Algebra

Regents Practice Test 3
Integrated Algebra

***Part I**: Multiple Choice*

1. Which property is displayed in the following equation?

    $$(xy)z = x(yz)$$

    [1] commutative property of multiplication
    [2] distributive property
    [3] associative property of multiplication
    [4] multiplicative inverse property

2. A large pizza has a circumference of 72.5 inches. Which of the perimeters listed could belong to the smallest box capable of holding a large pizza?
    [1] 23   [2] 24   [3] 73   [4] 96

3. For what values is $\dfrac{x+1}{x^2 - 5x - 14}$ undefined?

    [1] $\{2, -7\}$ [3] $\{2, 7\}$
    [2] $\{-2, 7\}$ [4] $\{-2, -7\}$

4. The ages of two brothers can be represented as consecutive even integers. If the younger brother's age is $x + 3$, which expression represents the age of the older brother.
    [1] $x + 1$ [2] $x + 4$ [3] $x + 5$ [4] $2x + 3$

5. Given the relation $A = \{(5,2), (7,4), (9,10), (x, 5)\}$. Which of the following values for x will make relation A a function?
    [1] 9   [2] 7   [3] 5   [4] 4

6. The expression $\left(2 \cdot 3x^2\right)^3$ is equivalent to

    [1] $54x^6$ [3] $18x^6$
    [2] $6x^6$ [4] $6x^5$

7. If $18x^2y + 12x^2y^2 - 6xy^2$ is divided by $6xy$, the quotient is
    [1] $2x + 2xy - y$ [3] $3x + 2y - 1$
    [2] $3x + 2xy - y$ [4] $3xy + 2x^2y - y^2$

8. The slope of a line parallel to the line whose equation is $3y + 2x = 6$ is
    [1] -2/3   [2] 2/3   [3] -3/2   [4] 3/2

9. The heights of all the students in grade 9 are arranged from least to greatest. Which statistical measure separates the top half of this set of data from the bottom half?
    [1] mean   [2] mode   [3] median   [4] average

10. Which ordered pair is *not* a solution set of $y > 5x - 1$?
    [1] (1,5)   [2] (1,6)   [3] (1,8)   [4] (2,5)

11. When solved graphically, which system of equations will have *exactly* one point of intersection?

[1] $y = -x - 20$
    $y = x + 17$

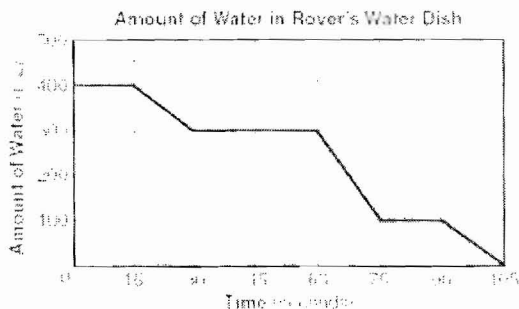[3] $y = 0.6x + 12$
    $y = 0.6x - 19$

[2] $y = 0.5x + 30$
    $y = 0.5x - 30$

[4] $y = -x + 15$
    $y = -x + 25$

12. What is the sum of $6\sqrt{7}$ and $2\sqrt{63}$?

[1] $3\sqrt{7}$ [2] $12\sqrt{7}$ [3] $36\sqrt{7}$ [4] $8\sqrt{70}$

13. The accompanying graph shows the amount of water left in Rover's water dish over a period of time. How long did Rover wait from the end of his first drink to the start of his second drink of water?

[1] 10 sec   [2] 30 sec   [3] 60 sec   [4] 75 sec

Amount of Water in Rover's Water Dish

14. The expression $(3x^2 + 2xy + 7) - (6x^2 - 4xy + 3)$ is equivalent to

[1] $-3x^2 - 2xy + 4$ [3] $-3x^2 + 6xy + 4$
[2] $3x^2 - 2xy + 4$ [4] $3x^2 - 6xy - 4$

15. If $x = -4$ and $y = 3$, what is the value of $x - 3y^2$?

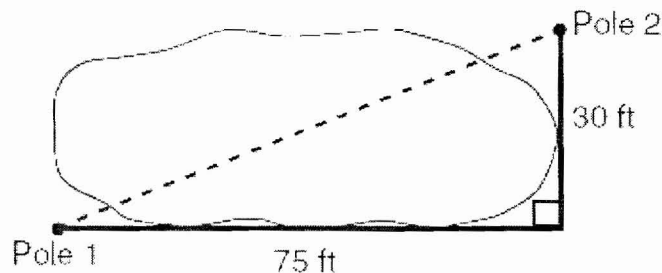[1] -13   [2] -23   [3] -31   [4] -85

16. The formula for potential energy is $P = mgh$, where P is potential energy, m is mass, g is gravity, and h is height. Which expression can be used to represent g?

[1] $P - m - h$

[3] $\dfrac{P}{m} - h$

[2] $P - mh$

[4] $\dfrac{P}{mh}$

17. The NuFone Communications Company must run a telephone line between two poles at opposite ends of a lake, as shown in the accompanying diagram. The length and width of the lake are 75 feet and 30 feet, respectively. What is the distance between the two poles, to the *nearest foot*?

[1] 105   [2] 81   [3] 69   [4] 45

Pole 2

30 ft

Pole 1   75 ft

18. What is the solution set of the equation $\dfrac{x}{5} + \dfrac{x}{2} = 14$?

[1] {4}   [2] {10}   [3] {20}   [4] {49}

19. A deli has five types of meat, two types of cheese, and three types of bread. How many different sandwiches, consisting of one type of meat, one type of cheese, and one type of bread, does the deli serve?

