

$d \geq 32.5$

PTS: 3 REF: 060834ia STA: A.A.6 TOP: Modeling Inequalities

404 ANS:

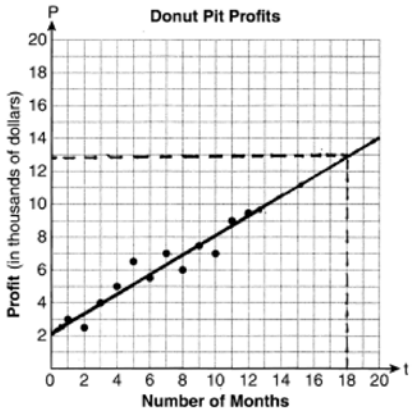
$y = \frac{2}{5}x + 2$. $m = \frac{4-0}{5-(-5)} = \frac{2}{5}$. $y = mx + b$.

$4 = \frac{2}{5}(5) + b$

$b = 2$

PTS: 3 REF: 080836ia STA: A.A.35 TOP: Writing Linear Equations

405 ANS:



They will not reach their goal in 18 months.

PTS: 3 REF: 061036ia STA: A.S.17 TOP: Scatter Plots

406 ANS:

(–2, 11). $x = \frac{-b}{2a} = \frac{-(-8)}{2(-2)} = -2$

$y = -2(-2)^2 - 8(-2) + 3 = 11$

PTS: 3 REF: 080934ia STA: A.A.41
TOP: Identifying the Vertex of a Quadratic Given Equation

407 ANS:

56. If the circumference of circle *O* is 16ð inches, the diameter, $\overline{AD}$, is 16 inches and the length of $\overline{BC}$ is 12 inches $\frac{3}{4} \times 16$. The area of trapezoid *ABCD* is $\frac{1}{2} \times 4(12 + 16) = 56$.

PTS: 3 REF: 060934ia STA: A.G.1 TOP: Compositions of Polygons and Circles
KEY: area

408 ANS:

$\frac{1}{6}$, 16.67%, \$13.50. $\frac{18 - 15}{18} = \frac{1}{6}$. $18 \times 0.75 = 13.5$

PTS: 3 REF: 060835ia STA: A.N.5 TOP: Percents

409 ANS:

$2(x + 3)(x - 4) + 2(5)(x - 4) + 2(x + 3)(5)$

$2(x^2 - 4x + 3x - 12) + 10(x - 4) + 10(x + 3)$

$2x^2 - 2x - 24 + 10x - 40 + 10x + 30$

$2x^2 + 18x - 34$

PTS: 3 REF: 061136ia STA: A.G.2 TOP: Surface Area

410 ANS:

$\frac{3}{4x - 8} \cdot \frac{3x + 6}{4x + 12} \div \frac{x^2 - 4}{x + 3} = \frac{3(x + 2)}{4(x + 3)} \cdot \frac{x + 3}{(x + 2)(x - 2)} = \frac{3}{4(x - 2)}$

PTS: 3 REF: 010935ia STA: A.A.18 TOP: Multiplication and Division of Rationals

411 ANS:

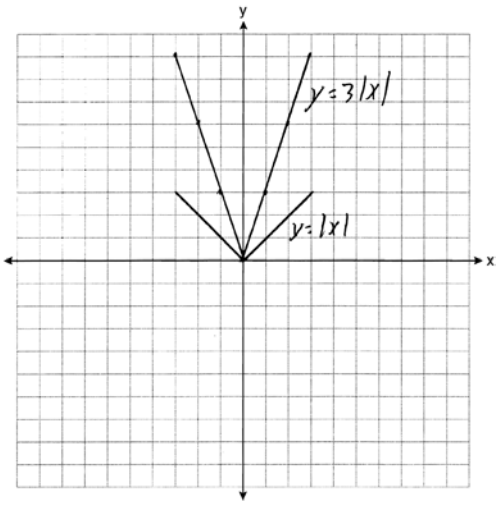
$0.65x + 35 \le 45$

$0.65x \le 10$

$x \le 15$

PTS: 3 REF: 061135ia STA: A.A.6 TOP: Modeling Inequalities

412 ANS:



The graph becomes steeper.

