Answer all 30 questions in this part. Each correct answer will receive 2 credits. Record your answers on your separate answer sheet. [60]

1 Which expression represents "5 less than twice x"?

(1) $2x - 5$

(3) $2(5 - x)$

(2) $5 - 2x$

(4) $2(x - 5)$

2 Gabriella has 20 quarters, 15 dimes, 7 nickels, and 8 pennies in a jar. After taking 6 quarters out of the jar, what will be the probability of Gabriella randomly selecting a quarter from the coins left in the jar?

(1) $\dfrac{14}{44}$

(3) $\dfrac{14}{50}$

(2) $\dfrac{30}{44}$

(4) $\dfrac{20}{50}$

3 Based on the line of best fit drawn below, which value could be expected for the data in June 2015?
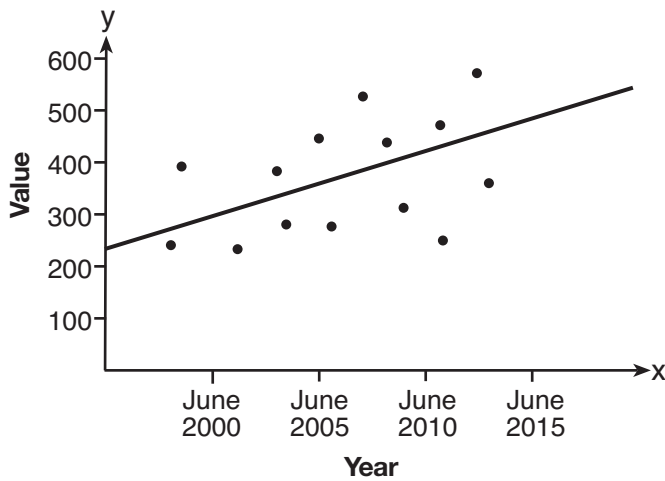
(1) 230

(3) 480

(2) 310

(4) 540

4 If the point $(5,k)$ lies on the line represented by the equation $2x + y = 9$, the value of k is
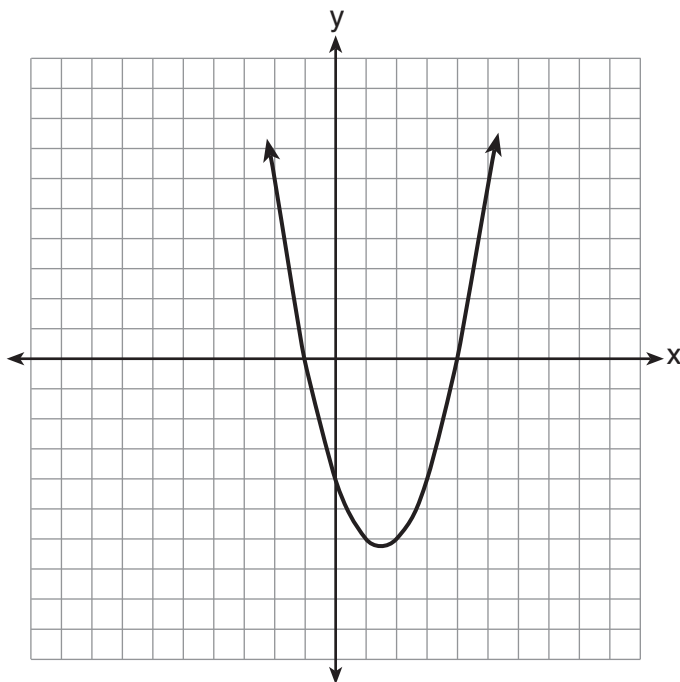
(1) 1   (3) −1

(2) 2   (4) −2

5 A soda container holds $5\frac{1}{2}$ gallons of soda. How many ounces of soda does this container hold?

> 1 quart = 32 ounces
> 1 gallon = 4 quarts

(1) 44   (3) 640

(2) 176   (4) 704

6 The roots of a quadratic equation can be found using the graph below.

What are the roots of this equation?

(1) −4, only   (3) −1 and 4

(2) −4 and −1   (4) −4, −1, and 4

7 If the area of a rectangle is represented by $x^2 + 8x + 15$ and its length is represented by $x + 5$, which expression represents the width of the rectangle?