[1] 10   [2] 25   [3] 30   [4] 75

20. At a school fair, the spinner represented in the accompanying diagram is spun twice. What is the probability that it will land in section G the first time and then in section B the second time?

[1] $\dfrac{1}{2}$ [2] $\dfrac{1}{4}$ [3] $\dfrac{1}{8}$ [4] $\dfrac{1}{16}$

21. If n represents an odd number, which computation results in an answer that is an even number?

[1] $2 \times n + 1$ [3] $3 \times n - 2$
[2] $2 \times n - 1$ [4] $3 \times n + 1$

22. The operation element @ is determined by the following table. What is the identity element of this operation?

[1] a, only
[2] b, only
[3] c
[4] a and b

23. If point $(-1,0)$ is on the line whose equation is $y = 2x + b$, what is the value of b?

[1] 1   [2] 2   [3] 3   [4] 0

24. What are the factors of $x^2 - 5x + 6$?

[1] $(x + 2)$ and $(x + 3)$ [3] $(x + 6)$ and $(x - 1)$
[2] $(x - 2)$ and $(x - 3)$ [4] $(x - 6)$ and $(x + 1)$

25. The length of a side of a square window in Jessica's bedroom is represented by $2x - 1$. Which expression represents the area of the window?

[1] $2x^2 + 1$ [3] $4x^2 + 4x + 1$
[2] $4x^2 + 1$ [4] $4x^2 - 4x + 1$

26. The graph of $y = 2^x$ lies in which Quadrant(s)?

[1] I, II   [2] I only   [3] I, III   [4] I, IV

27. Which inequality is represented by the graph below?

[1] $y < 2x + 1$

[2] $y < \dfrac{1}{2}x + 1$

[3] $y < -2x + 1$

[4] $y < -\dfrac{1}{2}x + 1$

28. Andy has grades of 84, 65, and 76 on three math tests. What grade must he obtain on the next test to have an average of exactly 80 for the four tests?

    [1] 90   [2] 95   [3] 85   [4] 80

29. The baby T-Rex at the museum weighs 851 pounds, to the *nearest pound*. Which weight listed **cannot** be the actual weight of the baby T-Rex?

    [1] 850.6 pounds
    [2] 851.0 pounds
    [3] 851.4 pounds
    [4] 851.6 pounds

30. What is the equation of the axis of symmetry of the graph $y = 3x^2 + 12x - 2$?

    [1] $x = -2$
    [2] $x = 2$
    [3] $y = -2$
    [4] $y = 2$

Part II: *Show work on separate paper.*

31 After a bad day on Wall Street, Mr. Magnum lost 30% of his money, but he had $3500 left. How much money did he originally have at the beginning of the day?

32 Solve for *m*: $4 (m - 2) = -2 (3 - m)$

33 When the angle of elevation of the sun is 62°, the shadow on the ground of a power pole is 85' long. Find the height of the power pole to the *nearest tenth* of a foot.

Part III

34 Find the negative solution for the equation:
$$x^2 - 4x - 32 = 0$$

35 License plates in a northern county of New York State are made with 2 letters followed by 4 digits (0 - 9). The first letter must be either "F" or "M", and the first digit must be an even, non-zero digit. How many different license plates can be made with these restrictions?

36 Brothers John and Jerry want to start a business cleaning swimming pools to earn money to purchase a 4-wheeler that costs $2700. They already have $660 in their savings. If they charge $60 per pool, what is the minimum number of pools they would have to clean to have at least $2700?

37 Mr. Escalante has a rectangular plot of land with length 20 feet and width 10 feet. He wants to design a flower garden in the shape of a circle with two semicircles at each end of the center circle, as shown in the accompanying diagram. He will fill in the shaded area with wood chips. If one bag of wood chips covers 5 square feet, how many bags must he buy?

20 ft

10 ft
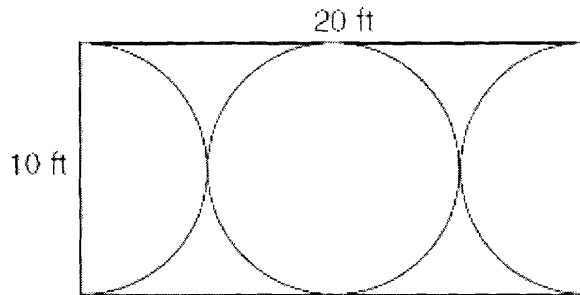
38 A rocket is launched from the ground and follows a parabolic path represented by the equation $y = -x^2 + 10x$. At the same time, a flare is launched from a height of 10 feet and follows a straight path represented by the equation $y = -x + 10$. Graph the equations that represent the paths of the rocket and the flare, and find the coordinates of the point(s) where the paths intersect.

39 On a Christmas package Audrey needs to use only 40-cent stamps and 16-cent stamps. If she uses twice as many 40-cent stamps as 16-cent stamps, how many of each type of stamp must she use to mail a package costing $5.76 in postage?

Algebra

Regents Practice Test 3 - Integrated Algebra

Part I:

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

Part II: (31) $5000 (32) $m = 1$ (33) 159.9 ft.

Part III: (34) $x = -4$ (35) 208,000 (36) 34

Part IV: (37) 9 bags (38) (1,9) (10,0) (39) 6 – 16 cent
12 – 40 cent