PTS: 3 REF: 081134ia STA: A.G.5 TOP: Graphing Absolute Value Functions

413 ANS:

$-15, 2 \quad x^2 + 13x - 30 = 0$

$(x + 15)(x - 2) = 0$

$x = -15, 2$

PTS: 3 REF: 081036ia STA: A.A.28 TOP: Roots of Quadratics

414 ANS:

80, 136 $V = lwh = 10 \cdot 2 \cdot 4 = 80$ $SA = 2lw + 2hw + 2lh = 2 \cdot 10 \cdot 2 + 2 \cdot 4 \cdot 2 + 2 \cdot 10 \cdot 4 = 136$

PTS: 3 REF: 081035ia STA: A.G.2 TOP: Surface Area

415 ANS:

5,583.86. $A = P(1 + R)^t = 5000(1 + 0.0375)^3 \approx 5583.86$

PTS: 3 REF: 060935ia STA: A.A.9 TOP: Exponential Functions

416 ANS:

50, 1.5, 10. $\frac{\text{distance}}{\text{time}} = \frac{60}{1.2} = 50.$ $\frac{\text{distance}}{\text{time}} = \frac{60}{40} = 1.5.$ speed $\times$ time $= 55 \times 2 = 110.$ $120 - 110 = 10$

PTS: 3 REF: fall0734ia STA: A.M.1 TOP: Speed

417 ANS:

$-2\sqrt{3} \quad \frac{16\sqrt{21}}{2\sqrt{7}} - 5\sqrt{12} = 8\sqrt{3} - 5\sqrt{4}\sqrt{3} = 8\sqrt{3} - 10\sqrt{3} = -2\sqrt{3}$

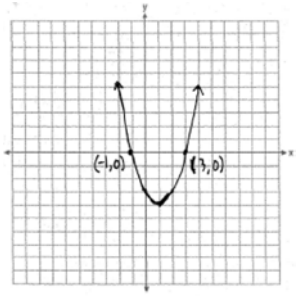
PTS: 3 REF: 081136ia STA: A.N.3 TOP: Operations with Radicals

418 ANS:

12, 7. Both the median and the mode will increase.

PTS: 3 REF: 061134ia STA: A.S.16 TOP: Central Tendency

419 ANS:



PTS: 3 REF: 060836ia STA: A.G.8 TOP: Solving Quadratics by Graphing

420 ANS:

–2, 3. $x^2 - x = 6$

$x^2 - x - 6 = 0$

$(x-3)(x+2) = 0$

$x = 3 \text{ or } -2$

PTS: 3 REF: 011034ia STA: A.A.28 TOP: Roots of Quadratics

421 ANS:

4, –5. $\frac{x+2}{6} = \frac{3}{x-1}$

$(x+2)(x-1) = 18$

$x^2 - x + 2x - 2 = 18$

$x^2 + x - 20 = 0$

$(x+5)(x-4) = 0$

$x = -5 \text{ or } 4$

PTS: 3 REF: 011136ia STA: A.A.26 TOP: Solving Rationals

422 ANS:

1,512, 1,551.25, 0.025. $36 \times 42 = 1512$. $36.5 \times 42.5 = 1551.25$. $RE = \left|\frac{1512 - 1551.25}{1551.25}\right| \approx 0.025$.

