

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 d) 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 e) Not Given

12. Evaluate: $3^{-2} + 3^2(-(-x)^0)$

- a) 0 b) 9 c) 82/9 d) -80/9 e) Not Given

13. Find the sum of the sequence: $1 + 3 + 5 + \dots + 21$

- a) 81 b) 100 c) 121 d) 144 e) Not Given

14. Evaluate: $5 - \frac{4-2}{3-7}(-10)^2$

- a) 550 b) -550 c) -45 d) 55 e) 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) $2\sqrt{42}$ e) Not Given

16. Find the ones digit of $7^5 - 3^8$.

- a) 0 b) 2 c) 4 d) 6 e) 8

17. Evaluate $(-25)^{3/2}$.

- a) 125 b) -125 c) 625 d) -625 e) Not Given

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

- a) 1.9×10^5 b) 1.9×10^{14} c) 4.2×10^5 d) 4.2×10^{14} e) 4.2×10^9

19. Subtract the sum of the first 50 positive odd integers from the sum of the first 50 positive even integers.

- a) 0 b) -50 c) 50 d) -100 e) 100

20. Evaluate i^{93} .

- a) 1 b) -1 c) i d) $-i$ e) Not Given

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

- a) 90 b) 93 c) 95 d) 96 e) Not Given

22. Find the sum of the sequence: 1, 2, 3, ..., 40.

- a) 820 b) 1600 c) 840 d) 1620 e) Not Given

23. Change the number 32 from base 10 to base 7.

- a) 44 b) 20 c) 42 d) 25 e) Not Given

24. Compute $(.005 \times 200)^7 - 10^{-3}$.

- a) .9 b) .99 c) .999 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?

- a) 19 b) 45 c) 90 d) 100 e) Not Given

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 $.5\overline{344}$?

- a) $\frac{481}{900}$ b) $\frac{4717}{9000}$ c) $\frac{53}{99}$ d) $\frac{533}{999}$ e) Not Given