Directions: Choose the best answer for each of the following problems. Choice E is "NOT" for "None of these".

1. $3 \times 6 + 9 \times 12 =$

   A. 120 B. 126 C. 132 D. 138 E. NOT

2. $589 + 389 + 489 =$ _____

   A. 1477 B. 1577 C. 1467 D. 1567 E. NOT

3. $5\frac{1}{2} \times 24 =$

   A. 132 B. 122 C. 126 D. 136 E. NOT

4. $8\frac{1}{3}$ feet = _____ inches

   A. 108 B. 104 C. 100 D. 96 E. NOT

5. $812736 \div 9 =$

   A. 90306 B. 90304 C. 90403 D. 90504 E. NOT

6. $83^2 - 72^2 =$

   A. 1705 B. 1805 C. 1905 D. 2005 E. NOT

7. $\frac{5}{6} + \frac{2}{3} - \frac{1}{2} =$

   A. $1\frac{1}{6}$ B. $\frac{7}{8}$ C. $\frac{5}{6}$ D. 1 E. NOT

8. The GCD of 88 and 120 is

   A. 8 B. 12 C. 4 D. 2 E. NOT

9. 92% of 400 is

   A. 398 B. 388 C. 378 D. 368 E. NOT

10. What is the range of the set {7, 8, 12, 3, 14}?

A. 11 B. 7 C. 3 D. 14 E. NOT

11. $\sqrt{14400}$ = _____

A. 80 B. 1212 C. 120 D. 12 E. NOT

12. 1 + 2 + 3 + 4 + ... + 10 =

A. 75 B. 65 C. 55 D. 45 E. NOT

13. A rectangle has an area of 40 square inches. If the length is 6 inches longer than its width, what is its perimeter?

A. 28 inches B. 36 inches C. 10 inches D. 14 inches E. NOT

14. What is the reminder when 573428 is divided by 11?

A. 10 B. 9 C. 8 D. 7 E. NOT

15. $12\frac{1}{2} \div 8\frac{1}{3}$ =

A. $1\frac{1}{4}$ B. $1\frac{1}{2}$ C. $2\frac{1}{4}$ D. $2\frac{1}{2}$ E. NOT

16. What is the largest prime number less than 52?

A. 47 B. 49 C. 51 D. 53 E. NOT

17. 0.363636... = _____ (fraction)

A. $\frac{4}{9}$ B. $\frac{4}{11}$ C. $\frac{6}{7}$ D. $\frac{5}{17}$ E. NOT

18. Three dozen eggs cost $5.44. How much will 9 eggs cost?

A. $1.36 B. $1.44 C. $1.22 D. $1.56 E. NOT

19. $\dfrac{3^6 \times 2^7}{6^5} =$

A. 36 B. 24 C. 18 D. 12 E. NOT

20. If $T = \{1, 3, 6, 10, 15, 21\}$ and $Q = \{2, 4, 8, 16, 32\}$, then $T \cap Q$ has _____ elements.

A. 1 B. 0 C. 7 D. 11 E. NOT

21. 110111 (base 2) = _____ (base 4)

A. 313 B. 212 C. 67 D. 32 E. NOT

22. 1.375 meters = _____ centimeters

A. 13750 B. 1375 C. $137\frac{1}{2}$ D. $13\frac{3}{4}$ E. NOT

23. If $f(x) = x^2 - x$, then $f(4) - f(1) =$

A. -4 B. 4 C. -12 D. 12 E. NOT

24. What is the midpoint of the segment whose endpoints are $(-2, 5)$ and $(1, 13)$?

A. $(\left(-\frac{1}{2}, -8\right)$ B. $\left(-\frac{1}{2}, 8\right)$ C. $\left(\frac{1}{2}, 9\right)$ D. $\left(-\frac{1}{2}, 9\right)$ E. NOT

25. Define $A \otimes B$ to be $\dfrac{A}{B^2}$. Find the value of $4 \otimes (3 \otimes 2)$.

A. $7\frac{1}{9}$ B. $8\frac{1}{9}$ C. $7\frac{4}{9}$ D. $8\frac{4}{9}$ E. NOT

26. If $2^{12} = Z$, what is $\sqrt{Z}$?

A. 256 B. 128 C. 64 D. 32 E. NOT

27. $8\frac{1}{7} + 7\frac{2}{7} + 6\frac{3}{7} + 5\frac{4}{7} + 4\frac{5}{7} + 3\frac{6}{7} =$

