FREE VIRTUAL MOCK EXAMINATION (2)
APRIL 2020
MATHEMATICS
ESSAY and OBJECTIVE
2 Hours

2&1

Name: ……

Index Number……

GB ASSESSMENT TEST (GBAT)

FREE VIRTUAL MOCK EXAMINATION (2)

April 2020 **MATHEMATICS 2 & 1** **2 hours**

All answers must be provided on clean sheet of papers (Answer booklet).

Write your name and index number on the sheets.

This examination consists of two papers; Paper 1 and Paper 2. Answer four questions only. All questions carry equal marks.

Answer all questions in your answer booklet.

Credit will be given for clarity of expression and orderly presentation of materials.

DESIST FROM REFERING TO BOOKS BEFORE PROVIDING ANSWERS

#COVID-19. STAY HOME. STAY SAFE.

MATHEMATICS 1 hour

[60 marks]

Answer **four** *questions in all. All questions carry equal marks.*

1. (a) The marks obtained by students in a General Knowledge test are as follows;

3, 7, 4, 3, 3, x, 8, 3x, 5 and 7. Find

i. the value of x if the mean is 6.

ii. the modal mark.

iii. the median mark.

(b) Abu bought 18 packets of crayon at GH¢1.50 each. How many pencils costing 30Gp each can he buy with the same amount of money?

(c) Lorinda is given pocket money for a week, she decides to spend $\frac{2}{5}$ of the money on breakfast, $\frac{1}{6}$ of the remaining on snacks and $\frac{3}{4}$ of what is still remaining on lunch for a day.

If she will be left with GH¢ 100 after the first day of making the above expenses,

i. How much money does she have as pocket money?

ii. If she is to follow the daily budget above, would the money be sufficient for the week?

2. (a) Using a ruler and a pair of compasses only,

i. Construct; α. Line $|AB|$ = 10cm

β. Perpendicular bisector at A to C.

¥. Angle ABC = 30°

ii. Construct; α. Perpendicular bisector at B to D such that $|AC| = |BD|$.

β. Join A to D.

iii. Measure. α. $|AD|$

β. Angle ADB

(b) A cylindrical water tank has a diameter of 14cm and a volume of 1694cm^3. Calculate

i. the height of the cylinder

ii. the total surface area of the tank if it is opened at one end. (Take $\pi = \frac{22}{7}$)

(c) 18 cows produce 12 gallons of milk in 21 days. How many weeks would it take 24 cows to produce the same quantity of milk?

(d) Arrange the following in descending order 1.5, 75%, $\frac{14}{25}$, 5

3. (a) The distance from Ashongman to Tema is 5200m. Calculate the time in seconds a car moving at 40km/h takes to travel from Ashongman to Tema.

(b) Without using a calculator, evaluate $\frac{0.000108 \times 0.00434}{0.012 \times 0.14}$ leaving your answer in standard form.

(c) i. Factorize $-4x^2 - 12x + 7$

ii. If R (-6,4) and S (-10,7) find $|RS|$.

(d) The average age of a family of eight is 30years. The average age of the six children in the family is 19years. If the mother is four years younger that the father, Calculate the age of the father.

4. (a) i. Copy and complete the table of the values for the relations

$Y_1 = 2x + 3$ and $Y_2 = 2 - 3x$ for values of x from -2 to 3.

X	-2	-1	0	1	2	3
$Y_1 = 2x + 3$		1		5		
$Y_2 = 2 - 3x$			2		-4	

ii. Using a scale of 2cm to 1 unit on x – axis and 2cm to 2 units on y- axis, draw two perpendicular axes OX and OY on a graph sheet

iii. On the same graph sheet draw the graphs of the relations $Y_1 = 2x + 3$ and $Y_2 = 2 - 3x$.

iv. Find the coordinates of the points where Y_1 and Y_2 meet.

(b) Make n the subject of the relation b = $\frac{2}{3}$ (m+ n) a, hence the value of n if m= 2, b= 3 and a = 4

5. (a) Find the length of the longer diagonal of a kite if the area of the kite is $88cm^2$, and the other diagonal is 11cm long.

