BASIC EDUCATION MOCK EXAMINATION

December

MATHEMATICS 2 & 1 **2&1**

Essay and Objective

2 hours

Name: .....

Index Number: .....

ONE VISION EXAMINATIONS CENTRE (OVEC)

BASIC EDUCATION MOCK EXAMINATION

December **MATHEMATICS 2 & 1** **2 hours**

Essay and Objective

BASIC 9

*Do **not** open this booklet until you are told to do so. While you are waiting, read and observe the following instructions. Write your **name** and **index number** in the spaces provided above.*

*This booklet consists of two paper. Answer Paper 2 which comes first in your answer booklet and Paper 1 on the Objective Test answer sheet. Paper 2 will last **1** hour after which answer booklet will be collected. Do **not** start Paper 1 until you are told to do so. Paper 1 will last **1** hour.*

*The use of calculators is **not** allowed.*

PAPER 2 1 hour

Essay

*Answer **four** questions **only**.*

***All** questions carry equal marks.*

***All** working must be clearly shown. Marks will **not** be awarded for **correct** answers without corresponding working.*

1. (a) In an examination, 80 candidates sat for Mathematics and Science. 35% of them passed Mathematics, 55% passed Science, 13 candidates **failed** both subjects, and the rest passed both subjects.

   i. How many students passed in:

      (α) Mathematics?

      (β) Science?

   ii. Illustrate the information on a Venn diagram.

   iii. Using the Venn diagram, find the number of candidates who passed in:

      (α) **both** subjects;

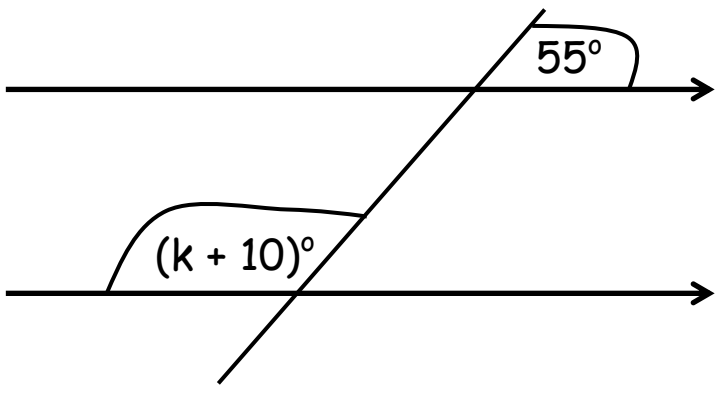
      (β) **only** one subject.

   (b) Simplify $\frac{2}{m} + 5p - \frac{3}{n}$ when m = 8, p = –1 and n = 9.

2. (a) The price of a Nasco Television which costs GH¢ 1250.00 is reduced by 10% and a Franko Television which costs GH¢ 1400.00 was reduced by 18%. If Mumuni buys four Nasco and six Franko televisions, how much would he pay in all?

   (b) Simplify 0.015 × 2.48 leaving the answer in standard form.

   (c) Find the value of k in the diagram below.



3. (a) A sack full of flour weighs 72 kilograms. If $\frac{5}{8}$ of the flour was used for pastries,

   i. find the weight of flour used.

   ii. what percentage of the flour was left?

   (b) Simplify $5\sqrt{45} + \sqrt{80}$

   (c) An amount of money worth GH¢ 12,500.00 is shared between Asantewaa and her five friends in the ratio 2 : 3 respectively. The five friends shared their portion equally, find **each** one's share.

4. (a) A pole leans against a wall at a point W from the same horizontal ground. The angle of elevation from the foot of the pole to the point W is 55°, and the foot of the pole is 3 metres away from the wall. (Take tan 55° = $\sqrt{5}$ and cos 55° = $\frac{1}{3}$)

   i. Represent the information with a diagram.

   ii. Find the

   (α) height of the wall at point W;

   (β) length of the pole.

   (b) Simplify: $1\frac{1}{6} \div \frac{4}{9}$ of $\left(\frac{2}{3} + \frac{1}{4}\right)$

   (c) Evaluate $3^3 \div (2^3 + 7^0) - 4 \times 2$

5. (a) The table shows the favourite fruits of some students in a Basic school.

Favourite fruits	Number of students
Mango	24
Pear	5
Apple	10
Orange	20
Grape	13

i. Draw a pie chart for the distribution above.

ii. Calculate correct to the nearest whole number, the percentage of students who like mango.

iii. What is the probability of meeting a student whose favourite fruit is orange?

