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# EDEXCEL IGCSE MATHEMATICS

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PAPER 1H & 1HR (LINEAR)

## ALGEBRA – INDICES

QP & MS (2018 – 2025)



COMPILED BY:  
SIR MUHAMMAD ABDULLAH SHAH



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# EDEXCEL IGCSE MATHEMATICS LINEAR FOR MAY 2026

by Sir Muhammad Abdullah Shah

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# EDEXCEL IGCSE MATHEMATICS LINEAR 1H & 1HR - INDICES

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1. June 2025 1H/Q4c

(c) Simplify fully  $(5a^4r^2)^3$

.....  
(2)

2. June 2025 1HR/Q8a,b

(a) Simplify  $a^6 \times a^{10}$

.....  
(1)

(b) Simplify  $c^{30} \div c^{12}$

.....  
(1)

3. Nov 2024 1H/Q3a

(a) Simplify  $(p^3)^5$

.....  
(1)



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4. June 2024 1H/Q10

(a) Simplify  $(2p)^0$  where  $p > 0$

.....  
(1)

$$y^9 \times y^{-3} = y^n$$

(b) Find the value of  $n$

$n =$  .....  
(1)

(c) Simplify fully  $(5a^4c^2)^3$

.....  
(2)

(Total for Question 10 is 4 marks)



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5. June 2024 1HR/Q7a

(a) Simplify  $g^9 \div g^2$

.....  
(1)

6. June 2023 1H/Q6a,b

(a) Simplify  $(2c^4 d^7)^3$

.....  
(2)

(b) Find the value of  $5y^0$  where  $y > 0$

.....  
(1)

7. June 2023 1HR/Q6

(a) Simplify  $m^{10} \div m^3$

EXAM PREP ARENA  
HUB OF EXAM PREPARATION

.....  
(1)

$$k^n \times k^4 = k^{12}$$

(b) Write down the value of  $n$

$n =$  .....  
(1)



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(c) Simplify  $(3x^6y^8)^2$

.....  
(2)

(Total for Question 6 is 4 marks)

8. Jan 2023 1H/Q12

$$3^{\frac{1}{2}} \times 3^{\frac{2}{5}} = 3^m$$

(a) Work out the value of  $m$

$$m = \text{.....}$$

(1)

$$5^{-10} \div 5^{-4} = 5^n$$

(b) Work out the value of  $n$

$$n = \text{.....}$$

(1)

(Total for Question 12 is 2 marks)



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9. June 2022 1H/Q9

(a) Simplify  $8 \times (4t)^0$

.....  
(1)

$$x^6 \div x^{-5} = x^p$$

(b) Find the value of  $p$

$p =$  .....  
(1)

(c) Simplify fully  $(2k^2m^4)^3$

.....  
(2)

(Total for Question 9 is 4 marks)

10. June 2022 1HR/Q9

Solve the inequality  $3 - 4x \leq 11$

.....  
(Total for Question 9 is 2 marks)



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11. Jan 2022 1H/Q1a,b,c

(a) Simplify  $a^7 \times a^4$

.....  
(1)

(b) Simplify  $w^{15} \div w^3$

.....  
(1)

(c) Simplify  $(8x^5y^3)^2$

.....  
(2)

12. Jan 2022 1HR/Q9a,b

(a) Simplify  $x^4 \times x^5$

.....  
(1)

(b) Simplify  $(4y^2)^3$

.....  
(2)



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13. Nov 2021 1H/Q1a

(a) Simplify  $e^8 \div e^2$

.....  
(1)

14. May 2021 1H/Q5c

Given that  $\frac{w^5 \times w^n}{w^3} = w^{10}$

(c) work out the value of  $n$ .

$n =$  .....  
(2)

(Total for Question 5 is 6 marks)

15. Jan 2021 1H/Q9a

(a) Simplify  $(2x^3y^5)^4$

.....  
(2)

16. Jan 2021 1HR/Q6b

(b) Write down the value of  $g^0$

.....  
(1)



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17. Jan 2021 1HR/Q12a

(a) Simplify  $(16e^{10}f^6)^{\frac{1}{2}}$

.....  
(2)

18. Nov 2020 1HR/Q3a

(a) Simplify  $h^7 \times h^2$

.....  
(1)

19. Jan 2020 1H/Q7c

(c) Simplify  $(p^2 + 3)^0$

.....  
(1)

20. Jan 2020 1HR/Q3d

(d) Simplify fully  $\frac{n^4 \times n^7}{n^5}$

.....  
(2)



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21. June 2019 1H/Q3a,b

(a) Simplify  $e^9 \div e^5$

.....  
(1)

(b) Simplify  $(y^2)^8$

.....  
(1)

22. June 2019 1H/Q12c

(c) Write  $\frac{\sqrt[4]{y}}{y}$  in the form  $y^b$  where  $b$  is a fraction.