(b) Henry bought a laptop for GH¢ 4,500.00. The cost of the laptop depreciates by 6% every year. If he decides to sell the laptop after using it for 4 years, at what price is an interested party most likely to buy the laptop?

(c) Find the truth set of the equation $\frac{1}{6}(2a - 5) - 3 = \frac{2}{5}(a + 2) - \frac{1}{3}$

(d) If the bearing of Amasaman from Adabraka is 198°, find the bearing of Adabraka from Amasaman.

6. (a) i. What is the equation of the line passing through the origin and the point (8,-4)?

ii. Given that P = $\begin{pmatrix} a \\ b \end{pmatrix}$, q = $\begin{pmatrix} 3 \\ 9 \end{pmatrix}$ and $2\left(p + \frac{1}{3}q\right) = \begin{pmatrix} 0 \\ 12 \end{pmatrix}$, find the values a and b.

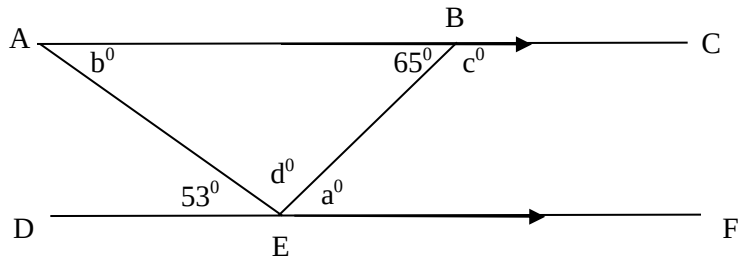
(b) Find the volume of a cone whose base radius is 7cm and height 16cm. (Take $\pi = \frac{22}{7}$)

(c) Kofi paid Gh¢ 800.00 for a television set with VAT inclusive. If the rate is 5%. Calculate

i. The price of the TV set.

ii. The VAT paid on the TV set.

(d) Find the value of the letters in the diagram below.



END OF PAPER

DO NOT TURN OVER THIS PAGE
UNTIL YOU ARE TOLD TO DO SO

YOU WILL BE PENALIZED SEVERELY IF YOU ARE FOUND LOOKING AT THE NEXT PAGE BEFORE YOU ARE TOLD TO DO SO.

PAPER 1 1 HOUR

OBJECTIVE TEST

Write your name and index number in ink in the spaces provided above

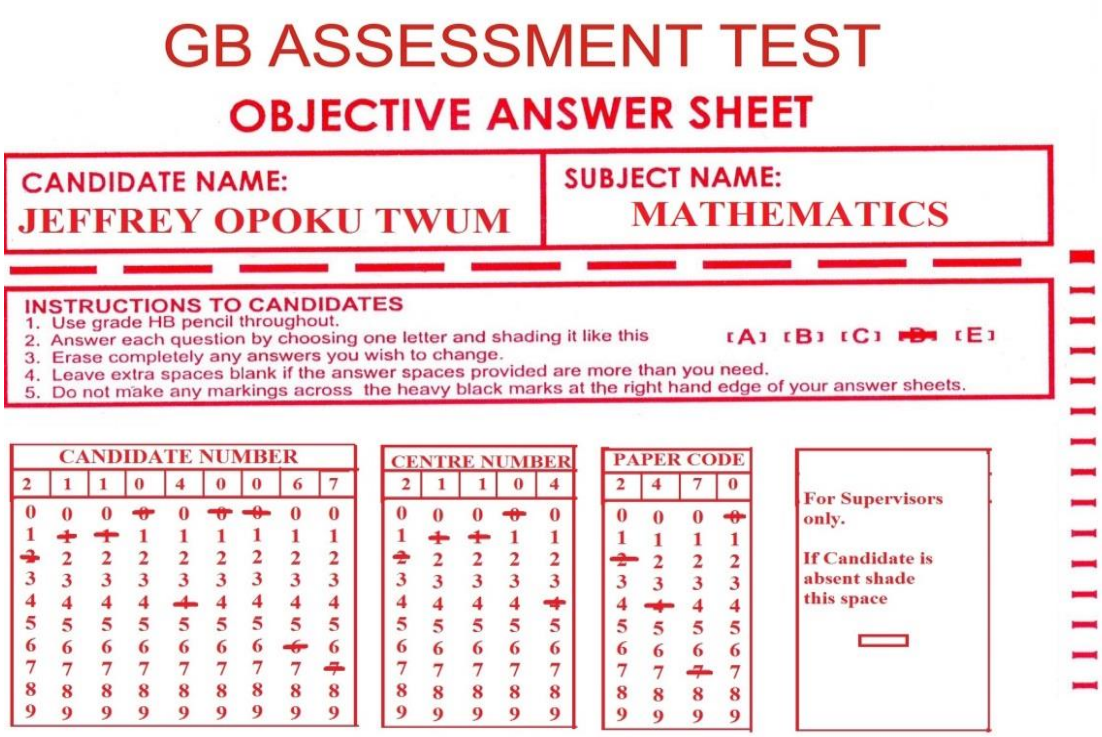
1. Use **2B** pencil throughout.

