

Mock Examination
MATHEMATICS 2 & 1
 Essay and Objective Test
 2 hours

Name:.....
 Index Number:.....

2 & 1

SUPERB MOCK

Basic Education Certificate Examination

MATHEMATICS 2 & 1

2 hours

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

This booklet consists of two papers. Answer Paper 2 which comes first, in your answer booklet and Paper 1 on your Objective Test answer sheet. Paper 2 will last 1 hour after which the 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 calculator is **not** allowed.

INSTRUCTIONS FOR OBJECTIVE TEST

Answer all the questions on your Objective Test answer sheet.

1 hour

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 Number*, *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 Erica Afiba MANU. 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.

**BASIC EDUCATION CERTIFICATE EXAMINATION
 OBJECTIVE ANSWER SHEET**

CANDIDATE NAME: MANU ERICA AFIBA	SUBJECT NAME: MATHEMATICS 1
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- | | |
|--|---|
| 1. Use 2B pencil, press firmly. | your first mark completely. |
| 2. Answer each question by choosing one letter and then, shade through the letter chosen like this [A] [B] [C] [D] [E] | 4. If only four alternative answers are given for each question, ignore the letter E. |
| 3. If you want to change an answer, erase | 5. Your question paper may have fewer than 60 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]
[2]	[2]	[2]	[2]
[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.

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PAPER 2: ESSAY

Answer four questions only. All questions carry equal marks. All workings must be clearly shown. Marks will not be awarded for correct answers without corresponding working.

1. (a) Adwoa bought a 42 inch television for GH¢1,210 including VAT of 21%. Calculate the: (i) Actual cost of the television, (ii) VAT paid on the television.
- (b) (i) Evaluate $17^2 - 2$ of $(13 + 2^2 + 3^5) - 3 \times (2^5 + 8)$.
(ii) Simplify without using tables or calculator $(89.23^2 - 10.77^2)$.
- (c) (i) The sum of the ages of twins and their sister who is 7 years younger than them is 35. Find the ages of each of them.
(ii) Afrifa can sweep 3 rooms in 18 minutes. Appiah can also sweep 3 rooms in 21 minutes. Which of them sweep faster?

2. (a) A trader borrows GH¢5000 from a bank at 10% per annum simple interest.
(i) How much interest does she pay in 3 years?
(ii) What is the total amount she pays after 3 years?
- (b) Copy and complete the magic square using any of the numbers 1, 2, 3, 4, 6, and 7.

8		
	5	
	9	

Use each number once, such that the sum of the three numbers, horizontally, vertically or diagonally are equal.

- (c) (i) The sum of the ages of Yaw and Kwame is 29 years. Yaw is 3 years older than Kwame. How old are the two people?
(ii) Make u the subject in the expression $d^2 + 3u = \frac{y}{x}$.

3. (a) A teacher went to class with a number of exercise books. He gave $\frac{1}{9}$ of the books to Kuwornu and $\frac{2}{5}$ to Amina. Amina had 18 books. Find the number of books.
(i) Kuwornu had, (ii) the teacher took to the class.
- (b) Find the truth set of $\frac{8x-3}{2} - \frac{10x-6}{4} - \frac{12x-1}{12} \geq 4\frac{1}{12} + \frac{8x-3}{2}$.
- (c) (i) Simplify $\sqrt{8} + \frac{2}{\sqrt{2}}$.
(ii) Given that $\sqrt{10} = 3.1623$, find the value of $\sqrt{160}$, correct to 2 significant figures.

4. (a) A number is selected at random from each of the set
 $P = \{x: x \text{ is a prime number less than } 30\}$ and
 $Q = \{x: 10 < x \leq 21\}$.
(i) List the elements in P and Q .
(ii) Find the probability that the number selected from P is more than 11 and the number selected from Q is even.
- (b) Evaluate $\frac{0.0024 \times 0.0048}{0.002 \times 0.012}$ leaving your answer in standard form.
- (c) A student travels 240 km in 4 hours.
(i) Find her average speed.
(ii) How long will she take to travel 360 km at the same speed?