.....  
(2)

23. June 2019 1HR/Q9a,b,c

(a) Simplify  $t^9 \div t^3$

.....  
(1)

(b) Simplify  $w^5 \times w^7$

.....  
(1)



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(c) Simplify  $(5xy^2)^3$

.....  
(2)

(Total for Question 9 is 4 marks)

24. Jan 2019 1HR/Q15a

(a) Simplify  $(3x^2y^5)^4$

.....  
(2)

25. June 2018 1H/Q3a,b

(a) Simplify  $y^5 \times y^9$

EXAM PREP ARENA  
HUB OF EXAM PREPARATION

.....  
(1)

(b) Simplify  $(2m^3)^4$

.....  
(2)

26. June 2018 1HR/Q14 a, c, d

(a) Simplify  $(2e^2f^3)^3$

.....  
(2)



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$\frac{\sqrt{a} \times a}{a^{-2}}$  can be written in the form  $a^k$

(c) Find the value of  $k$ .

$$k = \dots\dots\dots (2)$$

(d) Simplify  $\frac{2^n - 1}{4^n - 1}$

EXAM PREP ARENA (2)  
HUB OF EXAM PREPARATION  
(Total for Question 14 is 8 marks)



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**MARKING SCHEME**

1. June 2025 1H/Q4c

(c)		$125a^{12}r^6$	2	B2 for $125a^{12}r^6$  (B1 for a product in the form $ka^p r^q$ where 2 from $k$ , $p$ or $q$ are correct eg $5a^{12}r^6$ Allow $125a^{12}$ or $125r^6$ or $a^{12}r^6$ so as long as not added to any other terms)
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2. June 2025 1HR/Q8a,b

8	(a)		$a^{16}$	1	B1
	(b)		$c^{18}$	1	B1

3. Nov 2024 1H/Q3a

3	(a)		$p^{15}$	1	B1 cao
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4. June 2024 1H/Q10

10	(a)		1	1	B1
	(b)		6	1	B1 Accept $y^6$
	(c)		$125a^{12}c^6$	2	B2 for $125a^{12}c^6$  B1 for a product in the form $ka^p c^q$ where 2 from $k$ , $p$ or $q$ are correct eg $5a^{12}c^6$ or $125a^{12}3c^6$ Accept multiplication signs between terms (Allow $125a^{12}$ or $125c^6$ or $a^{12}c^6$ as long as not added to any other terms)
<b>Total 4 marks</b>					

5. June 2024 1HR/Q7a

7	(a)		$8g^7$	1	B1
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6. June 2023 1H/Q6a,b

6	(a)		$8c^{12}d^{21}$	2	B2 (B1 for 2 correct terms as part of a product)
	(b)		5	1	B1

7. June 2023 1HR/Q6

6	(a)		$m^7$	1	B1
	(b)		8	1	B1 Allow $k^8$
	(c)		$9x^{12}y^{16}$	2	B2 B1 for a product in the form $ax^p y^q$ where 2 from $a$ , $p$ or $q$ are correct eg $3x^{12}y^{16}$ (Allow $9x^{12}$ or $9y^{16}$ or $x^{12}y^{16}$ so as long as not added to any other terms)
<b>Total 4 marks</b>					

8. Jan 2023 1H/Q12

2	$6-12x$ or $2-4x = \frac{5}{3} - \frac{8}{3}x$			3	M1 for expansion of bracket on the LHS or dividing the RHS by 3 with two terms
	$6-5 = 12x-8x$ or $1 = 4x$ or $-12x+8x = 5-6$ oe or $-4x = -1$ or $\frac{8}{3}x - 4x = \frac{5}{3} - 2$ oe or $2 - \frac{5}{3} = -\frac{8}{3}x + 4x$ oe				M1 ft (dep on 4 terms) for terms in $x$ on one side of equation; number terms on the other
	Working required		$\frac{1}{4}$		A1 oe dep on M1 awarded
<b>Total 3 marks</b>					



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## 9. June 2022 1H/Q9

9	(a)		8	1	B1
	(b)		11	1	B1 accept $x^{11}$
	(c)		$8k^6m^{12}$	2	B2 for all correct B1 for two correct from 8 or $k^6$ or $m^{12}$
<b>Total 4 marks</b>					

## 10. June 2022 1HR/Q9

9	$-4x \leq 11 - 3$ or $-4x \leq 8$ or $-x \leq 2$ or $3 - 11 \leq 4x$ or $-8 \leq 4x$		$x \geq -2$	2	M1 allow equals sign or condone incorrect inequality sign for M1 only
					A1 allow $-2 \leq x$  SCB1 for $x$ and $-2$ with an incorrect sign between them or $-2$ as an answer
<b>Total 2 marks</b>					