(1) $x + 3$ (3) $x^2 + 6x + 5$

(2) $x - 3$ (4) $x^2 + 7x + 10$

8 Which set of data describes a situation that would be classified as qualitative?

(1) the colors of the birds at the city zoo

(2) the shoe size of the zookeepers at the city zoo

(3) the heights of the giraffes at the city zoo

(4) the weights of the monkeys at the city zoo

9 The value of the expression $6! + \dfrac{5!(3!)}{4!} - 10$ is

(1) 50   (3) 740

(2) 102   (4) 750

10 Which interval notation represents $-3 \leq x \leq 3$?

(1) $[-3, 3]$ (3) $[-3, 3)$

(2) $(-3, 3]$ (4) $(-3, 3)$

11 The solutions of $x^2 = 16x - 28$ are

(1) -2 and -14 (3) -4 and -7

(2) 2 and 14   (4) 4 and 7

12 If the expression $(2y^a)^4$ is equivalent to $16y^8$, what is the value of a?

(1) 12   (3) 32

(2) 2   (4) 4

13 Which table shows bivariate data?

Age (yr)	Frequency
14	12
15	21
16	14
17	19
18	15

(1)

Time Spent Studying (hr)	Test Grade (%)
1	65
2	72
3	83
4	85
5	92

(3)

Type of Car	Average Gas Mileage (mpg)
van	25
SUV	23
luxury	26
compact	28
pickup	22

(2)

Day	Temperature (degrees F)
Monday	63
Tuesday	58
Wednesday	72
Thursday	74
Friday	78

(4)

14 The box-and-whisker plot below represents the results of test scores in a math class.
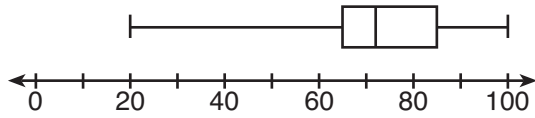
What do the scores 65, 85, and 100 represent?

(1) Q_1, median, Q_3

(2) Q_1, Q_3, maximum

(3) median, Q_1, maximum

(4) minimum, median, maximum

15 The expression $\dfrac{x-3}{x+2}$ is undefined when the value of x is

(1) -2, only   (3) 3, only

(2) -2 and 3 (4) -3 and 2

16 If $rx - st = r$, which expression represents x?
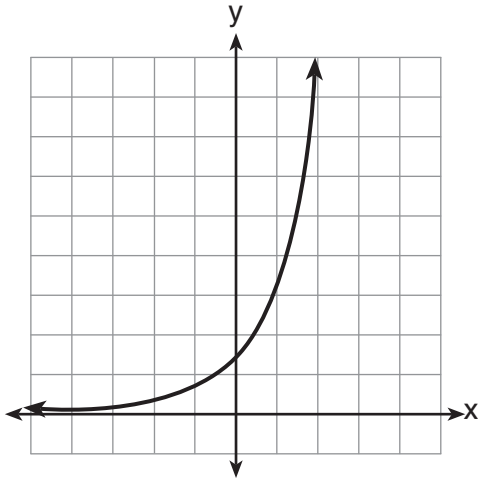
(1) $\dfrac{r+st}{r}$ (3) $\dfrac{r}{r-st}$

(2) $\dfrac{r}{r+st}$ (4) $\dfrac{r-st}{r}$

17 What is the solution of the equation $\dfrac{x+2}{2} = \dfrac{4}{x}$?

(1) 1 and -8

(2) 2 and -4

(3) -1 and 8

(4) -2 and 4

Integrated Algebra – June '13   [6]

18 Which type of function is graphed below?

  (1) linear   (3) exponential
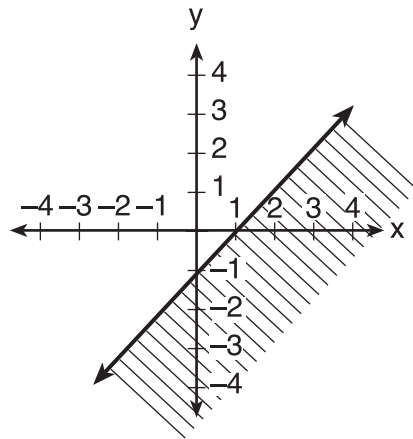
  (2) quadratic   (4) absolute value

19 What is the slope of the line represented by the equation $4x + 3y = 12$?

  (1) $\dfrac{4}{3}$ (3) $-\dfrac{3}{4}$

  (2) $\dfrac{3}{4}$ (4) $-\dfrac{4}{3}$

20 The diagram below shows the graph of which inequality?

(1) $y > x - 1$ (3) $y < x - 1$

(2) $y \geq x - 1$ (4) $y \leq x - 1$

21 Carol plans to sell twice as many magazine subscriptions as Jennifer. If Carol and Jennifer need to sell at least 90 subscriptions in all, which inequality could be used to determine how many subscriptions, x, Jennifer needs to sell?