PTS: 3 REF: 010934ia STA: A.M.3 TOP: Error
KEY: area

423 ANS:

81.3, 80, both increase

PTS: 3 REF: 011035ia STA: A.S.16 TOP: Central Tendency

424 ANS:

$y = \frac{3}{4}x + 10.$ $y = mx + b$

$4 = \frac{3}{4}(-8) + b$

$4 = -6 + b$

$10 = b$

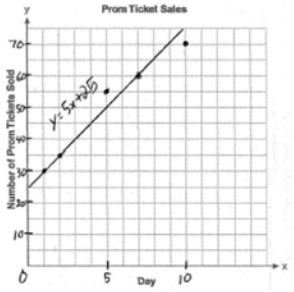
PTS: 3 REF: 011134ia STA: A.A.34 TOP: Writing Linear Equations

425 ANS:

Greg's rate of 5.5 is faster than Dave's rate of 5.3. $\frac{\text{distance}}{\text{time}} = \frac{11}{2} = 5.5.$ $\frac{16}{3} = 5.\overline{3}$

PTS: 3 REF: 080936ia STA: A.M.1 TOP: Speed

426 ANS:



PTS: 3 REF: 060936ia STA: A.S.8 TOP: Scatter Plots

427 ANS:

0.102. $\frac{(5.3 \times 8.2 \times 4.1) - (5 \times 8 \times 4)}{5.3 \times 8.2 \times 4.1} = \frac{178.16 - 160}{178.16} = 0.102$

PTS: 3 REF: 011036ia STA: A.M.3 TOP: Error
KEY: volume and surface area

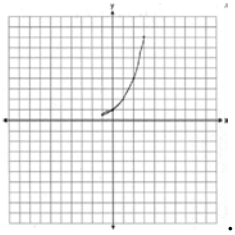
428 ANS:

41.8. $\sin x = \frac{8}{12}$

$A \approx 41.8$

PTS: 3 REF: 081135ia STA: A.A.43 TOP: Using Trigonometry to Find an Angle

429 ANS:



. The graph will never intersect the x-axis as $2^x > 0$ for all values of x.

PTS: 3 REF: 080835ia STA: A.G.4 TOP: Graphing Exponential Functions

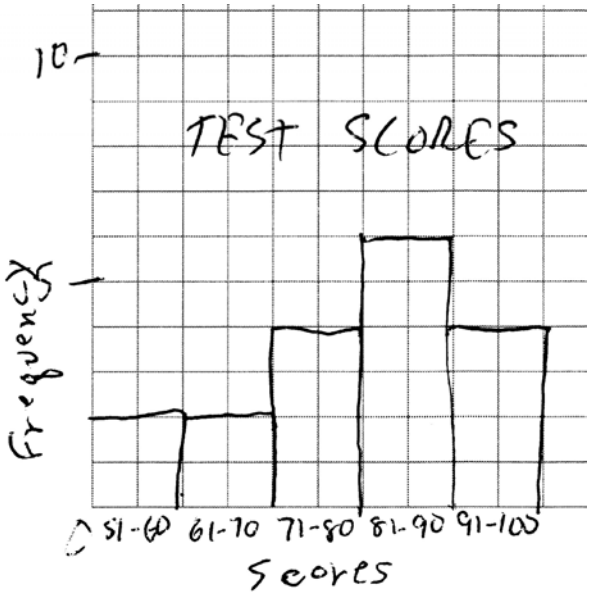
430 ANS:

30.4%; no, 23.3%. $\frac{7.50-5.75}{5.75} = 30.4\%$. $\frac{7.50-5.75}{7.50} = 23.3\%$

PTS: 3 REF: 080935ia STA: A.N.5 TOP: Percents

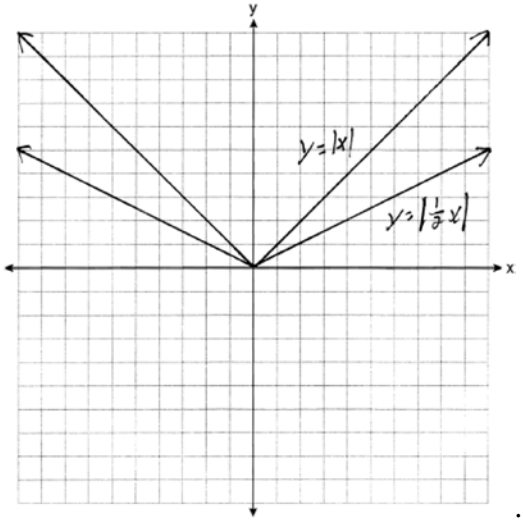
431 ANS:

