COWBELL

COWBELLPEDIA

SECONDARY SCHOOL MATHEMATICS TV QUIZ SHOW

1998 - 2018 Celebrating 20 Years COWBELL AND MATHEMATICS @ 20

JUNIOR CATEGORY | **SATURDAY FEBRUARY 17, 2018**

1 HOUR 15 MINUTES

INSTRUCTIONS

1. This paper is in two parts (I & II).
2. Answer all questions in both parts.
3. Use HB pencil throughout for the multiple choice question.
4. The use of calculators is not allowed.
5. Shade the correct option in the space provided in the answer booklet.
6. Please write your names in capital letters.
7. Candidates who do not shade their correct categories will be disqualified.
8. You are advised not to spend more than 1 hour in part I and 15 minutes in part II.
9. Each multiple choice question attracts 2 marks.

1. If the mean of 1, 2, x, 11, 13 and 14 is 8, find the value of x.
A. 6 B. 7 C. 8 D. 9

2. In a Mathematics test, the scores of 50 students are shown in the table below. Find the sum of the mode and the median.

Mark	3	4	5	10	11	12
Frequency	2	9	8	9	12	10

A. 14 B. 15 C. 16 D. 21

3. Six teams were involved in a handball and soccer competition. Their scores are given in the table below. Find the sum of the mean scores in both games.

Team	A	B	C	D	E	F
Handball	3	2	8	6	3	2
Soccer	8	6	9	4	5	4

A. 9 B. 10 C. 11 D. 27

4. Find the median of the following set of numbers: 5,5,7,7,11,12,12,15,16,16,19,22,22,7,16.
A. 16 B. 15 C. 12 D. 11

5. The sum of two different numbers is 40. If the smaller number is divided by 4 and the larger number by 12, the sum of the quotients is 6. Find the larger number.
A. 28 B. 24 C. 16 D. 15

6. If $(a+b)^2 = a^2 + 6b + b^2$, what is the value of a?
A. 0 B. 1 C. 3 D. 5

7. The H.C.F. of two numbers is 7 and their L.C.M is 140. If one of the numbers is 28, find the other number.
A. 28 B. 35 C. 40 D. 42

8. Add 32_{four} and 13_{four}, leaving your answer in base ten.
A. 18 B. 20 C. 21 D. 22

9. Find the range of all the multiples of 3 between 10 and 20.
A. 5 B. 6 C. 7 D. 8

10. The total ages of students in a class is 600 yrs. If the average age of the students is 15 yrs, find the number of students in the class.
A. 45 B 30 C. 40 D. 50

11. In a warehouse, there are 700 coloured cartons stored. 100 are red, 256 are black, 300 are white and 44 are blue. What is the difference between the Mode and the range of the coloured cartons?
A. 47 B. 256 C. 44 D. 144

12. What percentage of 1km is 525m?
A. 5.25% B. 52.5% C. 525.0% D. 5250.0%

13. Five litres of groundnut oil and three litres of palm oil cost ₦ 14.00 altogether. One litre of groundnut oil costs ₦2.00 more than a litre of palm oil. Find the cost of palm oil and groundnut oil per litre respectively.
A. ₦ 0.50 and ₦ 2.50 B. ₦ 1.50 and ₦ 0.20
C. ₦ 2.50 and ₦ 0.50 D. ₦ 1.50 and ₦ 2.50

14. On a map, scale of 1 cm represents 12km. What is the actual area of a town if it measures area of $\frac{27}{8}$ cm^2 on the map?
A. 489 km^2 B. 500 km^2
C. 486 km^2 D. 400 km^2

15. Two fractions have the same denominator, 15. The difference between the fractions is $\frac{2}{5}$, and the result of dividing one of them by the other is $\frac{4}{7}$. What are the fractions?
A. $\frac{20}{15}, \frac{14}{15}$ B. $-\frac{8}{15}, -\frac{14}{15}$ C. $-\frac{8}{15}, \frac{14}{15}$ D. $-\frac{8}{15}, -\frac{4}{3}$

16. Solve the equation, $\frac{5}{3x-1} = \frac{3}{4+x} - \frac{7}{3x-1}$
A. 17 B. 21 C. -17 D. 14

17. If it takes 5 men to make yam- ridges on an acre of land in 4 days. How many more days would be required by 4 men to do the work at the same rate?
A. 2 extra days B. 1 extra day
C. 3 extra day D. 0.5 extra day

18. Walter likes only bananas. A basket contains 15 fruits altogether of which 6 are apples, 5 are grapes and the rest are bananas. How many fruits can he take at the most?
A. 4 B. 11 C. 0 D.13

19. What is one-quarter of the difference between the product of 15 and 6 and the sum of 15 and 6? Leaving your answer in 2 decimal places

A. 17.2 B. 17.25 C.1.73 D.17.3

20. Stanley, Walter and Adele have ₦180, ₦250 and ₦130 respectively to give to charity. They decide to give ₦260 to a sports club and share the rest equally among the 60 inmates of an orphanage. How much does each inmate receive?

A. ₦10 B. ₦300 C. ₦50 D. ₦5

21. 6 lumberjacks can cut down 15 mahogany trees in 2 hours. How much longer will it takes 8 lumberjacks to cut down 35 mahogany trees working at the same rate?