(1) $x \geq 45$ (3) $2x - x \geq 90$

(2) $2x \geq 90$ (4) $2x + x \geq 90$

22 When $2x^2 - 3x + 2$ is subtracted from $4x^2 - 5x + 2$, the result is

(1) $2x^2 - 2x$ (3) $-2x^2 - 8x + 4$

(2) $-2x^2 + 2x$ (4) $2x^2 - 8x + 4$

23 Which expression represents the number of hours in w weeks and d days?

(1) $7w + 12d$ (3) $168w + 24d$

(2) $84w + 24d$ (4) $168w + 60d$

24 Given:

$R = \{1, 2, 3, 4\}$
$A = \{0, 2, 4, 6\}$
$P = \{1, 3, 5, 7\}$

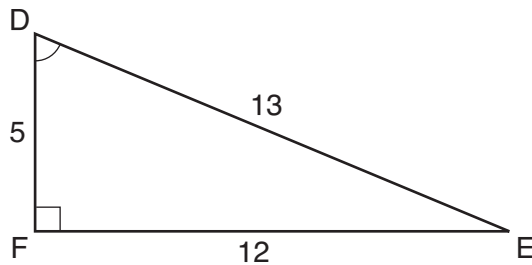What is $R \cap P$?

(1) $\{0, 1, 2, 3, 4, 5, 6, 7\}$ (3) $\{1, 3\}$

(2) $\{1, 2, 3, 4, 5, 7\}$ (4) $\{2, 4\}$

25 Which equation could be used to find the measure of angle D in the right triangle shown in the diagram below?

(1) $\cos D = \dfrac{12}{13}$ (3) $\sin D = \dfrac{5}{13}$

(2) $\cos D = \dfrac{13}{12}$ (4) $\sin D = \dfrac{12}{13}$

26 If the roots of a quadratic equation are -2 and 3, the equation can be written as

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

(2) $(x + 2)(x - 3) = 0$ (4) $(x - 2)(x - 3) = 0$

27 Which equation represents a line that is parallel to the y-axis and passes through the point $(4,3)$?

(1) $x = 3$ (3) $y = 3$

(2) $x = 4$ (4) $y = 4$

28 There are 18 students in a class. Each day, the teacher randomly selects three students to assist in a game: a leader, a recorder, and a timekeeper. In how many possible ways can the jobs be assigned?

(1) 306   (3) 4896

(2) 816   (4) 5832

29 In triangle RST, angle R is a right angle. If $TR = 6$ and $TS = 8$, what is the length of $\overline{RS}$?

(1) 10   (3) $2\sqrt{7}$

(2) 2   (4) $7\sqrt{2}$

30 How many solutions are there for the following system of equations?

$$y = x^2 - 5x + 3$$
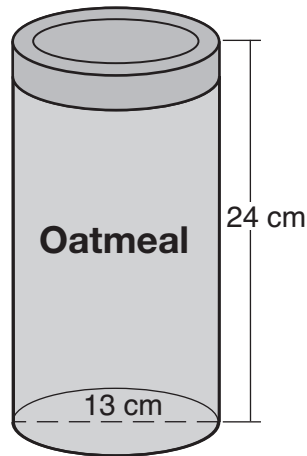$$y = x - 6$$

(1) 1   (3) 3

(2) 2   (4) 0

Part II

Answer all 3 questions in this part. Each correct answer will receive 2 credits. Clearly indicate the necessary steps, including appropriate formula substitutions, diagrams, graphs, charts, etc. For all questions in this part, a correct numerical answer with no work shown will receive only 1 credit. All answers should be written in pen, except for graphs and drawings, which should be done in pencil. [6]

31 Solve the inequality $-5(x - 7) < 15$ algebraically for x.

32 Oatmeal is packaged in a cylindrical container, as shown in the diagram below.

The diameter of the container is 13 centimeters and its height is 24 centimeters. Determine, in terms of π, the volume of the cylinder, in cubic centimeters.

33 The distance from Earth to Mars is 136,000,000 miles. A spaceship travels at 31,000 miles per hour. Determine, to the *nearest day*, how long it will take the spaceship to reach Mars.