Interval	Tally	Frequency
51–60	II	2
61–70	II	2
71–80	IIII	4
81–90	IIII I	6
91–100	IIII	4



PTS: 3 REF: 011135ia STA: A.S.5
TOP: Frequency Histograms, Bar Graphs and Tables KEY: frequency histograms

432 ANS:



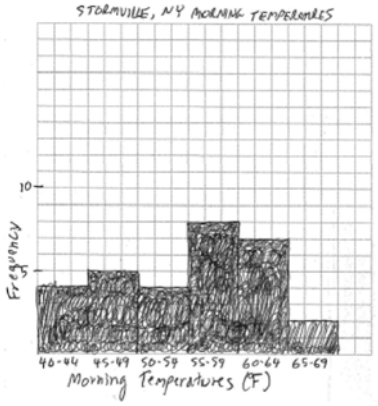
. Graph becomes wider as the coefficient approaches 0.

PTS: 3 REF: 061035ia STA: A.G.5 TOP: Graphing Absolute Value Functions

Integrated Algebra 4 Point Regents Exam Questions
Answer Section

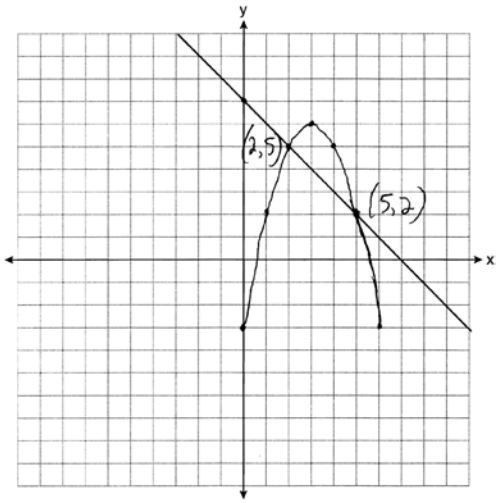
433 ANS:

Interval	Tally	Frequency
40–44	IIII	4
45–49	IIII	5
50–54	IIII	4
55–59	IIII III	8
60–64	IIII II	7
65–69	II	2



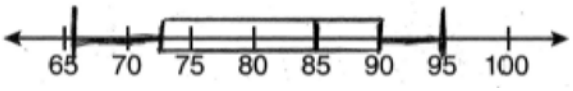
PTS: 4 REF: 060938ia STA: A.S.5
TOP: Frequency Histograms, Bar Graphs and Tables KEY: frequency histograms

434 ANS:



PTS: 4 REF: 081138ia STA: A.G.9 TOP: Quadratic-Linear Systems

435 ANS:



PTS: 4 REF: 080939ia STA: A.S.5 TOP: Box-and-Whisker Plots

436 ANS:

0.029. $\dfrac{[2\pi(5.1)^2 + 2\pi(5.1)(15.1)] - [2\pi(5)^2 + 2\pi(5)(15)]}{2\pi(5.1)^2 + 2\pi(5.1)(15.1)} \approx \dfrac{647.294 - 628.319}{647.294} \approx 0.029$

PTS: 4 REF: 011137ia STA: A.M.3 TOP: Error
KEY: volume and surface area

437 ANS:

84, 71 $\sin 50 = \frac{x}{110}$ $\cos 50 = \frac{y}{110}$

$x \approx 84$ $y \approx 71$

PTS: 4 REF: 081039ia STA: A.A.44 TOP: Using Trigonometry to Find a Side

438 ANS:

$(-2, 5)$. $3x + 2y = 4$ $12x + 8y = 16.$ $3x + 2y = 4$

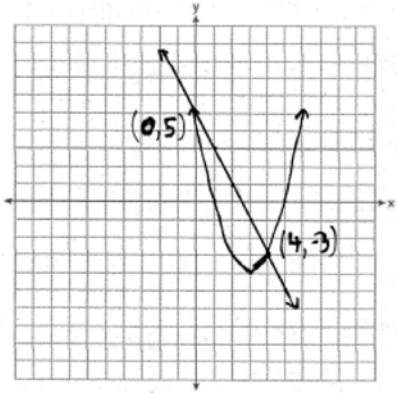
$4x + 3y = 7$ $12x + 9y = 21$ $3x + 2(5) = 4$