5. (a) A group of friends wanted to make contributions to buy a gift for a friend birthday party. The data below shows the suggestions of how much they wish each should pay.
GH¢7 GH¢10 GH¢15 GH¢9 GH¢12 GH¢8 GH¢10
GH¢7 GH¢8 GH¢7 GH¢10 GH¢12 GH¢15
Calculate the: (i) Mode, (ii) Median (iii) Mean for the data.
- (b) A cylindrical tank has a radius of 3 m and a height of 7 m. Find its
(i) Curved surface area (ii) Volume (Take $\pi = 3.142$)
- (c) Solve for the equation $\frac{1}{2}(3x + 4) - \frac{3}{8}(16x - 4) = -\frac{1}{2}(3x + 5)$

6. (a) Using a scale of 2cm : 1 units on both axes, draw on a graph sheet two perpendicular axes Ox and Oy .
(i) On the same graph sheet mark, the x -axis from -5 to 5 and the y -axis from -6 to 6 .
(ii) Draw, labelling all the vertices clearly together with their coordinate triangle ABC with vertices $A(3, 5)$, $B(0, 2)$ and $C(5, 1)$.
(iii) Draw the image triangle $A_1B_1C_1$ of triangle ABC under a reflection in the line $x = 0$.
(iv) Draw the image triangle $A_2B_2C_2$ of triangle ABC under an anticlockwise rotation of 90° about the origin.
(v) Draw the image triangle $A_3B_3C_3D_3$ of triangle ABC with a scale factor -1 from the origin.
- (b) (i) Find in index form highest common factor (HCF) of $2^3 \times 3^2 \times 5^4$ and $2^4 \times 5^2 \times 7^1$.
(ii) Factorize the expression $3x^2 - 2x - 5$ completely.

MATHEMATICS
OBJECTIVE TEST
Answer all questions

1. In the number 9,654,321,087, which digit is in the hundred million places?
A. 9
B. 6
C. 5
D. 8
2. Which of the following is an example of quantitative data?
A. Gender
B. Colour
C. Length
D. Marital Status
3. Solve $3(1 - y) < \frac{1}{3}(3 + y)$
A. $y > \frac{3}{5}$
B. $y > 1\frac{-3}{4}$
C. $y < \frac{3}{4}$
D. $y < \frac{-3}{4}$
4. Express 3,200 in standard form.
A. 3.20×10^{-3}
B. 3.2×10^3
C. 3.20×10^4
D. 3.20×10^2
5. How many vertices has a pentagonal pyramid?
A. 6
B. 12
C. 10
D. 13
6. Evaluate $\sqrt{75} + \sqrt{18} - \sqrt{27}$.
A. $2\sqrt{3} - 3\sqrt{2}$
B. $2\sqrt{3} + 3\sqrt{2}$
C. $2\sqrt{3} - 3\sqrt{2}$
D. $5\sqrt{6}$
7. Which of the following is not a Pythagorean triple?
A. 7, 24, 25
B. 3, 4, 5
C. 5, 12, 13
D. 15, 17, 25
8. The angles of a triangle are in the ratio 3: 2: 1. Find the value of the biggest angle.
A. 180°
B. 90°
C. 45°
D. 30°
9. Correct 784.0632 to 4 significant figures
A. 784.063
B. 78.406
C. 7.840
D. 784.1
10. If $m = \binom{2}{4}$ and $n = \binom{-3}{2}$. Find $2m - n$
A. $\binom{1}{6}$
B. $\binom{1}{10}$
C. $\binom{7}{6}$
D. $\binom{7}{10}$
11. A man invested GHC 800.00 in a bank at a simple interest rate of 5% per annum. Find his total amount in the bank at the end of one year.
A. GH¢ 840.00
B. GH¢ 860.00
C. GH¢ 900.00
D. GH¢ 960.00
12. Simplify $53.8^2 - 46.2^2$
A. 7.60
B. 760
C. 560
D. 6.70
13. If $U = \{1, 3, 5, 7, 9, 11\}$, $A = \{1, 3, 7, 11\}$ and $B = \{3, 5, 7, 9\}$, find $A \cap B$.
A. $\{1, 3, 11\}$
B. $\{1, 3, 5\}$
C. $\{1, 7, 9\}$
D. $\{1, 11\}$
14. Simplify $\frac{2^3 \times 3^3 \times 3^3}{2 \times 2 \times 3^3}$
A. 6
B. 108
C. 12
D. 54
15. Arrange the fractions $\frac{3}{4}, \frac{2}{3}, \frac{4}{5}$ in ascending order of magnitude.
A. $\frac{3}{4}, \frac{2}{3}, \frac{4}{5}$
B. $\frac{4}{5}, \frac{2}{3}, \frac{3}{4}$
C. $\frac{4}{5}, \frac{3}{4}, \frac{2}{3}$
D. $\frac{2}{3}, \frac{3}{4}, \frac{4}{5}$
16. The volume of a cylindrical tank is 1,100 m^3 . If the diameter of its base is 10m, find its height. (Take $\pi = \frac{22}{7}$)
A. 24.3 m
B. 14.0 m
C. 10.5m
D. 15.7m
17. How many subsets has the set $x = \{x: 3 < x \leq 7\}$, where x is an integer
A. 8
B. 5
C. 16
D. 4
18. Madam Janet wants to know which of the teachers in her school is liked best by most of the students. Which of the following methods is most suitable for collecting the data?
A. Experiment
B. Database
C. Questionnaire
D. Observation
19. Find the probability if the letter E is selected from the word EQUATION
A. $\frac{1}{8}$
B. $\frac{3}{8}$
C. $\frac{2}{10}$
D. 8

