Mathematics Questions

1. Evaluate, correct to four significant figures, (573.06×184.25).
   A. 105600.00
   B. 105622.00
   C. 105500.00
   D. 105532.00
2. Change 432_{five} to a number in base three.
   A. 10100_{three}
   B. 11100_{three}
   C. 11101_{three}
   D. 10110_{three}
3. Given that A and B are sets such that $n(A) = 8$, $n(B) = 12$ and $n(A \cap B) = 3$, find $n(A \cup B)$.
   A. 15
   B. 17
   C. 20
   D. 23
4. If $\sqrt{24} + \sqrt{96} - \sqrt{600} = y\sqrt{6}$, find the value of y.
   A. 4
   B. 2
   C. -2
   D. -4

5. Evaluate 23 × 54 (mod 7).
   A. 2
   B. 3
   C. 5
   D. 6
6. If $8^{n+2} = 16^{n-1}$, find the value of n.
   A. 2
   B. 3
   C. 4
   D. -1
7. A weaver bought a bundle of grass for ₦5,000 from which he made 8 mats. If each mat was sold for ₦1,500, find the percentage profit.
   A. 240 %
   B. 140 %
   C. 120 %
   D. 40 %
8. Find the 17th term of the Arithmetic Progression (A.P) -6, -1, 4, ...
   A. -91
   B. -86
   C. 74
   D. 79
9. M varies directly as n and inversely as the square of p. If $M = 3$ when $n = 2$ and $p = 1$, find M in terms of n and p.
   A. $M = \frac{3n}{2p^2}$
   B. $M = \frac{2n}{3p^2}$
   C. $M = \frac{2n}{3p}$
   D. $M = \frac{3n^2}{2n^2}$
10. If $a = 3$ and $b = -3$, find the value of $\frac{5b+(a+b)^2}{(a-b)^2}$.
    A. 0.51
    B. 0.19
    C. -0.19
    D. -0.51
11. Three boys shared ₦10,500.00 in the ratio 6:7:8. Find the largest share.
    A. ₦4,000.00
    B. ₦5,000.00

C. ₦4,500.00

D. ₦3,500.00

12. The length of a piece of stick is 1.75 m. A boy measured it as 1.80 m; Find the percentage error.

A. $4\frac{5}{7}\%$

B. $2\frac{5}{6}\%$

C. $2\frac{7}{9}\%$

D. $4\frac{7}{9}\%$

13. If $5x + 3y = 4$ and $5x - 3y = 2$, what is the value of $25x^2 - 9y^2$?

A. 20

B. 16

C. 8

D. 8

14. Mary has $3.00 more than Ben but $5.00 less than Jane. If Mary has $x, how much does Jane and Ben have altogether?

A. $(2x - 8)

B. $(2x + 8)

C. $(2x - 2)

D. $(2x + 2)

15. Consider the statements: p. Stephen is intelligent; q. Stephen is good at Mathematics. If $p \Rightarrow q$, which of the following is a valid conclusion?

A. If Stephen is good at Mathematics, then he is intelligent

B. If Stephen is not good at Mathematics, then he is not intelligent

C. If Stephen is not intelligent, then he is not good at Mathematics

D. If Stephen is not good at Mathematics, then he is intelligent

16. What value of p will make $x^2 - 4x + p$ a perfect square?

A. -2

B. 16

C. 4

D. -8

17. Find the value of x such that $\frac{1}{x} + \frac{4}{3x} = \frac{5}{6x} + 1$ is zero.

A. 1

B. $\frac{1}{4}$

C. $\frac{3}{2}$

D. $\frac{7}{6}$

18. A boy 1.4 m tall, stood 10 m away from a tree of height 12 m.
    Calculate, correct to the nearest degree, the angle of elevation of the
    top of the tree from the boy's eyes.
    A. 71°
    B. 47°
    C. 19°
    D. 8°

19. Given that $\sin(5x - 28)° = \cos(3x - 50)°$, $0° < x < 90°$, find the $\frac{1}{}$ and the value of x.
    A. 39
    B. 32
    C. 21
    D. 14

20. Mrs Gabriel is pregnant. The probability that she will give birth to a girl is $_2$ probability that the baby will have blue eyes is $\frac{1}{4}$. What is the probability that she will give birth to a girl with blue eyes?
    A. 1
    B. $\frac{2}{4}$
    C. $\frac{1}{8}$
    D. $\frac{1}{4}$

21. Solve: $\frac{y+2}{4} - \frac{y-1}{3} > 1$.
    A. $y < -10$
    B. $y < -2$
    C. $y < 2$
    D. $y < 10$

22. The ages (years) of some members in a singing group are: 12, 47, 49, 15, 43, 41, 13, 39, 43, 41 and 36. Find the lower quartile.
    A. 12
    B. 13
    C. 15
    D. 20

23. Using the same data, find the mean.
    A. 33.35
    B. 35.54
    C. 34.45
    D. 36.44

24. Find, correct to two decimal places, the volume of a sphere whose radius is 3 cm. [Take $\pi = \frac{22}{7}$]
    A. 72.57 cm^3
    B. 88.12 cm^3
    C. 105.29 cm^3
    D. 113.14 cm^3

25. The lengths of the parallel sides of a trapezium are 9 cm and 12 cm. If the area of the trapezium is 105 cm^2, find the perpendicular distance between the parallel sides.
    A. 5 cm
    B. 7 cm
    C. 10 cm
    D. 15 cm

26. Find the volume of a cone of radius 3.5 cm and vertical height 12 cm. [Take $\pi = \frac{22}{7}$]
    A. 15.5 cm^3
    B. 21.0 cm^3
    C. 12.0 cm^3
    D. 15.0 cm^3