Answer all 3 questions in this part. Each correct answer will receive 3 credits. Clearly indicate the necessary steps, including appropriate formula substitutions, diagrams, graphs, charts, etc. For all questions in this part, a correct numerical answer with no work shown will receive only 1 credit. All answers should be written in pen, except for graphs and drawings, which should be done in pencil. [9]

34 The menu for the high school cafeteria is shown below.

Main Course	Vegetable	Dessert	Beverage
veggie burger	corn	gelatin	milk
pizza	green beans	fruit salad	juice
tuna sandwich	carrots	yogurt	bottled water
frankfurter		cookie	
chicken tenders		ice cream cup	

Determine the number of possible meals consisting of a main course, a vegetable, a dessert, and a beverage that can be selected from the menu.

Determine how many of these meals will include chicken tenders.

If a student chooses pizza, corn or carrots, a dessert, and a beverage from the menu, determine the number of possible meals that can be selected.

35 A man standing on level ground is 1000 feet away from the base of a 350-foot-tall building. Find, to the *nearest degree*, the measure of the angle of elevation to the top of the building from the point on the ground where the man is standing.

36 Express $\sqrt{25} - 2\sqrt{3} + \sqrt{27} + 2\sqrt{9}$ in simplest radical form.

Answer all 3 questions in this part. Each correct answer will receive 4 credits. Clearly indicate the necessary steps, including appropriate formula substitutions, diagrams, graphs, charts, etc. For all questions in this part, a correct numerical answer with no work shown will receive only 1 credit. All answers should be written in pen, except for graphs and drawings, which should be done in pencil. [12]

37 Solve algebraically: $\dfrac{2}{3x} + \dfrac{4}{x} = \dfrac{7}{x + 1}$

[Only an algebraic solution can receive full credit.]

**38** A jar contains five red marbles and three green marbles. A marble is drawn at random and not replaced. A second marble is then drawn from the jar.

Find the probability that the first marble is red and the second marble is green.

Find the probability that both marbles are red.

Find the probability that both marbles are the same color.

39 In the diagram below of rectangle *AFEB* and a semicircle with diameter $\overline{CD}$, *AB* = 5 inches, *AB* = *BC* = *DE* = *FE*, and *CD* = 6 inches. Find the area of the shaded region, to the *nearest hundredth of a square inch*.
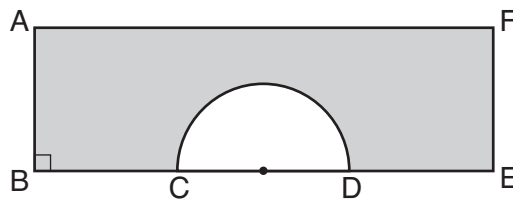
If the student's responses for the multiple-choice questions are being hand scored prior to being scanned, the scorer must be careful not to make any marks on the answer sheet except to record the scores in the designated score boxes. Marks elsewhere on the answer sheet will interfere with the accuracy of the scanning.

Part I

Allow a total of 60 credits, 2 credits for each of the following.

(1) 1	(11) 2	(21) . . . . . 4 . . . . .
(2) 1	(12) 2	(22) . . . . . 1 . . . . .
(3) 3	(13) 3	(23) . . . . . 3 . . . . .
(4) 3	(14) 2	(24) . . . . . 3 . . . . .
(5) 4	(15) 1	(25) . . . . . 4 . . . . .
(6) 3	(16) 1	(26) . . . . . 2 . . . . .
(7) 1	(17) 2	(27) . . . . . 2 . . . . .
(8) 1	(18) 3	(28) . . . . . 3 . . . . .
(9) 3	(19) 4	(29) . . . . . 3 . . . . .
(10) 1	(20) 4	(30) . . . . . 1 . . . . .

Updated information regarding the rating of this examination may be posted on the New York State Education Department's web site during the rating period. Check this web site at: http://www.p12.nysed.gov/assessment/ and select the link "Scoring Information" for any recently posted information regarding this examination. This site should be checked before the rating process for this examination begins and several times throughout the Regents Examination period.

Beginning in January 2013, the Department is providing supplemental scoring guidance, the "Sample Response Set," for the Regents Examination in Integrated Algebra. This guidance is not required as part of the scorer training. It is at the school's discretion to incorporate it into the scorer training or to use it as supplemental information during scoring. While not reflective of all scenarios, the sample student responses selected for the Sample Response Set illustrate how less common student responses to open-ended questions may be scored. The Sample Response Set will be available on the Department's web site at http://www.p12.nysed.gov/assessment/scoring/home-hs.html.