A. 40 B. 42 C. 34 D. 36 E. NOT

28. $1^3 + 2^3 + 3^3 + 4^3 + 5^3 + 6^3 + 7^3 =$

A. 784 B. 841 C. 490 D. 900 E. NOT

29. There are 12 red tiles, 15 yellow tiles, and 18 blue tiles in a bag. A single tile is drawn out. What is the probability of getting a blue or yellow tile?

A. $\frac{4}{5}$ B. $\frac{13}{15}$ C. $\frac{2}{3}$ D. $\frac{11}{15}$ E. NOT

30. Bob earned \$24,000 last year. This year, he received a 4% raise. How much will he make this year?

A. \$28000 B. \$24960 C. \$25200 D. \$25640 E. NOT

31. Which of these is a factor of $x^2 - 6x - 27$?

A. $x - 3$ B. $x - 9$ C. $x - 18$ D. $x - 1$ E. NOT

32. The angles of a triangle are 48°, 72°, and _____ .

A. 60° B. 70° C. 72° D. 84° E. NOT

33. 55 is the _____ $^{\text{th}}$ triangular number.

A. 13 B. 12 C. 11 D. 10 E. NOT

34. Solve for x: $\sqrt{\frac{2x}{x-4}} = 2$

A. 8 B. 8 and 0 C. 4 D. 4 or 8 E. NOT

35. Alé has only quarters and dimes, totaling \$11.45. If she has one more quarter than dimes, how many quarters does she have?

A. 35 B. 34 C. 33 D. 32 E. NOT

36. How many 2-element subsets does the set {p, e, n, c, i, l} have?

A. 10 B. 15 C. 20 D. 12 E. NOT

37. Adjacent angles in a rhombus are _____

A. right B. congruent C. supplementary D. complementary E. NOT

38. It takes 40 minutes to drive 10 miles in rush hour traffic. What is the average rate of speed?

A. 20 mph B. 15 mph C. 25 mph D. 4 mph E. NOT

39. Simplify $\left(\frac{x^3y^2}{z}\right)^5$ to $x^a y^b z^c$. What is $a + b + c$?

A. 10 B. 25 C. 30 D. 20 E. NOT

40. If $(\sqrt{2} - \sqrt{6})^2 = A + B\sqrt{3}$, what is A?

A. 4 B. -4 C. 8 D. -8 E. NOT

41. Find the y-intercept of $f(x) = \frac{3x - 4}{x^2 + 5x - 6}$.

A. $-\frac{2}{3}$ B. $\frac{2}{3}$ C. 3 D. $\frac{1}{6}$ E. NOT

42. Find the 51st term in the arithmetic sequence 6, 10, 14, 18, ...

A. 206 B. 210 C. 216 D. 214 E. NOT

43. How many palindromes are there between 300 and 400?

A. 10 B. 8 C. 18 D. 9 E. NOT

44. If $2^{4-3x} = \frac{1}{2}$, then $x =$

A. $\frac{5}{3}$ B. $-\frac{2}{3}$ C. 1 D. $\frac{1}{2}$ E. NOT

45. How many edges does a cube have?

A. 16 B. 8 C. 12 D. 6 E. NOT

46. The circumference of a circle is 6π cm. What is its area?

A. 24π cm^2 B. 36π cm^2 C. 12π cm^2 D. 9π cm^2 E. NOT

47. If $x = 4$ and $y = 3$, then $x^2 + 2xy + y^2 =$

A. 42 B. 45 C. 49 D. 52 E. NOT

48. What is the domain of $y = \sqrt{x}$?

A. $(-\infty, \infty)$ B. $[0, \infty)$ C. $(0, \infty)$ D. $[1, \infty)$ E. NOT

49. What is the value of $\frac{8!}{2!}$?

A. 24 B. 1080 C. 20160 D. 5040 E. NOT

50. $16^2 + 48^2 =$

A. 1280 B. 2560 C. 3840 D. 5120 E. NOT