

**CIE 2016 Math Comp Math Fun
Answer Key**

Name: _____

ID: _____

Grade: 5

Room: _____

Start Time: _____

Finish Time: _____

No.	Answer
1	C
2	D
3	C
4	C
5	A
6	C
7	B
8	C
9	A
10	C
11	C
12	C
13	D
14	A
15	C
16	C
17	E
18	B
19	B
20	E
21	B
22	B
23	A
24	B
25	C

No.	Answer
26	C
27	E
28	D
29	B
30	C
31	C
32	D
33	A
34	C
35	C
36	A
37	B
38	E
39	E
40	D
41	C
42	
43	
44	
45	
46	
47	
48	
49	
50	

CIE-USA/DFW

MathComp 2016

Grade 5

40 questions

Time: One Hour

- Make sure to write all your answers on the answer Sheet. Only the answer sheet will be graded.
- Each question only has one correct answer. The difficulty of the question is randomly distributed.
- Print your name clearly and legibly below.

Name _____

Room _____

1. Express $2016 \div 11$ as a mixed number.

- A. $181\frac{5}{4}$
- B. $182\frac{11}{3}$
- C. $183\frac{11}{2}$
- D. $184\frac{11}{11}$
- E. None of the above

2. Evaluate $\sqrt{2 + \sqrt{2 + \sqrt{2 + \sqrt{2 + \dots}}}}$.

- A. $2\sqrt{2}$
- B. -1
- C. 0
- D. 2
- E. None of the above

3. A local animal shelter had 6 dogs and 9 cats. On Monday, 2 dogs were adopted and 5 cats were brought in. On Tuesday, 1 dog and 2 cats were adopted, but 4 dogs were brought in. On Wednesday, 3 dogs and 3 cats were adopted, but 2 cats were brought in. How many more cats than dogs were at the shelter on Thursday?

- A. 11
- B. 9
- C. 7
- D. 4
- E. 3

4. Find the 2016th term of the following sequence: 1, 7, 49, 343, ...

- A. 7^{2016}
- B. 7^{2014}
- C. 7^{2015}
- D. 7^{2017}
- E. None of the above

5. Ura Yung is 4 years older than Tu Yung and Soh Yung is twice as old as Ura. Three years ago the sum of their ages was 35. How old is Ura now?
- A. 12
 - B. 16
 - C. 20
 - D. 24
 - E. None of the above
6. If set A has 10 elements, set B has 18 elements, and set $A \cup B$ has 20 elements, then how many elements does set $A \cap B$ have?
- A. 10
 - B. 9
 - C. 8
 - D. 6
 - E. None of the above
7. $3 + 5 = 5 + 3$ and $7 \times 8 = 8 \times 7$ are examples of the _____ Property of Addition and Multiplication.
- A. Associative
 - B. Commutative
 - C. Distributive
 - D. Transitive
 - E. None of the above
8. What is the angle, in degrees, between the minute and hour hands on a circular clock at 8:02 PM?
- A. 119
 - B. 120
 - C. 131
 - D. 90
 - E. None of the above

9. What is the area of a square with vertices $(2,3)$, $(5,8)$, $(1,7)$, and $(6,4)$?
- 17
 - 18
 - 24
 - 34
 - None of the above
10. What is the value of $1 - 4 + 9 - 16 + 25 - 36 + \dots + 81 - 100$?
- 45
 - 50
 - 55
 - 60
 - None of the above
11. There exists a positive integer n such that $1 + 2 + 3 + \dots + n = 2016$. What is n ?
- 61
 - 62
 - 63
 - 64
 - None of the above
12. A set of positive integers $\{p, q, r, s, t\}$ is listed in numeric order from least to greatest. The set has a mean of 32 , a median of 35 , a range of 22 , and a mode of 35 . Find q if $t = 41$.
- 35
 - 34
 - 30
 - 29
 - None of the above
13. Which of the following intervals is not in the solution set of $5 - 4|3x + 2| \leq 1$?
- $[-2, -1.1]$
 - $[-0.25, 1]$
 - $[-2.1, -1.3]$
 - $[-0.45, 0]$
 - None of the above