20. Solve for y in the equation $2^y = 1024$.

A. $y = 15$

C. $y = 25$

B. $y = 10$

D. $y = 45$

21. If $y = c + bx^2$, find y when $c = \frac{14}{5}$, $b = \frac{4}{5}$ and $x = 2$.

A. 3

C. 6

B. 4

D. 7

22. Find the image of the point $(-2, 3)$ under the mapping $\begin{pmatrix} x \\ y \end{pmatrix} \rightarrow \begin{pmatrix} x+y \\ 3x+2y \end{pmatrix}$

A. $(2, 0)$

C. $(1, 12)$

B. $(-1, 0)$

D. $(1, 0)$

23. Mr. Abaido is driving his car at 60km/h. How far does he drive in 2 hours 30 minutes?

A. 30km

C. 120km

B. 60km

D. 150km

24. What is the next number in the sequence: 15,000; 25,000; _____?

A. 35,000

C. 55,000

B. 45,000

D. 65,000

25. Find the median of the numbers 3, 3, 4, 5, 6, 7

A. 5.2

C. 4.5

B. 3.7

D. 6

26. If 5 boys took 14 days to cultivate a piece of land, how long will it take 7 boys working at the same rate to cultivate the land?

A. 14 days

C. 10 days

B. 12 days

D. 8 days

27. Evaluate $1001^2 - 1$

A. 60030

C. 200300

B. 4002

D. 1002000

28. Expand $(2x + y)(2x - y)$

A. $2x^2 - y^2$

C. $2x^2 + 4xy - y^2$

B. $4x^2 - y^2$

D. $4x^2 + 4xy - y^2$

29. What is the total cost of x shirts at GH¢5.00 each and y shirts at GH¢1.50 each?

A. $5x + 1.5y$

C. $5(x + 1.5y)$

B. $5y + 1.5x$

D. $1.5(5x + y)$

30. Find the next two numbers in the sequence, 2, 5, 9, 14, 20, _____, _____

A. 26, 35

C. 26, 34

B. 27, 35

D. 27, 34

31. The distance from the centre of a circle to any point on it is called

A. circumference

C. radius

B. diameter

D. sector

32. Express 1352 as a product of prime factors.

A. $2^3 \times 13^3$

C. $2^2 \times 13^3$

B. $2^3 \times 13^2$

D. $2^2 \times 13^2$

33. Find the product of $4xy^4$ and x^2yz .

A. $4x^3y^4z$

C. $4x^2y^4z$

B. $4x^3y^5z$

D. $4x^3y^4$

34. Find the slope of the line $3x - 33 = 6y$

A. -3

C. $\frac{1}{2}$

B. $-\frac{1}{2}$

D. 3

35. Make P the subject of the relation

$R = \frac{(P+Q)}{2}$

A. $P = Q - 2R$

C. $P = 2R + Q$

B. $P = 2R - Q$

D. $2Q + R$

36. Simplify $\frac{0.00492}{0.041}$

A. 0.012

C. 1.2

B. 0.12

D. 12.0

