

For questions 1-5, consider the data set $\{15, 16, 17, \dots, 30\}$.

- 1) How many numbers are in the data set?
A) 4 B) 15 C) 16 D) 17 E) 18
- 2) What is the sum of all the numbers in the data set?
A) 78 B) 350 C) 356 D) 360 E) 362
- 3) If each number in the data set is doubled, how does that affect the mean?
A) Cuts it in half B) keeps in the same C) Doubles it
D) Multiplies it by 4 E) divides it by 4
- 4) What is the median of the data set?
A) 22 B) 22.5 C) 23 D) 23.5 E) 24
- 5) What piece of data corresponds to the 75th percentile?
A) 24 B) 25 C) 26 D) 27 E) 28
- 6) Convert 232 from base 10 into base 8.
A) 347 B) 350 C) 351 D) 352 E) 353
- 7) Convert 545 from base 6 into base 10.
A) 204 B) 207 C) 208 D) 209 E) 210
- 8) What is the fraction equivalent to $0.\overline{12}$?
A) $1/9$ B) $4/33$ C) $12/999$ D) $3/19$ E) $3/25$
- 9) What is the fraction equivalent to $0.25\overline{23}$? [all answers are unsimplified]
A) $2497/9900$ B) $2498/9900$ C) $2523/10000$
D) $2523/9999$ E) None of the Above

- 10) Find the value of $\sqrt{3^2 + 4^2 + 12^2}$.
- A) 13 B) 14 C) 15 D) 16 E) 17
- 11) Find the value of $-25^{1/2}$.
- A) 5 B) -5 C) -1/5 D) 1/5 E) $5i$
- 12) Find the value of $81^{-3/4}$.
- A) -27 B) 27 C) 1/27 D) -1/27 E) None of the Above
- 13) Find the value of $\frac{3!8!5!}{2!9!4!}$.
- A) 1/3 B) 2/3 C) 1 D) 4/3 E) 5/3
- 14) A car is purchased at a 15% discount for \$17,000. What was the original price of the car?
- A) \$2,000 B) \$20,000 C) \$200,000 D) \$18,500 E) \$185,000
- 15) What is i^{43} ?
- A) $-i$ B) i C) 0 D) -1 E) 1
- 16) Find the next term in the sequence: 1, 2, 2, 4, 8, 32, _____
- A) 76 B) 136 C) 196 D) 256 E) 316
- 17) Find the next term in the sequence: 11, 20, 27, 32, _____
- A) 36 B) 37 C) 38 D) 39 E) 40
- 18) Find 2.5% of 560.
- A) 11.2 B) 12.0 C) 12.8 D) 13.4 E) 14
- 19) Suppose $W = \frac{3x}{4y^2}$. What effect does doubling y have on the value of W ?
- A) Divides W by 2 B) Divides W by 4 C) Divides W by 16
D) Multiplies W by 3/16 E) No effect

20) Find the value of $103(97)$.

- A) 9,991 B) 9,981 C) 9,971 D) 9,961 E) 9,951

21) The binary number 11011 is equivalent to what base 10 number?

- A) 23 B) 24 C) 25 D) 26 E) 27

22) The square root of 300 is closest in value to which of these integers?

- A) 15 B) 16 C) 17 D) 18 E) 19

23) The cube root of 226 is closest in value to which of the integers?

- A) 5 B) 6 C) 7 D) 8 E) 9

24) Evaluate $\frac{2^7 2^{21}}{2^{25}}$.

- A) 1 B) 2 C) 4 D) 8 E) 16

25) A \$100 sweater has its price increased by 25%. By what percent must its new price be decreased to return the price of the sweater to \$100?

- A) 15% B) 20% C) 25% D) 30% E) 35%

26) What is the value of $33^2 - 17^2$?

- A) 700 B) 800 C) 900 D) 1000 E) None of the Above

27) Evaluate $\left(-\frac{2}{5}\right)^2 + 7\left(-\frac{2}{5}\right) + 3$.

- A) $\frac{9}{5}$ B) 2 C) $\frac{11}{5}$ D) $\frac{12}{5}$ E) None of the Above

28) You flip a coin and toss a number cube at the same time. Find the probability that the coin is a tail and the number cube result is a multiple of 3.

- A) $\frac{1}{12}$ B) $\frac{1}{6}$ C) $\frac{1}{4}$ D) $\frac{1}{3}$ E) $\frac{1}{2}$

29) A car travels from point A to point B at an average rate of 52 miles per hour for 5 hours. On its trip home (point B to point A), the car's average rate is 2 miles per hour less than from point A to point B. The return trip took _____ than the initial trip.

- A) 12 minutes longer B) 6 minutes longer C) 2 minutes longer
D) 12 minutes shorter E) 24 minutes shorter

30) Find the ones digit of 7^{77} .

- A) 1 B) 3 B) 5 C) 7 D) 9

31) Find the geometric mean of 4 and 16.

- A) 6 B) 7 C) 8 D) 9 E) 10

32) Find the harmonic mean of 2 and 3.

- A) $2/5$ B) $5/2$ C) $5/12$ D) $12/5$ E) $6/5$

33) Suppose x and y inversely related. If $x = 5$ when $y = 6$, what is the value of x when $y = 10$?

- A) 3 B) 12 C) $25/3$ D) $3/25$ E) $1/12$

34) How many different 3-person committees can be formed from a group of 6 employees?

- A) 3 B) 12 C) 17 D) 19 E) 20

35) Compute $3,456 - 999$.

- A) 2,455 B) 2,456 C) 2,457 D) 2,458 E) 2,459

36) Compute $\frac{78^2 - 3^2}{78 + 3}$.

- A) 75 B) 77 C) 78 D) 79 E) 81

37) The reciprocal of .077 is closest to which number?

- A) 11 B) 12 C) 13 D) 14 E) 15

- 38) The median of six consecutive odd integers is 48. Find the largest of the six integers.
- A) 49 B) 51 C) 53 D) 55 E) 57
- 39) The mean of seven distinct positive integers is 20. Find the maximum value of a number in the data set.
- A) 118 B) 119 C) 120 D) 127 E) 134
- 40) Five siblings have an average height of 5 feet, 8 inches. If two siblings are each 5 feet, 6 inches tall and two siblings are each 6 feet, 2 inches, what is the height of the remaining sibling?
- A) 5 ft 0 in B) 5 ft 2 in C) 5 ft 4 in D) 4 ft 10 in E) 4 ft 8 in
- 41) Calculate: $(5 \times 10^{-7}) + (7 \times 10^{-6})$.
- A) 1.2×10^{-7} B) 1.2×10^{-6} C) 7.5×10^{-6} D) 7.5×10^{-7} E) None of the Above
- 42) Calculate: $\frac{3.2 \times 10^{-13}}{5 \times 10^{-7}}$
- A) 6.4×10^{-6} B) 6.4×10^{-7} C) 6.4×10^{-8} D) 6.4×10^{-9} E) None of the Above
- 43) A hot dog costs \$2.00 before tax and the tax rate is 8%. How many hot dogs can be purchased for \$40.00?
- A) 16 B) 17 C) 18 D) 19 E) 20
- 44) A data set contains 13 numbers and has a mean of 50. Three of those numbers are removed from the data set. The three removed numbers have a mean of 53. Find the mean of the remaining numbers in the data set.
- A) 47 B) 47.7 C) 48.4 D) 49.1 E) None of the Above
- 45) A movie theater has 7 seats in the first row and each successive row has 2 more seats than the one before it. If the theater has 21 rows, find the total number of seats in the theater.
- A) 563 B) 564 C) 565 D) 566 E) 567