A. $3\frac{1}{2}$hr B. $1\frac{1}{2}$hr C. $\frac{1}{2}$hr D. $2\frac{1}{2}$hr

22. A motorist covered $12\frac{3}{4}$ km in three hours. If he covered $5\frac{2}{8}$ km in the first two hours, find the distance covered in the third hour?

A. $6\frac{1}{2}$km B. $7\frac{1}{2}$km C. $8\frac{1}{2}$km D. 8km

23. Calculate the length of a chord of circle of radius 13cm if the chord is 5cm from the centre of the circle.

A. 12cm B.15cm C. 18cm D. 24cm

24. Simplify $\frac{b^2}{ab-b^2} \times \frac{a^2-ab}{a^2}$

A. $\frac{a}{b}$ B. $\frac{b}{a}$ C. $\frac{a}{a-b}$ D. $\frac{a}{b-a}$

25. A banker's salary and overtime allowance per month is given by the formula

S = 4T + 154, where S is the total income received and T the overtime hours. Find the total number of hours worked as overtime if he receives a total income of ₦234.00.

A.20 hours B.24 hours C.40 hours D. 28 hours

26. A motor cyclist travels 48 km at a certain speed. He then decides to decrease his speed by 2 km/hr to travel the remaining 42 km. If the time taken is the same for both parts of the journey, find the speed for the first part of his journey.

A. 20 km/hr B.16 km/hr C. 19 km/hr D. 96 km/hr

27. Kosi and Akwesi bought 13 eggs and each of them planned to keep his own for some visitors coming on Sunday. If Kosi took 1 egg for being the older guy and they then shared the rest equally, how many eggs did Akwesi have?

A. 12 B. 5 C. $5\frac{1}{2}$ D. 6

28. How many triangles are in a polygon whose sum of its interior angles is 1080°?

A. 3 B. 4 C.5 D.6

29. A polygon has x sides. Find the number of triangles in the polygon.

A. x + 2 B. x – 2 C. $\frac{x}{2}$ D. $\frac{2}{x}$

30. An investor decided to diversify his investments by investing one- third of his capital on natural gas, one-fourth on crude oil, one- fifth on savings, one- sixth on gold and the remaining £ 10,000 to buy some stakes in a franchise. How much did he invest on savings?

A. £50,000 B. £60,000 C. £500,000 D. £40,000

31. In a Mathematics class, students can offer either Algebra or Geometry or both. If there are 50 students in the class and 35 offer Geometry, while 28 Algebra, how many students offer both?

A. 12 B. 24 C. 14 D. 13

32. Find the area of a triangle with base length of 6 cm and a height of 4 cm?
A. 10 cm^2 B. 5 cm^2 C. 12 cm^2 D. 15 cm^2

33. Find the square of the difference between the area of a circle radius 7 cm and the area of a square with side 5 cm.
A. 1291 cm^2 B.1664 cm^2 C. 17956 cm^2
D. 16641 cm^2

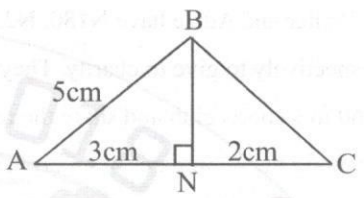
34. The vertical angle of a cone is 60° and its slant height is 30 cm. Find the radius of the base.
A. 15 cm B. 16 cm C. 20 cm D. $15\sqrt{3}$ cm

35. A metal disc of diameter 32 cm has a circular hole at the centre of radius 8 cm. Calculate the area of the disc in terms of π.
A. 40π cm^2 B. 24π cm^2
C. 192π cm^2 D. 64π cm^2

36. Two triangles A and B have sides 4 cm, 5 cm, 11 cm and 18 cm, 22 cm, 24 cm respectively. Find the ratio of the perimeter of A to the perimeter of B.
A. 20:64 B. 5:20 C. 5:16 D. 1:1

37. Given a triangle ABC such that <ABC=60° and < BAC = 30°. Calculate the value of /BC/, if /AC/ = 6cm
A. $\sqrt{3}$cm B. $2\sqrt{3}$cm C. $3\sqrt{3}$cm D. $5\sqrt{3}$cm

38. Find the area of the triangle below.



A. 14cm^2 B.12cm^2 C.10cm^2 D. 9cm^2

39. Calculate the value of n if the sum of the interior angles of a regular polygon of n-sides is 540°.
A. 10 B. 8 C. 6 D. 5

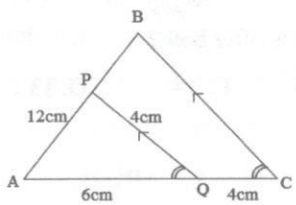
40. A metal washer in the form of an annulus has internal and external diameter of 12 cm and 14 cm respectively. Calculate the area in terms of π.
A. 13 π cm^2 B. 15 π cm^2 C. π cm^2
D. 24 π cm^2

PART TWO: THEORY
TIME ALLOWED: 15 MINUTES

1. (a) Calculate the volume of a cone if the slant height is 13cm long and the base is 10cm in diameter. (Take $\pi = \frac{22}{7}$)

(b). Solve the equation $\frac{1}{2} \div \frac{5}{6y} = \frac{2}{3y}$ **10 Marks**

2. (a) Calculate |BC| and |PB| in the diagram below.



(Diagram not drawn to scale)

(b) A man borrows N600,000.00 from a commercial bank at 8% per annum compound interest. He repays N60,000.00 at the end of each year. How much does he owe the bank at the end of the second year?