27. A local community has two newspapers: the Morning Times and the Evening Dispatch. The Morning Times is read by 45% of households and the Evening Dispatch by 60%. If 20% of the households read both papers, find the probability that a particular household reads at least one paper.
    A. 0.15
    B. 0.65
    C. 0.85
    D. 0.95

28. A rectangle has width 3 cm and an area 13.5 cm^2. Find the length.
    A. 6 cm
    B. 4.5 cm
    C. 2.5 cm
    D. 1.5 cm

29. The mean of two numbers x and y is 5. If their mean is 8, find $x + y$.
    A. 2
    B. 4
    C. 6
    D. 8

30. The straight line $y = mx - 4$ passes through the point (4, 16). Calculate the gradient of the line.
    A. 5
    B. 3
    C. 3
    D. 5

31. If the equations $x^2 - 5x + 6 = 0$ and $x^2 + px + 6 = 0$ have common roots, find the value of p.
    A. 5
    B. 6
    C. 6
    D. -5

32. A trader made a loss of 15% when an article was sold. Find the ratio of the selling price to the cost price.
    A. 3:20
    B. 3:17
    C. 17:20
    D. 20:23

33. Given that $\log_2(2y) = 2x + 1$, find the value of y.
    A. 0
    B. 1
    C. 2
    D. 3

34. Solve $6x^2 = 5x - 1$.
    A. $x = \frac{2}{3}, \frac{1}{3}$
    B. $x = \frac{1}{3}, \frac{1}{2}$
    C. $x = \frac{1}{2}, \frac{1}{3}$
    D. $x = \frac{1}{3}, \frac{1}{2}$

35. Arrange the following fractions in ascending order: $\frac{3}{4}, \frac{3}{5}, \frac{2}{3}$.
    A. $\frac{2}{3}, \frac{3}{4}, \frac{3}{5}$
    B. $\frac{3}{5}, \frac{3}{5}, \frac{3}{4}$
    C. $\frac{3}{5}, \frac{3}{4}, \frac{2}{3}$
    D. $\frac{3}{5}, \frac{2}{3}, \frac{3}{4}$

36. Find the product of 243_{five} and 14_{five}.
    A. 10112_{five}
    B. 11012_{five}

C. 10102_{five}

D. 11102_{five}

37. Given that $\frac{1}{3} \times 27^{y} = 9^{2y}$, find y.

A. -2

B. -1

C. 1

D. 2

38. Given that $M = \{x \in N; x > 3\}$ and $N = \{x \in N; x < 7\}$, find $M \cap N$.

A. $\{4\}$

B. $\{3, 4, 6\}$

C. $\{4, 5, 6\}$

D. $\{5, 6\}$

39. Evaluate: $16^{\frac{3}{2}} + \log_{10} 0.0001 + \log_2 32$.

A. 63

B. 64

C. 65

D. 66

40. If $(3x + 2y) : (3x + 4y) = 3 : 5$, find $x : y$.

A.1 : 3

B. 2 : 5

C. 3 : 1

D. 5 : 3

41. Given that P varies inversely as $\sqrt{q}$ and $P = 12$ when $q = 9$, find the value of q when $P = 24$.

A. $\frac{128}{49}$

B. $\frac{32}{49}$

C. $\frac{64}{49}$

D. $\frac{16}{49}$

42. In a class of 40 students, (8 - 3x) read Chemistry and 12 read Physics only. If 5 students read neither Chemistry nor Physics, find the value of x.

A. 5

B. 6

C. 10

D. 15

43. A bicycle wheel of radius 30 cm turns through 100 revolutions. Find, in metres, the distance travelled. [Take $\pi = \frac{22}{7}$]

A. 188.6

B. 168.5

C. 138.5

D. 128.7

44. Find the gradient of the line passing through the points $P\,(1, -\frac{1}{2})$ and $Q(-3, -\frac{8}{2})$.

A. -3

B. -2

C. 2

D. 3

45. A number is chosen at random from the set {35, 36, 37, 38, 39, 40, 41 and 42}. What is the probability that the number is a multiple of 7?

A. $\frac{1}{8}$

B. $\frac{1}{7}$

C. $\frac{1}{4}$

D. $\frac{1}{5}$

46. The sum of the angles of a regular polygon is 2520°. How many sides does the polygon have?

A. 20

B. 16

C. 15

D. 17

47. Find the gradient of the line $3x - 2y = 6$.

A. 3

B. -2

C. $\frac{3}{2}$

D. $-\frac{3}{2}$

48. In the diagram, P is the centre of the circle $MNRS$ and $\angle MNR = 52°$. Find the size of the reflex angle MPR.

A. 256°

B. 128°

C. 108°

D. 52°

49. The angle of a sector of a circle is 108°. If the radius of the circle is 3.5 cm, find the perimeter of the sector. [Take $\pi = \frac{22}{7}$]

A. 15.6 cm

B. 9.6 cm

C. 10.6 cm

D. 12.6 cm

50. A class consists of 21 boys and 15 girls who compete for a prize. Find the probability that a boy takes the first prize and a girl the second prize.

A. $\frac{1}{4}$

B. $\frac{1}{5}$

C. $\frac{1}{6}$

D. $\frac{1}{7}$

answers

1. B
2. B
3. C
4. A
5. D
6. A
7. C
8. D
9. A
10. B
11. C
12. B
13. A
14. B
15. C
16. C
17. B
18. B
19. A
20. A
21. B
22. C
23. B
24. D
25. C
26. B
27. C
28. A
29. D
30. A
31. D
32. C
33. D
34. A
35. B
36. B
37. C
38. C

39. B
40. C
41. C
42. B
43. A
44. A
45. B
46. A
47. C
48. A
49. A
50. C