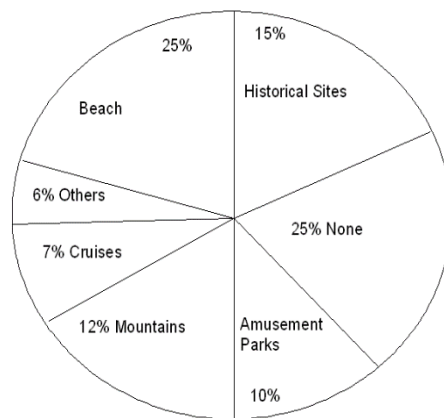
14. There are five Fridays and four Thursdays in January 2016. What day of the week is August 30th, 2016?

Note: The year 2016 is a leap year.

- A. Tuesday
- B. Thursday
- C. Saturday
- D. Sunday
- E. None of above

15. The pie chart below shows the distribution of vacation destinations for students attending Arlington High School.

Vacation Destinations



If 2000 students attend Arlington High School, how many are going to the amusement parks or cruises for vacation?

- A. 320
- B. 330
- C. 340
- D. 350
- E. None of the above

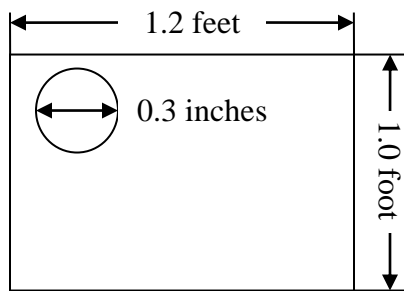
16. I multiplied $1,111,111 \times 1,111,111$ and wrote down the product. The sum of the digits is

- A. 25
- B. 36
- C. 49
- D. 64
- E. None of the above

17. How many 3-digit numbers are divisible simultaneously by 8, 12, and 15?

- A. 6
- B. 10
- C. 7
- D. 9
- E. None of the above

18. A rectangle has length of 1.2 feet and width of 1 foot; how many circles can draw and fill up the rectangle if each circle has a diameter of 0.3 inches such that no two circles overlap?



- A. 1910
- B. 1920
- C. 1930
- D. 1940
- E. None of the above

19. Tom walked a total of 105 miles for 5 days. Every day he walked 2 miles less than the day before. How many miles did Tom walk the last two days?

- A. 40
- B. 36
- C. 34
- D. 38
- E. None of the above

20. Out of a sample of 2520 people, 7% were vegetarians. How many were not vegetarians?

- A. 2240
- B. 2180
- C. 2120
- D. 2060
- E. None of the above

21. A chicken farmer has figured out that a hen and a half can lay an egg and a half in a day and a half. How long does it take for two hens to lay two eggs?
- A. 1 days
 - B. 1.5 days
 - C. 2 days
 - D. 3 days
 - E. None of the above
22. Coach Zarate asked Jannely, Joe, and Jamie to create a solution manual for the MathComp 2016 tests. The three of them can work together and finish in 4 hours. When working alone, Jamie can create the manual in 10 hours. Jannely can do it in 12 hours when working alone. How long would it take Jamie to do it working alone?
- A. 8 hours
 - B. 15 hours
 - C. 16 hours
 - D. 17 hours
 - E. None of the above
23. Jason was buying treats for 28 kids for his birthday party. He was told that 10 cookies and 18 scones will cost \$36, but 15 cookies and 13 scones will cost \$40. How much is one cookie?
- A. \$1.80
 - B. \$2.00
 - C. \$2.20
 - D. \$2.40
 - E. None of the above
24. The sale ad read: "Buy three tires at the regular price and get the fourth tire for \$3." Tom paid \$240 for the set of four tires at the sale. What was the regular price of one tire?
- A. \$59
 - B. \$79
 - C. \$80
 - D. \$81
 - E. None of the above

25. A fisher man takes his boat out to sea at an average speed of 18 miles per hour and then back to the harbor along the same route at an average speed of 14 miles per hour. If his entire trip lasts 8 hours, what is the total number of the miles in the round trip?