## 11. Jan 2022 1H/Q1a,b,c

1	(a)		$a^{11}$	1	B1
	(b)		$w^{12}$	1	B1
	(c)		$64x^{10}y^6$	2	B2 if not B2 then award B1 for 2 correct parts as part of a product eg $kx^{10}y^6$ where $k \neq 64$ or $64x^k y^6$ where $k \neq 10$ or $64x^{10}y^k$ where $k \neq 6$

## 12. Jan 2022 1HR/Q9a,b

9	(a)		$x^9$	1	B1 cao
	(b)		$64y^6$	2	B2 for $64y^6$ (B1 for $ky^6$ where $k \neq 64$ or $64y^m$ where $m \neq 6$ )

## 13. Nov 2021 1H/Q1a

1	(a)		$e^6$	1	B1 cao
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## 14. May 2021 1H/Q5c

	(c)	$w^2 \times w^n = w^{10}$ or $w^5 \times w^n = w^{13}$ or $w^5 \times w^{n-3} = w^{10}$ or $\frac{w^{5+n}}{w^3} = w^{10}$ or $5 + n - 3 = 10$ or $2 + n = 10$ or $5 + n = 13$		2	M1 A correct first stage simplifying at least one index in a correct equation or a clearly correct subsequent stage showing correct use of a rule of indices eg $w^5 \times w^n = w^{30}$ and $w^n = w^{30-5}$ or a correct equation using indices only
		<i>Working not required, so correct answer scores full marks (unless from obvious incorrect working)</i>	8		A1 accept $w^8$  (trial and error gains full marks if correct and no marks if incorrect unless a rule of indices is clearly shown)

## 15. Jan 2021 1H/Q9a

9	(a)		$16x^{12}y^{20}$	2	B2 B1 for an answer in the form $ax^n y^m$ with 2 correct from $a = 16, n = 12, m = 20$
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## 16. Jan 2021 1HR/Q6b

	b		1	1	B1
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## 17. Jan 2021 1HR/Q12a

12	a		$4e^5 f^3$	2	B2 (B1 for 2 out of 3 terms correct in a 3 term product)
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18. Nov 2020 1HR/Q3a

3	(a)		$h^9$	1	B1
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19. Jan 2020 1H/Q7c

	(c)		1	1	B1
--	-----	--	---	---	----

20. Jan 2020 1HR/Q3d

d		$\frac{n^{11}}{n^5}$ OR $n^{-1} \times n^7$ OR $n^4 \times n^2$ OR $n^4 \times n^7 \times n^{-5}$ OR $n^{11} \div n^5 = n^{(11-5)}$			M1 for simplifying two terms
			$n^6$	2	A1

21. June 2019 1H/Q3a,b

3	(a)		$e^4$	1	B1
	(b)		$y^{16}$	1	B1

22. June 2019 1H/Q12c

12 contd	(c)	$\frac{y^{\frac{1}{4}}}{y}$ or $\sqrt[4]{y} = y^{\frac{1}{4}}$ or $y^{\frac{1}{4}-1}$		2	M1 or $b = -\frac{3}{4}$
			$y^{-\frac{3}{4}}$		A1

23. June 2019 1HR/Q9a,b,c

9	(a)		$t^6$	1	B1
	(b)		$w^{12}$	1	B1
	(c)		$125x^3y^6$	2	B2
					(B1) for 2 correct terms as part of a product
					<b>Total 4 marks</b>

24. Jan 2019 1HR/Q15a

15	(a)		$81x^8y^{20}$	2	B2 (B1 two terms correct in a product of 3 terms)
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25. June 2018 1H/Q3a,b

3	a		$y^{14}$	1	B1
	b		$16m^{12}$	2	B2 if not B2 then B1 for $am^{12}$ or $16m^b$ or $2^4m^{12}$ $b \neq 0$ , $12$ $a \neq 1$ , $16$

26. June 2018 1HR/Q14 a, c, d

14	(a)		$8e^6f^9$	2	B2 B1 for 2 correct terms in a product of 3 terms
	(b)	$3x^2 + 9xy - 4yx - 12y^2$	$3x^2 + 5xy - 12y^2$	2	M1 M1 for 3 correct terms out of 4 or for 4 correct terms ignoring signs or for $3x^2 + 5xy + c$ for any non zero value of $c$ or for $d + 5xy - 12y^2$ for any non zero value of $d$
					A1
	(c)	$a^{\frac{1}{2}} \times a = a^{\frac{3}{2}}$ or $\frac{a}{a^{-2}} = a^3$ or $\frac{a^{\frac{1}{2}}}{a^{-2}} = a^{\frac{5}{2}}$	$\frac{7}{2}$	2	M1 for one correct step
					A1 oe
	(d)	$\frac{2^n - 1}{(2^n - 1)(2^n + 1)}$	$\frac{1}{2^n + 1}$	2	M1 for $(2^n - 1)(2^n + 1)$
					A1
					<b>Total 8 marks</b>

