Mathematics Practice questions

SECTION A

INSTRUCTION: Answer ALL the questions in both sections.

1. When I divide 48 by the sum of 5 and a certain number, the result is 3. What is the number?
   (A) 11   (B) 16   (C) 119   (D) 139

2. Evaluate $11011_2 + 10111_2$ in binary.
   (A) 110010_2 (B) 101101_2 (C) 111011_2 (D) 100111_2

3. Subtract 247_8 from 5432_8 and leave your answer in base 8.
   (A) 5163_8 (B) 4565_8 (C) 3456_8 (D) 1163_8

4. Given the $21_p = 10112$, calculate the value of p.
   (A) 2   (B) 3   (C) 4   (D) 5

5. The product of a certain number and 7 is equal to twice the number subtracted from 36. Find the number.
   (A) 2   (B) 3   (C) 4   (D) 5

6. Joel buys 4 rulers and a pencil and these cost the same as 2 rulers and 4 pencils. If a pencil costs ₦ 8, how much does a ruler cost?
   (A) ₦10.00   (B) ₦11.00   (C) ₦12.00   (D) ₦13.00

7. Efe can travel 45km in 3 hours using his bicycle. How many kilometres can he travel in 10hours?
   (A) 120km   (B) 150km   (C) 155km   (D) 160km

8. Calculate the reciprocal of 0.05.
   (A) $\frac{2}{5}$ (B) $\frac{2}{2}$ (C) 5   (D) 20

9. The sum of 35 and a certain number is divided by 4. The result is equal to double the number. Find the number.
   (A) 3   (B) 4   (C) 5   (D) 6

10. From the product of 9 and 10, subtract 48; then divide the result by 7. What is your final answer?
    (A) 5   (B) 6   (C) 7   (D) 8

11. Five workers dig a piece of ground in 8 days. How long will it take 10 workers to do the same work?
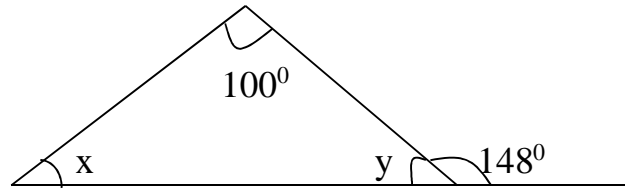   (A) 10days   (B) 8days   (C) 5days   (D) 4days

12. Convert 10111011_{two} to decimal.

(A) 187   (B) 178   (C) 718   (D) 127

13. Calculate the simple interest on ₦30,000 for 4 years at 5% per annum.

(A) ₦ 5,000   (B) ₦ 5,600   (C) ₦ 6000   (D) ₦ 6,500

Use the figure below to answer questions 14 and 15.

14. What is the value of y?

(A) 32^0 (B) 42^0 (C) 48^0 (D) 50^0

15. Calculate the value of x.

(A) 32^0 (B) 42^0 (C) 48^0 (D) 50^0

16. Express 0.65 as a fraction.

(A) $\frac{2}{5}$ (B) $\frac{3}{5}$ (C) $\frac{1}{2}$ (D) $\frac{9}{1}$

17. Find the H.C.F of 15, 20 and 35.

(A) 2   (B) 3   (C) 4   (D) 5

18. Convert 131_{four} to base ten.

(A) 29   (B) 28   (C) 21   (D) 19

19. A dealer bought 1000 articles for ₦ 6000 and sold them at ₦ 9 each. Find his percentage profit.

(A) 90%   (B) 70%   (C) 60%   (D) 50%

20. Express 0.0004532 in standard form.

(A) 4.532×10^4 (B) 4.532×10^3 (C) 4.532×10^{-3} (D) 4.532×10^{-4}

21. Given that $7: y = 21: 6$, find the value of y.

(A) 2   (B) 6   (C) 16   (D) 24

22. Find the area of a trapezium which has a height 20cm and its parallel sides are 7cm and 8cm long.

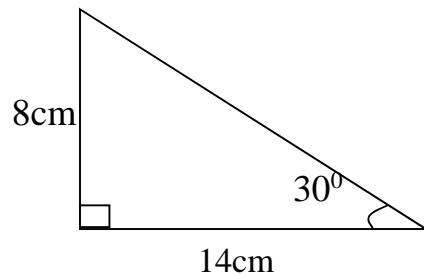(A) $140cm^2$ (B) $150cm^2$ (C) $160cm^2$ (D) $560cm^2$

23. The angles of a quadrilateral are 24^0, $3x^0$, 120^0 and 144^0. Find x.

(A) 21^0 (B) 24^0 (C) 40^0 (D) 48^0

24. Find the sum of angles of a hexagon.

(A) 180^0 (B) 360^0 (C) 720^0 (D) 900^0

25. Solve the equation: $\frac{4(m+2)}{4} = \frac{5 - 4}{3}$.

  (A) -5 (B) -4 (C) 4   (D) 5

26. The area of a triangle is 54cm². If the height of the triangle is 6cm, find its base.

  (A) 9cm   (B) 12cm   (C) 18cm   (D) 21cm

27. A dealer was paid 5% commission on all the recharge cards he sold. If he sold ₦ 50,000.00 worth of cards, how much commission did he get?

