

**Number Sense 9 – NO calculator!**  
**KCATM 2014**

Name \_\_\_\_\_

- 1) Evaluate  $\frac{10!}{7!3!}$ .
- A) 120      B) 180      C) 240      D) 360      E) 720
- 2) Find  $f(2)$  if  $f(x) = \frac{x^3 + 2x + 1}{x + 4}$ .
- A) 11/6      B) 2      C) 13/6      D) 7/3      E) 5/2
- 3) What is the remainder when 2,399 is divided by 24?
- A) 19      B) 20      C) 21      D) 22      E) 23
- 4) What is the value of  $i^{47}$  ?
- A) 1      B) 0      C) -1      D)  $i$       E)  $-i$
- 5) Evaluate  $\left(\frac{x^{-2}y^3x^2}{4y^3}\right)^{-3}$ .
- A) -64      B) -12      C) -1/64      D) 1/64      E) 64
- 6) Evaluate  $2^{-3}$ .
- A) -8      B) -6      C) -1/8      D) 1/8      E) 8
- 7) Evaluate  $9^{3/2}$ .
- A) 9      B) 27      C) 54      D) 81      E) 162
- 8) Evaluate  $25^{-3/2}$ .
- A) -125      B) -1/125      C) 1/125      D) 125      E) answer not given
- 9) Evaluate  $\log_4(2) + \log_2(4)$ .
- A) 0.5      B) 1      C) 1.5      D) 2      E) answer not given
- 10) Evaluate  $\log(\sqrt{7}) + \log\left(\frac{100\sqrt{7}}{7}\right)$ .
- A) 1      B) 2      C) 5      D) 7      E) answer not given

- 11) Evaluate  $\frac{\frac{1}{2} + \frac{1}{9}}{\frac{1}{2} - \frac{1}{9}}$ .
- A) 7/11      B) 11/7      C) 11/18      D) 18/11      E) answer not given
- 12) The cube root of 400 falls between which two integers?
- A) 4 and 5      B) 5 and 6      C) 6 and 7      D) 7 and 8      E) 8 and 9
- 13) The square root of 500 falls between which two integers?
- A) 20 and 21      B) 21 and 22      C) 22 and 23      D) 23 and 24      E) 24 and 25
- 14) What is the ones digit of  $16^7$ ?
- A) 1      B) 4      C) 5      D) 6      E) 9
- 15) What is the remainder when  $x^3 - 3x^2 + 5x - 1$  is divided by  $x - 4$ ?
- A) 5      B) 15      C) 25      D) 35      E) answer not given
- 16) How many quarters are in \$116.75?
- A) 467      B) 468      C) 471      D) 475      E) 479
- 17) Solve for  $x$ :  $(x - 1)! = 6$
- A) 4      B) 3      C) 2      D) 1      E) answer not given
- 18) Solve for  $x$ :  $5^{x+7} = 1$ .
- A) -8      B) -7      C) -6      D) -5      E) answer not given
- 19) Solve for  $x$ :  $3^{3-x} = \frac{1}{81}$
- A) 8      B) 7      C) 6      D) 5      E) 4
- 20) A number cube is rolled twice. Find the probability that neither roll is a 1.
- A) 35/36      B) 33/36      C) 31/36      D) 29/36      E) answer not given
- 21) A number cube is rolled three times. Find the probability that the result is even every time.
- A) 1/2      B) 1/4      C) 3/8      D) 5/8      E) answer not given
- 22) A number cube is rolled four times. Find the probability that the result is even exactly twice.
- A) 1/2      B) 1/4      C) 3/8      D) 5/8      E) answer not given