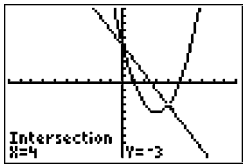
$y = 5$ $3x = -6$

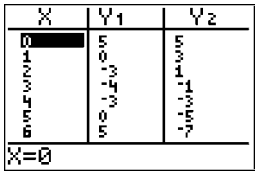
$x = -2$

PTS: 4 REF: 010937ia STA: A.A.10 TOP: Solving Linear Systems

439 ANS:

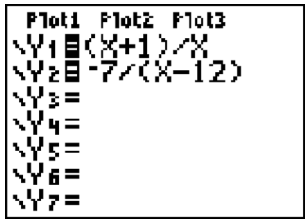


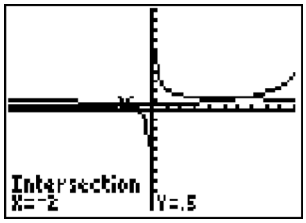




PTS: 4 REF: fall0738ia STA: A.G.9 TOP: Quadratic-Linear Systems

440 ANS:





6, -2. $\frac{x+1}{x} = \frac{-7}{x-12}$

$(x+1)(x-12) = -7x$

$x^2 - 11x - 12 = -7x$

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

$(x-6)(x+2) = 0$

$x = 6$ or -2

PTS: 4 REF: fall0739ia STA: A.A.26 TOP: Solving Rationals

441 ANS:

$-\frac{9}{4}$.

$$\frac{3}{4} = \frac{-(x+11)}{4x} + \frac{1}{2x}$$

$$\frac{3}{4} = \frac{-x-11}{4x} + \frac{2}{4x}$$

$$\frac{3}{4} = \frac{-x-9}{4x}$$

$$12x = -4x - 36$$

$$16x = -36$$

$$x = -\frac{9}{4}$$

PTS: 4 REF: 061137ia STA: A.A.26 TOP: Solving Rationals

442 ANS:

$$\frac{m}{5} + \frac{3(m-1)}{2} = 2(m-3)$$

$$\frac{2m}{10} + \frac{15(m-1)}{10} = 2m - 6$$

$$\frac{17m-15}{10} = 2m - 6$$

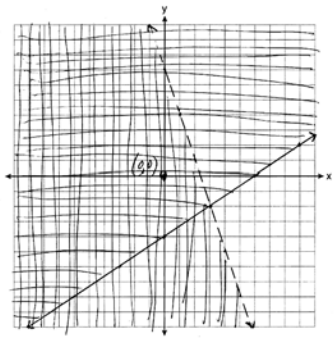
$$17m - 15 = 20m - 60$$

$$45 = 3m$$

$$15 = m$$

PTS: 4 REF: 081139ia STA: A.A.25
TOP: Solving Equations with Fractional Expressions

