2011 KCATM

9th Grade Number Sense

- 1. Compute: $(109 \times 91) (109 + 91)$
- b) 9919 d) 9901 a) 200 c) 9719 e) Not Given 2. Find the greatest common factor of the numbers: 64, 512, 128 a) 512 b) 32 c) 16 d) 8 e) Not Given 3. Compute the sum and given your answer in simplest terms: .1 + .37d) 47/99 a) 48/99 b) 16/33 e) 49/99 e) Not Given 4. A company is constructing 100 lockers to be numbered 1 - 100. How many digits must the company purchase, so that each locker is correctly numbered? a) 100 b) 300 c) 192 d) 191 e) 190 5. Consider the sequence of odd integers starting at 1 and ending at 99. If you were to write out the entire sequence by hand, how many times would you write the digit 2? a) 0 d) 50 e) Not Given b) 5 c) 10 6. 30 is 75% of what number?
 - a) 22.5 b) 40 c) 2.25 d) 4 e) Not Given

- 7. Which of the following sets of numbers do NOT form a Pythagorean triple?
 - a) 5-12-13 b) 10-25-26 c) 6-8-10 d) 7-24-25 e) 9-40-41
- 8. I am thinking of a number whose square root is between 10 and 11. If the number is even, the digits of the number sum to 3, and the number is divisible by 17, which of the following must be the number?
 - a) 102 b) 119 c) 120 e) 111 e) Not Given
- 9. When a two-digit positive integer is divided by 4, the remainder is 3. When the number is divided by 7, the remainder is 4. How many two-digit positive integers satisfy these criteria?
 - a) 0 b) 1 c) 2 d) 3 e) 4
- 10. Find the largest number that is the sum of the squares of two distinct one-digit integers.
 - a) 162 b) 145 c) 152 d) 135 e) 142

11. Find the value of $123^2 - 122^2$.

a) 245 b) 247 c) 249 d) 251 c) Not Given
12. Evaluate:
$$3^{-2} + 3^2 (-(-x)^0)$$

a) 0 b) 9 c) 82/9 d) -80/9 c) Not Given
13. Find the sum of the sequence: $1 + 3 + 5 + ... + 21$
a) 81 b) 100 c) 121 d) 144 c) Not Given
14. Evaluate: $5 - \frac{4-2}{3-7}(-10)^2$
a) 550 b) -550 c) -45 d) 55 c) Not Given
15. Evaluate and simplify: $\sqrt{216} - \sqrt{54} + \sqrt{6}$
a) $2\sqrt{6}$ b) $3\sqrt{6}$ c) $4\sqrt{6}$ d) $2\sqrt{42}$ c) Not Given
16. Find the ones digit of $7^5 - 3^8$.
a) 0 b) 2 c) 4 d) 6 c) 8
17. Evaluate $(-25)^{1/2}$.

a) 1.9×10^5	b) 1.9 x 10 ¹⁴	c) 4.2×10^5	d) 4.2×10^{14}	e) 4.2
19. Subtract the sum of	f the first 50 positive odd	l integers from the sum o	of the first 50 positive evo	en integers.
a) 0	b) -50	c) 50	d) -100	e) 100
20. Evaluate i^{93} .				

18. Which of the following answers is closest to $4.2 \times 10^{14} - 2.3 \times 10^9$?

d) *—i* a) 1 b) -1 c) *i* e) Not Given

e) 4.2 x 10⁹

21. Given that $5 < x^2 < y < 100$. Given that x and y are both positive integers, find the maximum value of y – x.

- b) 93 e) Not Given a) 90 c) 95 d) 96
- 22. Find the sum of the sequence: 1, 2, 3, ..., 40.
 - b) 1600 d) 1620 e) Not Given a) 820 c) 840

23. Change the number 32 from base 10 to base 7.							
a)	44	b) 20	c) 42	d) 25	e) Not Given		
24. Compute $(.005 \times 200)^7 - 10^{-3}$.							

c) .999 a) .9 b) .99 d) .9999 e) Not Given 25. How many ways are there to choose a president and a vice-president from a group of 10 people?

26. The sets $\{2, 8, x, 7, 4\}$ and $\{3, 9, x, 5\}$ have the same mean. Find the value of x.

a) 0 b) -1 c) -2 d) -3 e) Not Given

27. Evaluate the expression $\frac{(n-2)!}{(n+1)!}$ when n = 5.

- a) $\frac{1}{120}$ b) 120 c) $\frac{1}{60}$ d) 60 e) Not Given
- 28. How many three digit numbers are divisible by 10, and have a cube root satisfying the inequality 6 < x < 7?
 - a) 10 b) 11 c) 12 d) 13 e) Not Given
- 29. The digits of a five digit number increase in value as you read from left to right. If the thousands digit is 5 less than the hundreds digit, find the sum of the five digits.
 - a) 24 b) 25 c) 26 d) 27 e) 28
- 30. What fraction is equivalent to $.53\overline{44}$?

a) 481/900	b) 4717/9000	c) 53/99	d) 533/999	e) Not Given
aj 401/900	0) 47177000	()	u) 555/777	C