1. The quadratic equation $n^2 - 6n - 55$ is prime, then the largest value of n is

(a) 19

(c) 9

(b) 12

(d) 1

2. A rectangle has been divided into congruent squares such that the sum of the perimeters of the squares is numerically equal to the area of the rectangle. What is the length of a side of one of the squares?

(a) 4

(c) 7

(b) 5

(d) 8

3. Jack has challenged the math team to a math duel. For each question of the duel, Jack must give exactly one answer. Each member of the math team may also give one answer, and if at least one math team member gives the correct answer, the math team gets the question right. Jack has a 31 /32 chance of answering any given question correctly, while each member of the rest of the math team has a 1/2 chance of getting any given question correct. Find the number of math team members that should answer a question so that the math team has exactly the same probability of answering the question correctly as Andrei does.

(a) 4

(b) 6

(c) 5

(d) 8

4. Mr. Ronald starts on the coordinate plane at the origin (the point (0, 0)). Each move, he randomly chooses one of the following four directions and moves one unit in that direction: up (positive y-direction), down (negative y-direction), left (negative x-direction), or right (positive x-direction). In how many ways can he end at the point (2, 0) after 25 such moves?

(a) 1

(b) 0

(c) 9

(d) 1

5. Jim and Ken play a game. They toss coins one at a time until either the sequence heads-tails or tails-tails comes up. If the sequence is heads-tails, Jim wins. If the sequence is tails-tails, Ken wins. What is the probability that Jim wins?

(a) 5/7

(c) 6/7

(b) 7/8

(d) 3/4

6. Each term of the Fibonacci sequence is equal to the sum of the previous two terms. That is, $a_n = a_{n-1} + a_{n-2}$ for all n greater than or equal to 3, where an is the nth term in the sequence. If the second term in the sequence is 4 and the ninth term is 110, what is the first term in the sequence?

(a) 2

(c) 1

(b) 3

(d) 4

7. How many positive divisors does $\{[(2^0 \cdot 3^1)^2 \cdot 4]^3 \cdot 5\}^4$ have?.

(a) 1192

(c) 1945

(b) 1250

(d) 3125

8. Rhodes, Watson, Rambo, Peter, Mark and Dwayne are standing in a line with their backs to a wall. How many different orders could they be standing in so that Rhodes and Dwayne are standing next to each other?

(a) 240

(c) 720

(b) 120

(d) 660

9. A Kite with vertices P,Q,R and S has right angles at Q and S, and angle P = θ. Extend lines PQ and RS such that they intersect at point K, and extend lines PS and QR such that they intersect at point L. Finally, draw line KL. What is the angle of (MLK), in terms of θ ?

(a) $90 - (\theta/2)$

(c) $(\theta/2) + 90$

(b) 2θ

(d) 3θ

10. A Teacher has given class five homework assignments. Jackson only has done three of these assignments. The teacher picks two assignments at random to check, out of the five she gave. What is the probability that Jackson has done both of the assignments that the teacher checks?

(a) 1/20

(c) 3/10

(b) 5/10

(d) 2/20

11. Ronald has wondered that who else participates in math team, physics team, and choir. There are 300 people who participate in at least one of the three activities, 150 who participate in choir, 200 who participate in math team, 32 who participate in physics team, 70 who participate in both choir and math team, 12 who participate in both choir and physics team, and 8 who participate in both math team and physics team. How many people participate in all three activities?

(a) 12

(c) 13

(b) 11

(d) 8

12. If $2^x = 2^4$, then the value of "x" is

(a) 8

(c) 4

(b) 9

(d) 4

13. David and James have a 300-square-foot lawn. It takes David 30 minutes to mow the lawn alone, and it takes James 20 minutes to mow the lawn alone. If David and James work together to mow the lawn at the same time, how long, in minutes, will it take them to mow it?

(a) 36

(c) 17

(b) 12

(d) 22

14. Four different numbers A,B,C and D are chosen from the set {−4,−(3/2),−1, 0,5/8, 1, 4, 7}. What is the smallest possible value of the sum (A/B) + (C/D)?