2. On the pre-printed answer sheet, check that the following details are correctly printed:

Your surname followed by your other names, the subject Name, your Index Number, Centre Number and the Paper Code.

3. In the boxes marked *Candidate Name*, *Centre Number* and *Paper code*, reshade each of the shaded Spaces.

4. An example is given below. This is for a candidate whose name is Jeffrey Opoku Twum, whose Index Number 0211040067. He is writing the examination at Centre Number 21104 and offering Integrated Science 1 and the Paper code is 2470.



GB ASSESSMENT TEST

OBJECTIVE ANSWER SHEET

CANDIDATE NAME: JEFFREY OPOKU TWUM

SUBJECT NAME: MATHEMATICS

INSTRUCTIONS TO CANDIDATES
1. Use grade HB pencil throughout.
2. Answer each question by choosing one letter and shading it like this [A] [B] [C] [D] [E]
3. Erase completely any answers you wish to change.
4. Leave extra spaces blank if the answer spaces provided are more than you need.
5. Do not make any markings across the heavy black marks at the right hand edge of your answer sheets.

CANDIDATE NUMBER: 2 1 1 0 4 0 0 6 7

CENTRE NUMBER: 2 1 1 0 4

PAPER CODE: 2 4 7 0

For Supervisors only.

If Candidate is absent shade this space

Answer **all** *the questions.*
Each question is followed by **four** *options lettered A to D. Find the correct option for each question and shade* **in pencil** *on your answer sheet the space which bears the same letter as the option you have chosen. Give only* **one** *answer to each question.*

1. Factorize 12pqr – 6pq
   A. 6pq (2r + 1)
   B. 6pq (2r – 1)
   C. 6p (2qr – q)
   D. 2pq (96r – 3)

2. Solve the equation $1 = \frac{2}{m} - \frac{1}{3m}$
   A. $1\frac{2}{3}$
   B. $\frac{1}{3}$
   C. $1\frac{3}{5}$
   D. $2\frac{2}{3}$

3. A circle of radius 7cm is divided into 6 equal sectors. Calculate the area of each sector, correct to one decimal place.
   A. $25.7cm^2$
   B. $24cm^2$
   C. $25cm^2$
   D. $24.7cm^2$

4. The slope of the line passing through point S(-2, y) and T (-3,2) is 3, find the value of y?
   A. -5
   B. -2
   C. 5
   D. 2

5. A set has eight different subsets. How many elements are there in this set?
   A. 2
   B. 3
   C. 4
   D. 5

6. Find the product of $5\frac{1}{2}$ and $\frac{2}{4}$.
   A. $5\frac{3}{6}$
   B. $2\frac{1}{3}$
   C. $3\frac{2}{3}$
   D. $2\frac{3}{4}$

7. Make w the subject of the relation $P = \frac{Rw^2}{f}$
   A. $w = \sqrt{\frac{P}{Rf}}$
   B. $w = \frac{\sqrt{Pf}}{R}$
   C. $w = \sqrt{\frac{R}{Pf}}$
   D. $w = \sqrt{\frac{Rf}{P}}$

8. A firm gives 15% commission to its salesmen. Find the commission given to a salesman who made a total sale of GH¢450.00
   A. GH¢50.00
   B. GH¢57.00
   C. GH¢67.50
   D. GH¢55.50