37. Which of the following dimensions of a triangle form the sides of a right angled triangle?

A. 3cm, 4cm, 6cm

B. 3cm, 5cm, 7cm

C. 5cm, 12cm, 13cm

D. 5cm, 13cm, 17cm

38. Simplify $\left[\frac{5 \times (-6)}{-11 - 4}\right] \times (-4)$

A. -8

C. 12

B. 10

D. 8

39. An angle which is more than 180° but less than 360° is

A. a reflex angle

B. a right angle

C. an obtuse angle

D. an acute angle

40. The diameter of a circle is 18m. Find the area of the circle. [Take $\pi = \frac{22}{7}$]

A. $120.0m^2$

C. $235.5m^2$

B. $254.6m^2$

D. 150

**MARKING SCHEME: MATHEMATICS
OBJECTIVE TEST**

- | | | | | | | | |
|-----|---|-----|---|-----|---|-----|---|
| 1. | B | 11. | A | 21. | C | 31. | C |
| 2. | C | 12. | B | 22. | D | 32. | B |
| 3. | A | 13. | D | 23. | D | 33. | B |
| 4. | B | 14. | D | 24. | A | 34. | C |
| 5. | A | 15. | D | 25. | C | 35. | B |
| 6. | B | 16. | B | 26. | C | 36. | B |
| 7. | D | 17. | C | 27. | D | 37. | C |
| 8. | B | 18. | C | 28. | B | 38. | A |
| 9. | D | 19. | A | 29. | A | 39. | A |
| 10. | C | 20. | B | 30. | B | 40. | B |

- | | | | | |
|----|-----|------|--|--|
| 1. | (a) | (i) | Actual cost = $\frac{100}{121} \times \text{Gh}\text{¢}1,210$
= Gh¢1,000 | M1
A1 |
| | | (ii) | VAT = $\frac{21}{100} \times \text{Gh}\text{¢}1,000$
= Gh¢210 | M1
A1 |
| | (b) | (i) | $17^0 \div 2 \text{ of } (13 + 2^2 + 3^0) - 3 \times (2^5 \div 8)$
$1 \div 2 \text{ of } (13 + 4 + 1) - 3 \times (32 \div 8)$
$1 \div 2 \text{ of } (18) - 3 \times (4)$
$\frac{1}{2} \times 18 - 12$
$1 \times 9 - 12$
$9 - 12$
-3 | B½
B½
M½
B½
M½
A1 |
| | | (ii) | $(89.23^2 - 10.77^2)$
$(89.23 - 10.77)(89.23 + 10.77)$
$(78.46)(100)$
7846 | M½
B½
A1 |
| | (c) | (i) | Let m = age of the twins
$m - 7$ = age of their younger sister
$m + m + m - 7 = 35$
$3m - 7 = 35$
$3m = 35 + 7$
$3m = 42$
$\frac{3m}{3} = \frac{42}{3}$
$m = 14$
Each twin is 14 years old
Age of the younger sister = $m - 7$
= $14 - 7$
= 7 years | B½
B½
M½
B½
B½
A½
B½ |
| | | (ii) | Rate at which Afrifa can sweep a room = $\frac{18}{3} = 6$
Rate at which Appiah can sweep a room = $\frac{21}{3} = 7$
Therefore, Afrifa can sweep faster than Appiah. | M½
M½ |