(a) 35/8

(c) 55/3

(b) -45/7

(d) -67/5

15. Kevin plays darts on a circular dartboard that is made up of two concentric circles (two circles with the same center but different sizes). Getting a bulls-eye means hitting anywhere in the inner circle, which has radius 2 inches. The outer circle has radius 3 inches. Kevin always hits the dartboard, but does not always get a bulls-eye. If Kevin has an equal chance of hitting each point on the dartboard, what is the probability that Kevin gets a bulls-eye in his next shot?

(a) 2/9

(b) 4/9

(c) 8/9

(d) 1/9

16. On a test, Rose was asked to add 9 to a number x, and then divide the result by 2. However, Rose accidentally subtracted 9 from x and then multiplied the result by 2. Luckily for her, she still got the correct answer! Find x.

(a) 15

(b) 17

(c) 16

(d) None of these

17. If $3x + 3x = 432$, find x.

(a) 52

(b) 42

(c) 72

(d) 82

18. In a circle, the length of the line which is passing from one end of the circle to another end of the circle through the centre is 14. What is the perimeter of the circle?

(a) 22

(b) 44

(c) 11

(d) 88

19. A palindrome is a number that reads the same left-to-right as right-to-left. For example, 1234321 is a palindrome. How many palindromes between 1000 and 9999 are divisible by 9?

(a) 10

(b) 13

(c) 11

(d) 12

20. A teacher raises chickens and rabbits in his classroom. He counts 450 total animals, and 1050 total legs on the animals. Each chicken has 2 legs, while each rabbit has 4 legs. How many rabbits does the teacher have?

(a) 35

(b) 75

(c) 65

(d) 15

21. Kemp runs at a speed of 1.1π miles per hour. How long, in hours, does it take Dan to run 2.75 times around a circle with radius 1 mile?

(a) 1

(b) 2

(c) 9

(d) 5

22. What is the unit digit of 8^{22}?.

(a) 4

(b) 3

(c) 2

(d) 1

23. The angle measures of acute triangle ABC are all positive whole numbers. If angle A = 50, what is the smallest possible measure, in degrees, of angle B?

(a) 71

(b) 81

(c) 41

(d) none of these

24. Compute $1001^2 - 999^2$

(a) 2200

(b) 3350

(c) 1350

(d) 4000

25. For lunch, David must select 3 different side dishes and one drink. There are 6 available different side dishes and 4 available drinks. The order in which David selects the side dishes and drinks does not matter. How many different meals can David select?

(a) 50

(b) 70

(c) 60

(d) 80

26. How many lines of symmetry does a regular dodecagon have?

(a) 27

(c) 12

(b) 8

(d) 6

27. There are three ducks named - Duck A, Duck B, and Duck C - are sitting in a row. Duck A quacks once every six minutes. Duck B quacks once every nine minutes. Duck C quacks once every fifteen minutes. Given that all three ducks quack at 1:00 PM, when is the next time they will all simultaneously quack? ("Simultaneously" means at the same time.)

(a) 2:30 Pm

(c) 1:30 Pm

(b) 4:30 Pm

(d) 3:30 Pm

28. Johnny scored 4 free throws out of the 13 free throws he has taken. How many consecutive shots must he now score in order to achieve a shooting percentage (free throws scored out of total free throws taken) of 50%?

(a) 2

(c) 1

(b) 5

(d) 9

29. In the game of Gaussball, there are two ways to score points: a regular goal, worth 3 points;and a Gauss goal, worth 4 points. What is the greatest whole number that cannot be earned as a score in a game of Gaussball?

(a) 1

(b) 2

(c) 5

(d) 6

30. If the length, width, and height of a box (rectangular prism) are all doubled, by how many times is the volume of the box increased?

(a) 8

(b) 5

(c) 4

(d) 6

31. Compute: (Square root of 2^3)$^{4/3}$

(a) 2

(b) 6

(c) 3

(d) 4

32. If $J = 20 \cdot 30 \cdot 50 \cdot 70 \cdot 90 \cdot 110 \cdot 130$, then the smallest prime number that is not a factor of J is

(a) 40

(c) 17

(b) 64

(d) 50

33. The point (10, 0) is 10 units from the origin. Give a point, as an ordered pair (x, y), that is also 10 units from the origin such that both coordinates x and y are positive whole numbers and $x < y$.