9. What is the perimeter of a square frame with an area of $81cm^2$?
   A. 18cm
   B. 36cm
   C. 44cm
   D. 52cm

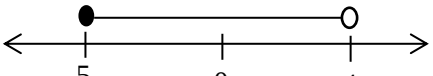
10. Evaluate 3.4 ÷ 1.25
    A. 1.72
    B. 2.35
    C. 2.72
    D. 3.72

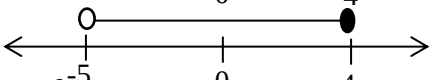
Use the information below to answer questions 11 and 12:
If A = {even numbers between 5 and 11}
And B = {multiples of 3 less than 15}

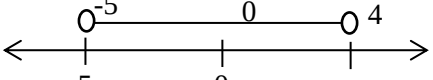
11. Find A ∩ B
    A. {6}
    B. {6, 9}
    C. {9}
    D. {3,6, 9}

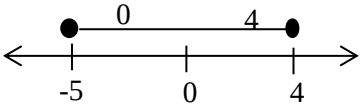
12. List the elements of A ∪ B
    A. {3, 8, 9}
    B. {3, 6, 8, 12}
    C. {3, 6, 8, 9, 10, 12}
    D. {3, 6, 10, 12}

13. Which of the following represents the inequality $-5 \leq x < 4$?

A. 

B. 

C. 

D. 

14. Find the sum of -15, -3, 28, -5 and 4
   A. 12
   B. 15
   C. 9
   D. 35

15. Find the area of sector OKM given that angle KOM is 90° and the radius of the circle is 6cm.
   A. 28.29
   B. 27.89
   C. 26.89
   D. 25.89

16. Write 200mm: 50cm as a ratio in its simplest form.
   A. 20 : 5
   B. 2 : 50
   C. 20 : 50
   D. 2 : 5

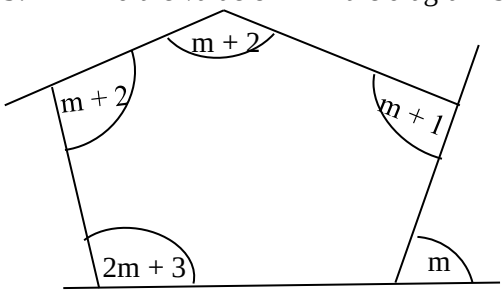
17. Find the simple interest on GH¢11.50 at 2% per annum for a year.
   A. GH¢ 23.00
   B. GH¢ 2.30
   C. 33Gp
   D. 23Gp

18. Given that s= $\begin{pmatrix} -1 \\ 3 \end{pmatrix}$ and t = $\begin{pmatrix} 2 \\ -4 \end{pmatrix}$, find $\frac{1}{2}(s-t)$

   A. $\begin{pmatrix} 1\frac{1}{2} \\ -3\frac{1}{2} \end{pmatrix}$ B. $\begin{pmatrix} -1\frac{1}{2} \\ 3\frac{1}{2} \end{pmatrix}$

   C. $\begin{pmatrix} -1\frac{1}{2} \\ -3\frac{1}{2} \end{pmatrix}$ D. $\begin{pmatrix} 1\frac{1}{2} \\ 3\frac{1}{2} \end{pmatrix}$

19. Find the value of m in the diagram below:



   A. 58^0
   B. 98^0
   C. 108^0
   D. 88^0

20. The scale of a map is 1 : 25,000. Find in km, the actual distance represented by 4.5cm on the map.
   A. 11.25km
   B. 112.5km
   C. 1.125km
   D. 1125km

21. Five identical balls in a bag are labeled with the first five prime numbers. What is the probability of selecting a ball with a label between 2 and 8?
   A. $\frac{2}{5}$ B. $\frac{4}{5}$
   C. $\frac{3}{5}$ D. $\frac{1}{5}$

22. Find the inverse of the mapping $x \rightarrow \frac{2}{3}x - 4$
   A. $3x - \frac{4}{2}$ B. $\frac{2}{3}x + 4$
   C. $\frac{3x+12}{2}$ D. $\frac{3x-4}{2}$