443 ANS:



PTS: 4 REF: 061139ia STA: A.G.7 TOP: Systems of Linear Inequalities

444 ANS:
6, 8, 10. Three consecutive even integers are x, $x+2$ and $x+4$. $(x+2)(x+4) = 10x+20$

$$x^2 + 6x + 8 = 10x + 20$$
$$x^2 - 4x - 12 = 0$$
$$(x-6)(x+2) = 0$$
$$x = 6$$

PTS: 4 REF: 011039ia STA: A.A.8 TOP: Writing Quadratics

445 ANS:
24,435.19. $30000(.95)^4 \approx 24435.19$

PTS: 4 REF: 011138ia STA: A.A.9 TOP: Exponential Functions

446 ANS:
39, 63. $\tan 52 = \frac{50}{x}$. $\sin 52 = \frac{50}{x}$

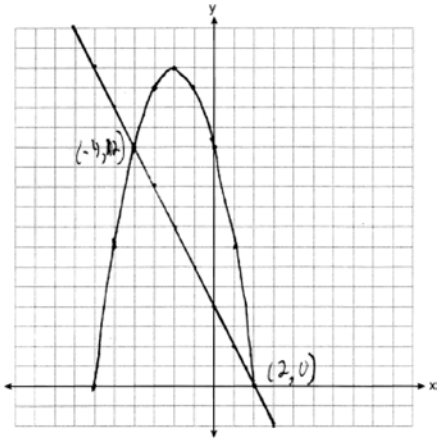
$x \approx 39$ $x \approx 63$

PTS: 4 REF: 060937ia STA: A.A.44 TOP: Using Trigonometry to Find a Side

447 ANS:
(H,F,M), (H,F,J), (H,F,S), (H,A,M), (H,A,J), (H,A,S), (C,F,M), (C,F,J), (C,F,S), (C,A,M), (C,A,J), (C,A,S), (T,F,M), (T,F,J), (T,F,S), (T,A,M), (T,A,J), (T,A,S). There are 18 different kids' meals, 12 do not include juice and 6 include chicken nuggets.

PTS: 4 REF: 010939ia STA: A.S.19 TOP: Sample Space

448 ANS:

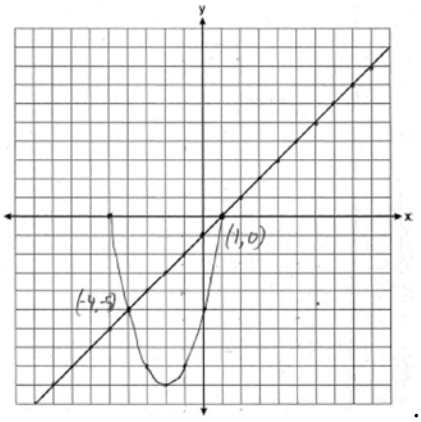


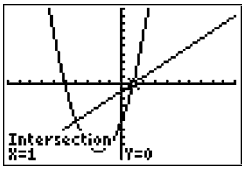
PTS: 4 REF: 061039ia STA: A.G.9 TOP: Quadratic-Linear Systems

449 ANS:
(T,J,F), (T,J,N), (T,K,F), (T,K,N), (T,C,F), (T,C,N), (B,J,F), (B,J,N), (B,K,F), (B,K,N), (B,C,F), (B,C,N), (S,J,F), (S,J,N), (S,K,F), (S,K,N), (S,C,F), (S,C,N). 3, 12.

PTS: 4 REF: 061138IA STA: A.S.19 TOP: Sample Space

450 ANS:





PTS: 4 REF: 080839ia STA: A.G.9 TOP: Quadratic-Linear Systems

451 ANS:

225000, 175000, the median better represents the value since it is closer to more values than the mean.

PTS: 4 REF: fall0737ia STA: A.S.4
TOP: Frequency Histograms, Bar Graphs and Tables

452 ANS:

Hat *A*, add 1 not green to Hat *A*, add 11 green to Hat *B*, and add none to Hat *C*.

PTS: 4 REF: 081038ia STA: A.S.22 TOP: Theoretical Probability

453 ANS:

15,600,000, 4,368,000. $10 \times 10 \times 10 \times 26 \times 25 \times 24 = 15,600,000$. $10 \times 9 \times 8 \times 26 \times 25 \times 24 = 11,232,000$.
$15,600,000 - 11,232,000 = 4,368,000$.