- $$\begin{aligned} 2. \quad (a) \quad (i) \quad \text{Simple Interest} &= \frac{PRT}{100} \\ &= \frac{\text{GH¢}5000 \times 10 \times 3}{100} && \text{M1} \\ &= \text{GH¢}1500 && \text{A1} \end{aligned}$$

$$\begin{aligned}
 \text{(ii)} \quad \text{Amount} &= P + S.I \\
 &= \text{GH¢}5000 + \text{GH¢}1500 \\
 &= \text{GH¢}6500
 \end{aligned}$$

M1
A1

(b) Completed magic box

8	1	6
3	5	7
4	9	2

B3

(c) (i) Let x represent Kwame's age, Yaw is $x + 3$

B½

$$x + x + 3 = 29$$

M1

$$2x = 29 - 3$$

$$2x = 26$$

B1

$$\frac{2x}{2} = \frac{26}{2}$$

$$x = 13$$

A1

∴ Kwame's age is 13 years and Yaw's age is 16 years B½

$$\text{(ii)} \quad d^2 + 3u = \frac{y}{x^2}$$

$$x^2 \times d^2 + x^2 \times 3u = x^2 \times \frac{y}{x^2}$$

M1

$$x^2 d^2 + x^2 3u = y$$

B1

$$x^2 3u = y - x^2 d^2$$

M1

$$u = \frac{y - x^2 d^2}{3x^2}$$

A1

15 Marks

3. (a) (i) Kuwornu = $\frac{1}{9} \times \frac{5}{2} \times 18$ books

M½

$$= \frac{1}{9} \times 45 \text{ books}$$

B½

$$= 5 \text{ books}$$

A1

(ii) Total number of books = $\frac{5}{2} \times 18$ books

M1

$$= 45 \text{ books}$$

A1

$$\begin{aligned}
 \text{(b)} \quad \frac{8x-3}{2} - \frac{10x-6}{4} - \frac{12x-1}{12} &\geq 4\frac{1}{12} + \frac{8x-3}{12} \\
 12 \times \frac{8x-3}{2} - 12 \times \frac{10x-6}{4} - 12 \times \frac{12x-1}{12} &\geq 12 \times \frac{49}{12} + 12 \times \frac{8x-3}{12} \quad \text{M1} \\
 6(8x-3) - 3(10x-6) - (12x-1) &\geq 49 + 6(8x-3) \quad \text{B½} \\
 48x - 18 - 30x + 18 - 12x + 1 &\geq 49 + 48x - 18 \quad \text{B½} \\
 48x - 48x - 30x - 12x &\geq 49 - 1 - 18 + 18 - 18 \\
 -42x &\geq 30 \\
 \frac{-42x}{-42} &\leq \frac{30}{-42} \\
 x &\leq -\frac{5}{7}
 \end{aligned}$$

B1

M½

A1

$$\text{Truth set} = (x: x \leq -\frac{5}{7})$$

B½

$$\text{(c) (i)} \quad \sqrt{8} + \frac{2}{\sqrt{2}} = \sqrt{8} + \frac{2}{\sqrt{2}} \times \frac{\sqrt{2}}{\sqrt{2}}$$

M½

$$= \sqrt{8} + \frac{2\sqrt{2}}{2}$$

B½

$$= \frac{2\sqrt{8} + 2\sqrt{2}}{2}$$

M½

$$= \frac{2\sqrt{4 \times 2} + 2\sqrt{2}}{2}$$

$$= \frac{4\sqrt{2} + 2\sqrt{2}}{2}$$

B½

$$= \frac{6\sqrt{2}}{2}$$

B½

$$= 3\sqrt{2}$$

A1

$$\begin{aligned}
 \text{(ii)} \quad \sqrt{160} &= \sqrt{16 \times 10} \\
 &= 4\sqrt{10} \\
 \text{Given that } \sqrt{10} &= 3.1623, \\
 &= 4(3.1623) \\
 &= 12.6492 \\
 &= 13(2 \text{ significant figures})
 \end{aligned}$$