23. Write 36 as a product of prime factors.
   A. 2×3^2 B. $2^2 \times 3^2$
   C. $2^2 \times 3$ D. $2^2 \times 3^3$

24. If k = 3, r = 8, e = 5 and n =11, evaluate $\frac{(n-r)}{k} + e^2$.
   A. 27
   B. 26
   C. 25
   D. 24

25. The length, breadth and height of a rectangular tank are 10m, 6m and 2m respectively. Find two – thirds of the volume of the tank.
   A. $100m^3$ B. $90m^3$
   C. $105m^3$ D. $80m^3$

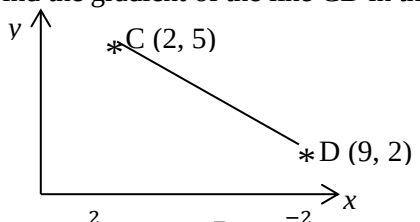
26. The product of three consecutive prime numbers is 105. What is the least of the consecutive prime numbers?

A. 7
B. 5
C. 3
D. 2

27. The length and breadth of a rectangle is 6.3m and 3.5m respectively. Find the area, correct to three significant figures.

A. $22.05m^2$ B. $22.0m^2$
C. $22.1m^2$ D. $22m^2$

28. Find the gradient of the line CD in the diagram below.

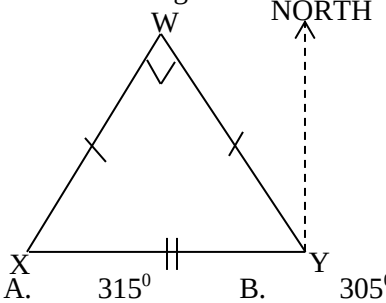


A. $\frac{2}{5}$ B. $\frac{-2}{5}$
C. $\frac{3}{7}$ D. $\frac{-3}{7}$

29. 270 mangoes were sold at 3 for 95Gp. How much will Chris get if he sells all the mangoes?

A. GH¢80.00 B. GH¢83.50
C. GH¢85.50 D. GH¢84.00

30. The diagram below has an isosceles triangle WXY. Find the bearing of W from Y.



A. 315^0 B. 305^0
C. 275^0 D. 255^0

31. Simplify $\frac{25a^7b^3}{5a^4c^2}$

A. $5a^3b^3c^{-2}$ B. $5a^2b^3c^2$
C. $5a^3b^3c^2$ D. $5a^3b^2c^{-2}$

32. A motor rider covered 216km in 2 hours. Find in metres per second the average speed of the car.

A. 108m/s B. 55m/s
C. 45m/s D. 30m/s

33. The marks obtained by seven pupils in a test are 3, 6, 7, 9, 8, 5, 4. What is the range?

A. 3 B. 7
C. 5 D. 6

34. Simplify $\frac{4\frac{2}{3}-3\frac{1}{3}}{\frac{2}{9}}$

A. 4 B. 5
C. 6 D. 7

35. Find the value of x and y if E = $\begin{pmatrix} 8 \\ -4+y \end{pmatrix}$, D = $\begin{pmatrix} 3-5x \\ -7 \end{pmatrix}$ and E = D.

A. $x = 1, y = -3$
B. $x = -1, y = 3$
C. $x = -1, y = -3$
D. $x = 1, y = 3$

36. What is the Lowest Common Multiples of 18, 24 and 32?

A. 186 B. 188
C. 286 D. 288

37. Eight added to trice a number is greater than one-third of that number. Find the number.

A. $x > -3$
B. $x < 3$
C. $x > -2.4$
D. $x < 2.4$

38. Find the Highest Common Factor (H.C.F) of 28, 56 and 84

A. 14 B. 12
C. 8 D. 4

39. Find the value of m in the mapping below:

x	0	1	2	3	4	m
y	-9	-6	-3	0	3	18

A. 9 B. -9
C. 6 D. 5

40. Find the image of the point (-2, 5) under a translation by the vector $\begin{pmatrix} -2 \\ -3 \end{pmatrix}$.

A. $\begin{pmatrix} 4 \\ 2 \end{pmatrix}$ B. $\begin{pmatrix} -4 \\ 2 \end{pmatrix}$
C. $\begin{pmatrix} 4 \\ -2 \end{pmatrix}$ D. $\begin{pmatrix} -4 \\ -2 \end{pmatrix}$