- 23) 86% of a number is 172. What is that number?  
A) 190      B) 200      C) 210      D) 220      E) answer not given
- 24) A car is marked up by 15% to \$46,000. What is the original price of the car?  
A) \$30,000      B) \$35,000      C) \$38,000      D) \$40,000      E) answer not given
- 25) What is the thousandths digit of the decimal form of  $\frac{2}{9}$ ?  
A) 1      B) 2      C) 3      D) 5      E) 9
- 26) What is the hundredths digit of the decimal form of  $\frac{2}{7}$ ?  
A) 1      B) 2      C) 4      D) 5      E) 8
- 27) What is the hundredths digit of the decimal form of  $\frac{5312}{9999}$ ?  
A) 1      B) 2      C) 3      D) 4      E) 5
- 28) Evaluate  $-4^2 + |-3|$ .  
A) -19      B) -13      C) -11      D) -5      E) answer not given
- 29) Evaluate  $\frac{(-8)^2 - 1}{.1}$ .  
A) 63      B) 65      C) -63      D) -65      E) answer not given
- 30) Evaluate  $\sqrt{64\sqrt[3]{64}}$ .  
A) 2      B) 4      C) 8      D) 16      E) answer not given
- 31) Which of the following points is on the graph of  $3x + 5y = 17$ ?  
A) (-1, 4)      B) (0, 3)      C) (1, 2)      D) (2, 1)      E) (3, 0)

32) What is the smallest positive integer greater than 1 that is both a perfect square and a perfect cube?

- A) 2            B) 8            C) 16            D) 32            E) 64

33) A car travels 15 miles in 25 minutes. What is its average speed in miles per hour?

- A) 35            B) 36            C) 38            D) 40            E) answer not given

34) Completely reduce the fraction:  $\frac{882}{888}$ .

- A) 441/444    B) 147/148    C) 294/296    D) 290/291    E) cannot be reduced

35) What is the prime factorization of 960?

- A)  $2^6 * 3 * 5$     B)  $2^5 * 3 * 5$     C)  $2^5 * 3^2 * 5$     D)  $2^6 * 15$     E) answer not given

36) Evaluate  $(5 + x)^2 - (3 + x)^2 - 4x$ .

- A) 16            B)  $16 - 4x$     C)  $16 + 4x$     D)  $16 + 8x$     E) answer not given

37) Which of these is equivalent to  $-2\log_4 9$ ?

- A)  $-\log_4 81$     B)  $-\log_4 18$     C)  $\log_4 18$     D)  $\log_4 81$     E) none of the above

38) Evaluate  $\frac{x!}{(x+2)!}$  when  $x = 14$ .

- A)  $\frac{1}{210}$             B)  $\frac{1}{240}$             C)  $\frac{1}{282}$             D)  $\frac{1}{306}$             E) answer not given

39) Evaluate  $(i^9 - i^7)(i^9 + i^7)$ .

- A) 1            B) 0            C) -1            D)  $i$             E)  $-i$

40) What is the quotient when 1,200 is divided by 177?

- A) 4            B) 5            C) 6            D) 7            E) 8

41) What is the sum of the first 20 integers?

- A) 190            B) 200            C) 210            D) 400            E) answer not given

42) What is the sum of the first 20 odd integers?

- A) 190            B) 200            C) 210            D) 400            E) 420

- 43) What is the sum of the first 20 even integers?
- A) 190      B) 200      C) 210      D) 400      E) 420
- 44) Y is a number between 50 and 100. When Y is divided by 5, the remainder is 2. When Y is divided by 6, the remainder is 5. What is the value of Y?
- A) 57      B) 62      C) 67      D) 72      E) 77
- 45)  $\pi^2$  is closest to what integer?
- A) 9      B) 10      C) 11      D) 12      E) 13
- 46)  $10\sqrt{2}$  is closest to what integer?
- A) 14      B) 15      C) 16      D) 17      E) 18
- 47) Find the distance between the points (3, 8) and (9, 16).
- A) 6      B) 8      C) 10      D) 12      E) 14
- 48) (8, 1) is the midpoint of (4, 7) and (12, a). What is the value of a?
- A) -5      B) -13      C) 5      D) 13      E) answer not given
- 49) What positive integer is a solution to  $(w-7)^2 = 289$ ?
- A) 20      B) 21      C) 22      D) 23      E) 24
- 50) What positive integer is a solution to  $|14-10x|=176$ ?
- A) 15      B) 16      C) 17      D) 18      E) 19

## KCATM Number Sense 9 Answers 2014

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