PTS: 4 REF: 011037ia STA: A.N.8 TOP: Permutations

454 ANS:

$\frac{4}{12} \times \frac{2}{11} \times \frac{1}{10} = \frac{8}{1320}$ $\frac{6}{12} \times \frac{5}{11} \times \frac{4}{10} + \frac{4}{12} \times \frac{3}{11} \times \frac{2}{10} = \frac{120}{1320} + \frac{24}{1320} = \frac{144}{1320}$

PTS: 4 REF: 081137ia STA: A.S.23 TOP: Theoretical Probability
KEY: dependent events

455 ANS:

$m = 50¢$, $p = 15¢$. $3m + 2p = 1.80$. $9m + 6p = 5.40$. $4(.50) + 6p = 2.90$

$4m + 6p = 2.90$ $4m + 6p = 2.90$ $6p = .90$

$5m = 2.50$ $p = \$0.15$

$m = \$0.50$

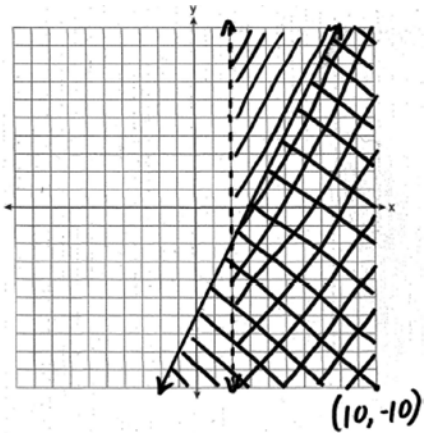
PTS: 3 REF: 080837ia STA: A.A.7 TOP: Writing Linear Systems

456 ANS:

$$\frac{x^2+9x+14}{x^2-49} \div \frac{3x+6}{x^2+x-56} = \frac{(x+7)(x+2)}{(x+7)(x-7)} \cdot \frac{(x+8)(x-7)}{3(x+2)} = \frac{x+8}{3}$$

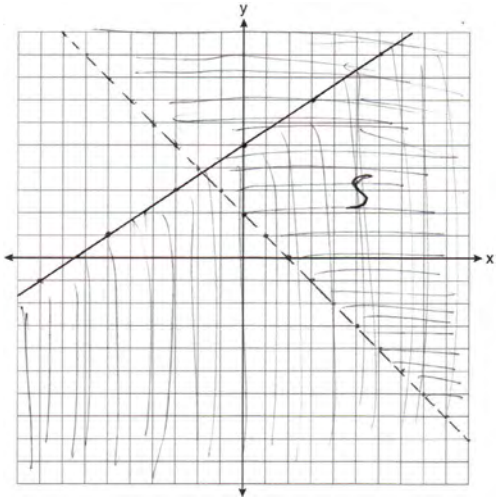
PTS: 4 REF: 061037ia STA: A.A.18 TOP: Multiplication and Division of Rationals

457 ANS:



PTS: 4 REF: 010938ia STA: A.G.7 TOP: Systems of Linear Inequalities

458 ANS:



PTS: 4 REF: 011139ia STA: A.G.7 TOP: Systems of Linear Inequalities

459 ANS:

$w(w+15) = 54$, 3, 18. $w(w+15) = 54$

$$w^2 + 15w - 54 = 0$$

$$(w+18)(w-3) = 0$$

$$w = 3$$

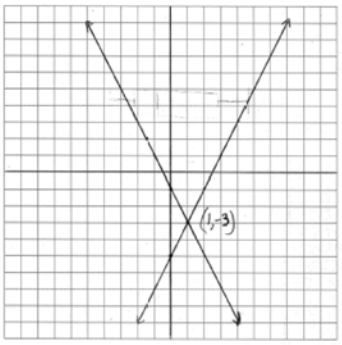
PTS: 4 REF: 060837ia STA: A.A.8 TOP: Geometric Applications of Quadratics