M½

A½

B½

A1

15 Marks

4. (a) (i) $P = \{2, 3, 5, 7, 11, 13, 17, 19, 23, 29\}$ B1
 $Q = \{11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21\}$ B1
(ii) Probability that the number selected from P is more than 11 and the number selected from Q is even $= \frac{5}{10} \times \frac{5}{11}$ M1
 $= \frac{1}{2} \times \frac{5}{11}$
 $= \frac{5}{22}$
The probability that the number selected from P is more than 11 and the number selected from Q is even is $\frac{5}{22}$ A1

(b)
$$\begin{aligned}
 &\frac{0.0024 \times 0.0048}{0.002 \times 0.012} \\
 &\frac{24 \times 10^{-4} \times 48 \times 10^{-4}}{2 \times 10^{-3} \times 12 \times 10^{-3}} \\
 &\frac{24 \times 48 \times 10^{-4} \times 10^{-4}}{2 \times 12 \times 10^{-3} \times 10^{-3}} \\
 &\frac{48 \times 10^{-4} \times 10^{-4}}{10^{-3} \times 10^{-3}} \\
 &\frac{48 \times 10^{-4+(-4)}}{10^{-3+(-3)}} \\
 &\frac{48 \times 10^{-8}}{10^{-6}} \\
 &48 \times 10^{-8-(-6)} \\
 &48 \times 10^{-2} \\
 &4.8 \times 10^1 \times 10^{-2} \\
 &4.8 \times 10^{-1}
 \end{aligned}$$

M1

B1

M½

B1

M½

B1

A1

- (c) (i) Average speed $= \frac{240 \text{ km}}{4 \text{ hours}}$ M1
 $= 60 \text{ km/h}$ A1½
(ii) Time $= \frac{\text{Distance}}{\text{Speed}}$ M1
Time $= \frac{360 \text{ km}}{60 \text{ km/h}}$ A1½
Time = 6 hours
∴ It will take her 6 hours to travel 360 km at the same speed 15 Marks

5. (a) Frequency distribution table

Amount (GH¢) (x)	Frequency (f)	Total (fx)
7	3	21
8	2	16
9	1	9
10	3	30
12	2	24
15	2	30
	$\Sigma f = 13$	$\Sigma fx = 130$

B3

Construction of x and y axes with correct labelling is B½ each = B1
 Correct plotting is B½ each = B6

- (iii) **Reflection in the line $x = 0$**
 $(x, y) \rightarrow (-x, y)$
 $A(3, 5) \rightarrow A_1(-3, 5)$ B½
 $B(0, 2) \rightarrow B_1(0, 2)$ B½
 $C(5, 1) \rightarrow C_1(-5, 1)$ B½
- (iv) **Anticlockwise rotation of 90°**
 $(x, y) \rightarrow (-y, x)$
 $A(3, 5) \rightarrow A_2(-5, 3)$ B½
 $B(0, 2) \rightarrow B_2(-2, 0)$ B½
 $C(5, 1) \rightarrow C_2(-1, 5)$ B½
- (v) **Translation with a scale factor -1**
 $(x, y) \rightarrow (-x, -y)$
 $A(3, 5) \rightarrow A_3(-3, -5)$ B½
 $B(0, 2) \rightarrow B_3(0, -2)$ B½
 $C(5, 1) \rightarrow C_3(-5, -1)$ B½
- (b) (i) **Highest Common Factor (HCF) = $2^3 \times 5^2$** A1
- (ii) $3r^2 - 2r - 5$ M½
 $3r^2 + 3r - 5r - 5$ B½
 $(3r^2 + 3r) - (5r + 5)$ M½
 $3r(r + 1) - 5(r + 1)$ A1
 $(3r - 5)(r + 1)$ 15 Marks