(a) (4,3)

(c) (3,2)

(b) (1,2)

(d) (6,8)

34. What is the positive difference between the sum of the first fifteen positive even numbers and the sum of the first fifteen positive odd numbers?

(a) 18

(c) 15

(b) 19

(d) 16

35. Mr. Tom begins at the origin (the point (0, 0)) of a Cartesian plane, facing in the positive x direction. He takes two steps forward, turns 90 degree to its right, takes three steps, turns around (180 degree), takes five steps, and finally turns 90 degree to his left and takes nine steps. Assuming each of his steps is the same length, in which quadrant does Mr.Tom end up?

(a) I

(c) II

(b) III

(d) IV

36. On planet Penev, the symbol {-} is defined as follows : $\{x/y\} = (-1)^{x+y}$. Compute {2/4}

(a) 1

(c) 8

(b) 4

(d) 7

37. What is the number halfway between 1/13 and 1/9?

(a) 28/117

(c) 12/117

(b) 11/117

(d) 24/117

38. Moody has 7 coins, which together make 72 cents. Each coin is a penny, nickel, dime or quarter. Then, the number of dimes Moody has?

(a) 2

(b) 1

(c) 4

(d) 5

39. Peterson can sing 120 notes every minute, while Ronald can sing 180 notes every minute. If Peterson and Ronald begin singing at the same time, how long, in seconds, will it take for their combined note total to equal 1080 notes?

(a) 316

(b) 226

(c) 216

(d) 336

40. Jessy took a test with 25 questions. For every question she got right, she earned 4 points, and for every question she got wrong, she lost 1 point. She answered every question, and got a score of 80. How many questions did she get right?

(a) 41

(c) 31

(b) 61

(d) 21

41. Jakson likes to mix different types of soda. He buys one liter of cola for $2.00, one liter of lemon-lime soda for $1.50, and 2 liters of orange soda for a total of $3.50. If he mixes these all together, what is the price per liter of the mixture?

(a) $1.75

(c) $7.3

(b) $6.4

(d) $1.2

42. Find the probability that a randomly chosen positive whole number less than or equal to 90 is a multiple of 17.

(a) 3/4

(c) 1/17

(b) 2/18

(d) 1/18

43. If a box of donuts is marked down $20 from its original price of $5, then marked back up $20 from the sale price, how much does this box of donuts cost now

(a) $1.7

(c) $6.3

(b) $4.8

(d) $5.2

44. A farmer wants to buy fencing for the perimeter of his rectangular field. The length of the field is 17 meters and the area of the field is 119 square meters. Given that fencing costs 10 cents per meter, how much money will the farmer have to spend?

(a) $7.5

(c) $6.3

(b) $6.4

(d) $4.8

45. The sum of the ages of Keshia and Jerry is 30. Keshia is 4 years younger than Jerry. How old is Jerry?

(a) 43

(c) 17

(b) 48

(d) 19

46. Compute $(1 + 2 + 3 + \cdots + 98 + 99) \div (.01 + .02 + .03 + \cdots + .98 + .99)$.

(a) 210

(c) 100

(b) 300

(d) 310

47. Donald has twice as many books as Kevin. Kevin has 4 times as many books as Watson. Watson has 6 books. How many books do Donald, Kevin, and Watson have in total?

(a) 78

(c) 36

(b) 24

(d) 48

48. Find the product of the even multiples of 5 that are greater than 1 and less than 49.

(a) 660000

(c) 330000

(b) 520000

(d) 240000

49. When the band the Beatles first formed, they had 1 fan. This fan told 3 other people about the Beatles. Each of these 3 people told 3 other people about The Beatles. As a result, how many people in total knew about The Beatles?

(a) 11

(b) 13

(c) 51

(d) 41

50. How many perfect squares are there between 2 and 140

(a) 30

(b) 20

(c) 70

(d) 10

Answers

1. b	2. a	3. c	4. d	5. d	6. a
7. d	8. a	9. a	10. c	11. d	12. d
13. b	14. d	15. b	16. a	17. c	18. b
19. a	20. b	21. d	22. a	23. c	24. d
25. d	26. c	27. a	28. b	29. c	30. a
31. d	32. c	33. d	34. c	35. c	36. a
37. b	38. b	39. c	40. d	41. a	42. d
43. b	44. d	45. c	46. c	47. a	48. d
49. b	50. d				