460 ANS:

$$\frac{x-7}{3x}\cdot\frac{2x^2-8x-42}{6x^2}\div\frac{x^2-9}{x^2-3x}=\frac{2(x^2-4x-21)}{6x^2}\cdot\frac{x(x-3)}{(x+3)(x-3)}=\frac{(x-7)(x+3)}{3x}\cdot\frac{1}{x+3}=\frac{x-7}{3x}$$

PTS: 4 REF: 080937ia STA: A.A.18 TOP: Multiplication and Division of Rationals

461 ANS:



PTS: 4 REF: 080938ia STA: A.G.7 TOP: Solving Linear Systems

462 ANS:

618.45, 613.44, 0.008. $21.7\times28.5=618.45$. $21.6\times28.4=613.44$. $\left|\frac{618.45-613.44}{613.44}\right|\approx0.008$. An error of less than 1% would seem to be insignificant.

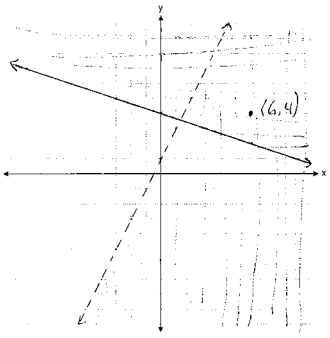
PTS: 4 REF: 060838ia STA: A.M.3 TOP: Error
KEY: area

463 ANS:

315,000, 180,000, the median better represents value since it is closer to more prices than the mean.

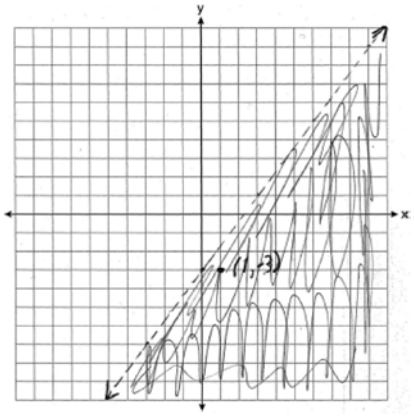
PTS: 4 REF: 060839ia STA: A.S.4
TOP: Frequency Histograms, Bar Graphs and Tables

464 ANS:



PTS: 4 REF: 081037ia STA: A.G.7 TOP: Systems of Linear Inequalities

465 ANS:



(1,–3) is in the solution set. $4(1) - 3(-3) > 9$

$4 + 9 > 9$

PTS: 4 REF: 011038ia STA: A.G.6 TOP: Linear Inequalities

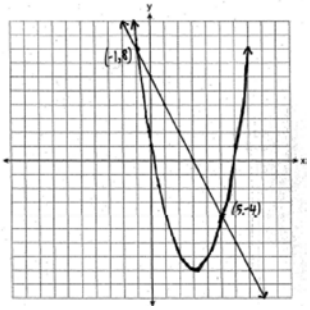
466 ANS:

30, 20, 71-80, 81-90 and 91-100

PTS: 4 REF: 061038ia STA: A.S.9

TOP: Frequency Histograms, Bar Graphs and Tables

467 ANS:



PTS: 4 REF: 060939ia STA: A.G.9 TOP: Quadratic-Linear Systems

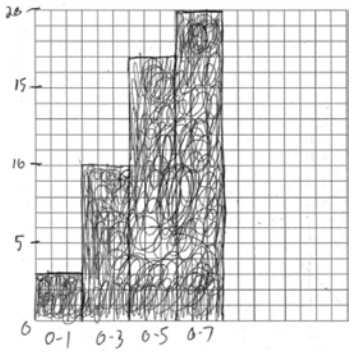
468 ANS:

Number of Days Outside

Interval	Tally	Frequency
0–1	III	3
2–3	IIII II	7
4–5	IIII II	7
6–7	III	3

Number of Days Outside

Interval	Cumulative Frequency
0–1	3
0–3	10
0–5	17
0–7	20



PTS: 4 REF: 080838ia STA: A.S.5

TOP: Frequency Histograms, Bar Graphs and Tables KEY: cumulative frequency histograms