(b) Find the sum of **3(w + y)** and **w^2** when w = –2 and y = 5.

6. The table has the relation y = –x – 1 and y = 2x.

X	– 3	– 2	– 1	0	1	2	3	4
y_1 = – x–1		1				– 3		
y_2 = 2x		– 4		0		4		

(a) i. Copy and complete the table for the given relation.

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

iii. Plot on the same graph sheet the ordered pairs (x, y) from the mapping and join with a straight line.

(b) Using the graph, find the;

i. positive value of y when x = 2.5

ii. negative value of x when y = – 3

END OF ESSAY TEST

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.

BASIC 9

1 hour

PAPER 1

OBJECTIVE TEST

OBJECTIVE TEST

Answer all questions on your Objective Test answer sheet.

1. Use **2B** pencil throughout.
2. On the pre-printed answer sheet, check that the following details are **correctly** printed: Your **surname** followed by **other names**, the *Subject Name,* your *Index Number, Centre Number* and the *Paper Code*.
3. In the boxes marked *Candidate Number, Centre Number* and *Paper Code*, **reshade** each of the shaded spaces.
4. An example is given below. This is for a female candidate whose name is Janet OWUSU, Her *index number* is **772384188** and she is writing the examination at *Centre Number* **77234**. She is offering ***Mathematics 1*** and the *Paper Code* is **0301**.

ONE VISION EXAMINATIONS CENTRE (OVEC)

BASIC EDUCATION MOCK EDUCATION

OBJECTIVE ANSWER SHEET

CANDIDATE NAME: **OWUSU JANET**	**SUBJECT NAME:** **MATHEMATICS 1**

1. Use 2B pencil. Press firmly.
2. Answer question by choosing one letter and then, shade through the letter chosen like this [A] [B] [C] [D] [E]
3. If you want to change an answer, rub out your first mark completely.
4. If only four alternatives answers are given for each question, ignore the letter E
5. Your question paper may have fewer than 100 questions.

CANDIDATE NUMBER								
7	7	2	3	8	4	1	8	8
[0]	[0]	[0]	[0]	[0]	[0]	[0]	[0]	[0]
[1]	[1]	[1]	[1]	[1]	[1]	~~[1]~~	[1]	[1]
[2]	[2]	~~[2]~~	[2]	[2]	[2]	[2]	[2]	[2]
[3]	[3]	[3]	~~[3]~~	[3]	[3]	[3]	[3]	[3]
[4]	[4]	[4]	[4]	[4]	~~[4]~~	[4]	[4]	[4]
[5]	[5]	[5]	[5]	[5]	[5]	[5]	[5]	[5]
[6]	[6]	[6]	[6]	[6]	[6]	[6]	[6]	[6]
~~[7]~~	~~[7]~~	[7]	[7]	[7]	[7]	[7]	[7]	[7]
[8]	[8]	[8]	[8]	~~[8]~~	[8]	[8]	~~[8]~~	~~[8]~~
[9]	[9]	[9]	[9]	[9]	[9]	[9]	[9]	[9]

CENTRE NUMBER				
7	7	2	3	4
[0]	[0]	[0]	[0]	[0]
[1]	[1]	[1]	[1]	[1]
[2]	[2]	~~[2]~~	[2]	[2]
[3]	[3]	[3]	~~[3]~~	[3]
[4]	[4]	[4]	[4]	~~[4]~~
[5]	[5]	[5]	[5]	[5]
[6]	[6]	[6]	[6]	[6]
~~[7]~~	~~[7]~~	[7]	[7]	[7]
[8]	[8]	[8]	[8]	[8]
[9]	[9]	[9]	[9]	[9]

PAPER CODE			
0	3	0	1
~~[0]~~	[0]	~~[0]~~	[0]
[1]	[1]	[1]	~~[1]~~
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[3]	~~[3]~~	[3]	[3]
[4]	[4]	[4]	[4]
[5]	[5]	[5]	[5]
[6]	[6]	[6]	[6]
[7]	[7]	[7]	[7]
[8]	[8]	[8]	[8]
[9]	[9]	[9]	[9]

For Supervisors only.

If candidate is absent shade this space.

*Answer **all** questions in this section.*

*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 answer space which bears the same letter as the option you have chosen. Give only **one** answer to **each** question. An example is given below*

If $3n + 2 = 8$, find the value of n.