- A. 130
- B. 128
- C. 126
- D. 124
- E. None of the above

26. What is the supplement of $(9b)^0$?

- A. 0
- B. $(100+9b)^0$
- C. $(180-9b)^0$
- D. $(90-9b)^0$
- E. $(100-9b)^0$

27. Find the value of N that completes the equation $3N-5=N+17$

- A. 0
- B. 6
- C. 10
- D. 34
- E. None of the above

28. Which of the following are side lengths of a scalene acute triangle?

- A. 5, 6, 8
- B. 8, 10, 13
- C. 1, 2, 3
- D. 4, 5, 6
- E. None of the above

29. A cube of side length 8 is painted in its exterior on all 6 faces. It is then split into 512 smaller unit cubes (cubes with side length 1). How many of these unit cubes have no paint on them?

- A. 196
- B. 216
- C. 256
- D. 343
- E. None of the above

30. A number is increased by $x\%$ and then decreased by $x\%$. The result is a number that is 89.76% of the original number. What is x ?
- A. 22
 - B. 28
 - C. 32
 - D. 38
 - E. None of the above
31. The MathFun Club consists of 4 boys and 3 girls. How many ways can the children form a committee consisting of 2 boys and 2 girls?
- A. 9
 - B. 12
 - C. 18
 - D. 24
 - E. None of the above
32. How many ordered pairs of nonnegative integers (a, b) satisfy $3a + 7b = 2016$?
- A. 94
 - B. 95
 - C. 96
 - D. 97
 - E. None of the above
33. If $x + \frac{1}{x} = 16$, then what is $x^2 + \frac{1}{x^2}$?
- A. 254
 - B. 256
 - C. 258
 - D. 260
 - E. None of the above
34. What is the units digit of $2016^{2016} - 1$?
- A. 1
 - B. 3
 - C. 5
 - D. 7
 - E. None of the above

35. John and Ling start their new jobs on the same day. John's schedule is 6 workdays followed by 1 day off. Ling's schedule is 7 workdays followed by 2 days off. On how many days during their first year of work (365 days) do John and Ling have the same day off?
- A. 9
 - B. 10
 - C. 11
 - D. 12
 - E. None of the above
36. How many positive integers less than or equal to 2016 are relatively prime to 2016?
- A. 576
 - B. 672
 - C. 864
 - D. 1152
 - E. None of the above
37. In how many ways can I distribute 10 chocolate bars to Adam, Brian, Cindy, and Dave, if each child must receive at least one chocolate bar, and Adam and Brian refuse to receive the same amount?
- A. 66
 - B. 68
 - C. 70
 - D. 72
 - E. None of the above
38. Which of the following is NOT true of parallelograms?
- A. Opposite angles are congruent.
 - B. Opposite sides are parallel.
 - C. Diagonals bisect each other.
 - D. Parallelograms are special cases of trapezoids.
 - E. All of the above are true

39. Find the sum of the positive divisors of 2016.

- A. 3969
- B. 4536
- C. 5280
- D. 6561
- E. None of the above

40. Let $a_1, a_2, a_3, \dots, a_{10}$ be a permutation of the numbers $1, 2, 3, \dots, 10$. Find the maximum value of $|a_1 - a_2| + |a_2 - a_3| + |a_3 - a_4| + \dots + |a_9 - a_{10}|$.

- A. 18
- B. 27
- C. 36
- D. 45
- E. None of the above

BONUS QUESTION:

41. If there were 300 people at a dinner and nearly 39% ordered fish, approximately how many ordered fish?

- A. 150
- B. 130
- C. 120
- D. 110
- E. 100