  (A) ₦1,000.00   (B) ₦1,500.00   (C) ₦2,500.00   (D) ₦5,000.00

28. Express 1101_{two} in denary.

  (A) 50   (B) 27   (C) 20   (D) 13

29. Find the area of the triangle below.

  (A) 14cm²   (B) 28cm²   (C) 42cm²   (D) 56cm²

30. Which of these angles is complementary to 70^0?

  (A) 20^0 (B) 30^0 (C) 90^0 (D) 110^0

31. The sum of supplementary angles is

  (A) 90^0 (B) 180^0 (C) 240^0 (D) 360^0

32. If 6 men plough a field in 10 hours, how many hours will it take 4 men to do the same work? (Assuming they are working at the same rate)

  (A) 8   (B) 15   (C) 20   (D) 25

33. A trader sells a number of books and takes in ₦57 400 altogether. If the average selling price of a book is ₦700, find the number of books sold.

  (A) 80   (B) 81   (C) 82   (D) 83

34. Expand $(2x - 1)(x - 3)$.

  (A) $2x^2 - 7x + 3$ (B) $2x^2 + 7x + 3$ (C) $2x^2 - 7x - 3$ (D) $2x^2 + 7x - 3$

35. Two heaps of rice are of similar shape and contain 250kg and 128kg of rice respectively. The height of the smaller heap is 56cm. Find the height of the bigger one.

(A) 60   (B) 70   (C) 75   (D) 78

36. Find the value of t in the equation $2t - 7 = 15$.

(A) 5   (B) 10   (C) 11   (D) 22

37. A candidate scored 32 marks out of 80, find his percentage score.

(A) 20%   (B) 32%   (C) 40%   (D) 48%

38. Two triangles have areas of $9cm^2$ and $16cm^2$ respectively. If the base of the larger triangle is 20cm, find the base of the smaller triangle.

(A) 9   (B) 12   (C) 15   (D) 18

39. A cone is 6cm high and its vertical angle is 54^0. Calculate the radius of its base to 2 s.f.

(A) 3.1cm   (B) 4.3cm   (C) 5.6cm   (D) 6.3cm

40. Calculate x, if the mean of 30, x, 12, 40 and 10 is equal to x.

(A) 13   (B) 23   (C) 33   (D)43

41. The sum of ₦3600 is shared in the ratio 5: 6: 7. What is the difference between the largest and the smallest share?

(A) ₦ 800   (B) ₦ 400   (C) ₦ 1400   (D) ₦ 1000

42. Given that $(2x - 1)(x + 5) = 2x^2 - mx - 5$, what is the value of m?

(A) 11   (B) 5   (C) – 9   (D) – 10

43. Solve the inequality $3x - 5 < 5x - 3$.

(A) x > - 1   (B) x < - 1   (C) x < - 2   (D) x > - 2.

44. Find the value of y if $5(y - 3) = 20$.

(A) 1   (B) 4   (C) 7   (D) 12

45. Find the average of the first four prime numbers greater than 10.

(A) 20   (B) 19   (C) 17   (D) 15

The table below gives the ages of a choral group in CDSS Ikeja. Use this information to answer questions 46 – 49.

Age(Years)	17	18	19	20	21
Frequency	3	9	5	6	2

46. How many students are in the choral group?

(A) 22   (B) 23   (C) 24   (D) 25

47. What is the mean age of the group?

(A) 18 years   (B) 18.8 years   (C) 19 years   (D) 19.8 years

48. What is the mode of the data?

(A) 17 years   (B) 18 years   (C) 19 years   (D) 20 years

49. What is the probability that a person chosen at random from the group is at least 19 years old?

    (A) 0.32   (B) 0.48   (C) 0.52   (D) 0.68

50. If 80 is divided by the sum of 4 and certain number, the result is 16. Find the number.

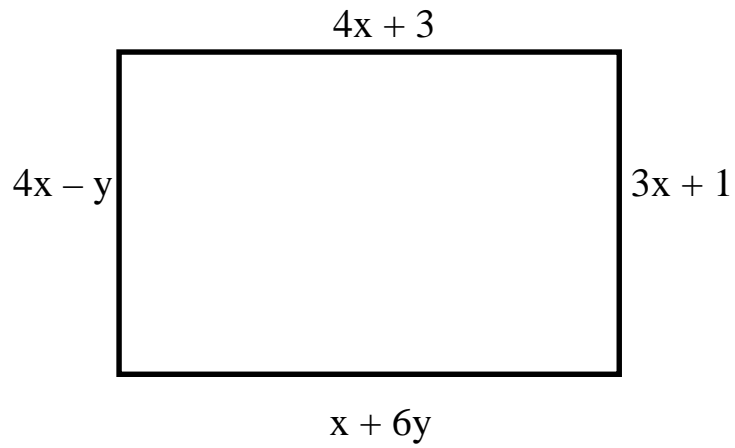   (A) 5   (B) 4   (C) 2   (D) 1

SECTION B

1. An opinion poll among 900 students in Grammar School regarding the country they would like to visit outside Africa gave the following result:

Country they wished to visit	Number of students
JAPAN	90
U.S.S.R	225
CANADA	155
U.K	185
U.S.A	135
CHINA	110

Represent the above data on a pie chart.

2. Find (a) the amount and
   (b) the compound interest on ₦87,000 for 2 years at 10% per annum.

3. Use the method of substitution to solve the simultaneous equations
   $2x - y = 4$ and $3x + y = 11$.

4. The sides of the rectangle shown below are given in cm.

$$4x + 3$$

$$4x - y \qquad\qquad\qquad 3x + 1$$

$$x + 6y$$

(a) Find the values of x and y.
(b) Calculate the area of the rectangle.
(c) Calculate the perimeter of the figure.