A. 10
B. 6
C. 3
D. 2

The correct answer is '2' which is lettered D and therefore answer space D would be shaded.

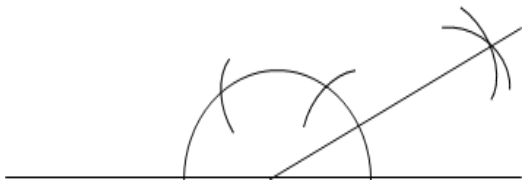
[A] [B] [C] [■D■]

Think carefully before you shade the answer spaces: erase completely any answer you wish to change.

Do all rough work on this question paper. Now answer the following questions

1. Find the product of (5w – 4) and (5w + 4).
   A. 25w – 16
   B. $10w^2 + 8$
   C. $25w^2 - 16$
   D. $10w^2 + 8$
2. Given that 3m = – 6 – 9n, find n when m = –1.
   A. $-\frac{1}{3}$
   B. – 1
   C. $\frac{2}{3}$
   D. 0
3. Akua has nineteen GH¢20.00 notes, thirteen GH¢5.00 notes, and seven 50Gp coins in her bag. What is the total amount of money in her bag?
   A. GH¢ 448.50
   B. GH¢ 449.00
   C. GH¢ 444.50
   D. GH¢ 408.50
4. Which of the following sets represents set Y = {factors of 42}?
   A. Y = {1, 2, 3, 4, 6, 14, 21, 42}
   B. Y = {1, 2, 3, 6, 7, 14, 21, 42}
   C. Y = {1, 2, 4, 6, 7, 14, 21, 42}
   D. Y = {1, 2, 3, 7, 14, 21, 28, 42}
5. Factorize 5mp – np + 15m – 3n completely.
   A. (p + 3) (5m – n)
   B. (p + 5) (3m – n)
   C. (p – 3) (5m + n)
   D. (p – 5) (3m + n)
6. A piece of button sells at 35Gp at a shop. How many buttons can be bought with GH¢ 21.00?
   A. 6
   B. 30
   C. 60
   D. 150
7. Multiply 0.0435 by 0.008, leaving the answer in standard form.
   A. 3.48×10^{-5}
   B. 3.48×10^{3}
   C. 3.48×10^{4}
   D. 3.48×10^{-4}
8. Find the gradient of the line which passes through the points (–1, 4) and (6, –3).
   A. 1
   B. 0
   C. 2
   D. –1
9. A bottle has 372 ml of water in it. If it is two-thirds full, find the total capacity of the bottle.
   A. 124 ml
   B. 186 ml
   C. 490 ml
   D. 558 ml
10. A point (0, –2) is translated by the vector $\begin{pmatrix} 4 \\ -5 \end{pmatrix}$. Find the image of the point.
    A. (4, 7)
    B. (4, –3)
    C. (4, –7)
    D. (4, 9)
11. Express 504 as a product of prime numbers.
    A. $2^3 \times 3^2 \times 7$
    B. $2^3 \times 3 \times 7$
    C. $2^2 \times 3^2 \times 7$
    D. $2^2 \times 3^3 \times 7$
12. Solve the equation:
    $3(6 + 7y) + 2(1 - 5y) > 31$
    A. $y > 1$
    B. $y > -1$
    C. $y < 0$
    D. $y < -1$

13. Evaluate $\frac{2}{3}+\frac{4}{5}\div\frac{8}{15}-\frac{2}{3}$
    A. $\frac{3}{4}$
    B. $2\frac{1}{3}$
    C. $1\frac{1}{2}$
    D. $1\frac{2}{3}$
14. Simplify $9\sqrt{2}-\sqrt{98}$
    A. $12\sqrt{2}$
    B. $2\sqrt{2}$
    C. $8\sqrt{2}$
    D. $6\sqrt{2}$
15. The diagram below shows the construction of



    A. angle 30°
    B. angle 45°
    C. angle 60°
    D. angle 75°
16. Esinam and Etornam are 14 and 17 years old respectively. Find the sum of their ages 24 months ago.
    A. 31
    B. 29
    C. 28
    D. 27
17. Simplify $2^{5(x-1)} \div 2^{x-2}$
    A. A. 2^{6x-1}
    B. B. 2^{4x-3}
    C. C. 2^{4x+1}
    D. D. 2^{3x-2}
18. If $\sqrt{3}=1.72$ find the value of $\sqrt{27}$ leaving the answer in 1 decimal place.
    A. 5.1
    B. 6.3
    C. 5.2
    D. 4.9
19. A box contains 20 green and 16 white cards of the same size. If a card is chosen at random from the box, what is the probability that it is green?
    A. $\frac{1}{10}$
    B. $\frac{4}{5}$
    C. $\frac{5}{9}$
    D. $\frac{4}{9}$
20. Adamu and Isaka started a business with GH¢ 45,000.00. If their contributions were in the ratio 5 : 7 respectively, find Isaka's contribution.
    A. GH¢ 3,750.00
    B. GH¢ 26,250.00
    C. GH¢ 18,750.00
    D. GH¢ 12,500.00
21. What is the missing number in the sequences: 1, 2, 4, 7, 11, 16, ……, 29.
    A. 17
    B. 19
    C. 22
    D. 25
22. The population of a town is 10,001. If there are 4576 males, express the number of males in three significant figures.
    A. 5430
    B. 5420
    C. 5000
    D. 5400
23. A cyclist travelled 19 km in two hours and thirty minutes. He spent 30 minutes on the first 4 km and the same time on each of the remaining km. How many minutes did he spend on each of the remaining km?
    A. 7
    B. 8
    C. 9
    D. 10
24. Naomi packed 1518 biscuits in a number of sachets. If each sachet can only hold 3 biscuits, how many sachets will be filled?
    A. 56
    B. 506
    C. 5006
    D. 560
25. Given the vectors $\mathbf{m}=\begin{pmatrix}4\\-5\end{pmatrix}$ and $\mathbf{n}=\begin{pmatrix}2\\3\end{pmatrix}$ find $3\mathbf{m}-\mathbf{n}$.
    A. $\begin{pmatrix}-10\\-18\end{pmatrix}$
    B. $\begin{pmatrix}14\\-12\end{pmatrix}$
    C. $\begin{pmatrix}6\\-10\end{pmatrix}$
    D. $\begin{pmatrix}10\\-18\end{pmatrix}$

26. If 0.68 is expressed as a fraction in the lowest form, the numerator is
    A. 17
    B. 19
    C. 20
    D. 2

27. Seven poultry birds eat 315 grams of maize daily. How many birds will eat 585 grams of maize?
    A. 9
    B. 11
    C. 13
    D. 15

28. A man spent GH¢ 2240.00 of his monthly salary GH¢2800.00 and gave the rest to his children. What percentage of the money was given to his children?
    A. 10%
    B. 18%
    C. 20%
    D. 27%

29. What type of angle is $(4t - 5)^o$ when t = 16?
    A. Acute
    B. Obtuse
    C. Straight
    D. Reflex

30. Find the total distance around a circular field if the radius of the field is 280 metres. [Take $\pi = \frac{22}{7}$]
    A. 440 m
    B. 880 m
    C. 1760 m
    D. 2520 m

31. Solve $-10 + 6r = 2(r + 5)$
    A. $r = -10$
    B. $r = 0$
    C. $r = \frac{1}{5}$
    D. $r = 5$

32. Given that $0.08 \div k = 0.05$, find the value of k.
    A. 16
    B. 1.6
    C. 0.16
    D. 0.016

33. Expand and simplify $2(-7 + 3y) + 5(6 - y)$.
    A. $16 + y$
    B. $14 - 2y$
    C. $11 + 4y$
    D. $18 - 3y$

34. What percentage of 3 days is 9 hours?
    A. 12.5%
    B. 18.5%
    C. 20%
    D. 25%

35. Solve $3^x = 4^0 + 5^2 + 1^3$.
    A. x = 1
    B. x = 2
    C. x = 3
    D. x = 4

36. Thrice a number is three more than eighteen. What is the number?
    A. 4
    B. 5
    C. 6
    D. 7

37. A girl walks through a path which divides the distance between two points A and B into equal halves. Which of the following **best** describes the locus of the girl?
    A. An arc passing through line AB
    B. A circle passing through line AB
    C. Perpendicular bisector of line AB
    D. Perpendicular from point K to B

38. The distance from one point to another on the circumference of a circle is
    A. chord
    B. semi-circle
    C. arc
    D. segment

39. The bearing of Wassa from Mim is 119^o. Find the bearing of Mim from Wassa.
    A. 019^o
    B. 299^o
    C. 301^o
    D. 319^o

40. Which of the following quadrilaterals have no sides equal?
    A. Kite
    B. Rhombus
    C. Trapezium
    D. Parallelogram