Oxford Revise | Edexcel GCSE Maths Higher | Answers

Chapter 5 Algebra basics

Question	Answer	Extra information	Marks
5.1 (a)	$(2a)^3 = 8a^3$	8 a^3	1 1
5.1 (b)	$\frac{6x^2y^{-3}}{18yx^{-1}} = \frac{6x^3}{18y^4} = \frac{x^3}{3y^4}$ Alternative acceptable final answers $\frac{1}{3}x^3y^{-4}$ or $\frac{1}{3}\frac{x^3}{y^4}$	Correct collecting of x and y terms Correct final answer	1 1
5.1 (c)	$\sqrt{x^4y^6} = \sqrt{x^4} \times \sqrt{y^6} = x^2y^3$	x^2 y^3	1 1
5.2	$5(3-x)-4(6-3x) = 15-5x-24+12x$ $= -9+7x$	$7x-9$	1 1
5.3 (a)	$\frac{5-x}{2} = 12$ $5-x = 24$ $5-24 = x$ $x = -19$	$5-x = 24$ Correct answer	1 1

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5.3 (b)	$\frac{2}{y}=5$ $2=5y$ $y=\frac{2}{5}$	$2=5y$ Correct answer	1 1
5.3 (c)	$3+p=4p-6$ $3+6=4p-p$ $9=3p$ $p=3$	$9=3p$ Correct answer	1 1
5.3 (d)	$3(3-2p)=4-11p$ $9-6p=4-11p$ $9-4=6p-11p$ $5=-5p$ $p=-1$	$5=-5p$ Correct answer	1 1
5.4	$5y-2=\frac{y-13}{2}$ $10y-4=y-13$ $9y=-9$ $y=-1$	Multiply each side by 2 $9y$ or -9 correct Correct answer	1 1 1
5.5 (a)	$\frac{3^6}{3^7}=3x$ $3^{-1}=3x$ $\frac{1}{3}=3x$ $\frac{1}{9}=x$	3^6 3^{-1} Correct answer	1 1 1

Question	Answer	Extra information	Marks
5.5 (b)	$2^5 \times 4^2 = 8x$ $2^5 \times \left(2^2\right)^2 = 8x$ $2^5 \times 2^4 = 8x$ $2^9 = 8x$ $512 = 8x$ $64 = x$	Writing 4 as 2^2 or 8 as 2^3 2^9 on the LHS Correct answer	1 1 1
5.6	$\frac{c^t \times c^{2t}}{c} = c^2$ $\frac{c^{3t}}{c} = c^2$ $c^{3t} = c^3$ $3t = 3$ $t = 1$	c^{3t} Multiply both sides by c Equate the indices Correct answer	1 1 1 1
5.7	$2x + 3 = 3x - 4$ $-x = -7$ $x = 7$	Correct equation Correct rearrangement Correct answer	1 1 1
5.8 (a)	$xy + x + 2y + 2$		1
5.8 (b)	$4a + 2a^2 - 10 - 5a$ $2a^2 - a - 10$	Correct expansion in any order Correctly simplified answer	1 1
5.8 (c)	$a^2 + ab + ab + b^2$ $a^2 + 2ab + b^2$	Correct expansion in any order Correctly simplified answer	1 1
5.8 (d)	$6m^2 - 4mn + 9mn - 6n^2$ $6m^2 + 5mn - 6n^2$	Correct expansion in any order Correctly simplified answer	1 1

Question	Answer	Extra information	Marks
5.8 (e)	$16x^2+4x+4x+1$ $16x^2+8x+1$	Correct expansion in any order Correctly simplified answer	1 1
5.9	$(4x-1)(2x+5)(3x-2)$ $=(8x^2+18x-5)(3x-2)$ $=24x^3-16x^2+54x^2-36x-15x+10$ $=24x^3+38x^2-51x+10$ (Brackets can be multiplied in two other orders)	All three pairs of brackets expanded, with at least half of all terms correct Correct answer	1 1
5.10 (a)	$4x(4+3y)$	Removing any one common factor Fully factorised	1 1
5.10 (b)	$xy(x+y)$	Removing any one common factor Fully factorised	1 1
5.10 (c)	$2p(4-2pq+3q)$	Removing any one common factor Fully factorised	1 1
5.11 (a)	$2x^2-3=y$ $2x^2=y-3$ $x^2=\frac{y-3}{2}$ $x=\sqrt{\frac{y-3}{2}}$	Making x^2 the subject Correct answer	1 1

Question	Answer	Extra information	Marks
5.11 (b)	$a\sqrt{x}+b=c$ $a\sqrt{x}=c-b$ $\sqrt{x}=\frac{c-b}{a}$ $x=\left(\frac{c-b}{a}\right)^2$	Making $\sqrt{x}$ the subject Correct answer	1 1
5.12	$\frac{P}{R}=I^2$ $I=\sqrt{\frac{P}{R}}$	Making I^2 the subject Correct answer	1 1
5.13	Mion-Jun has made a mistake on line 3. The correct working is as follows. $y=a^2x-b$ $y+b=a^2x$ $x=\frac{y+b}{a^2}$	Identifying the mistake in line 3 Correct explanation Correct answer	1 1 1

Question	Answer	Extra information	Marks
5.14	$6d = \frac{n-7}{3r+1}$ $3r+1 = \frac{n-7}{6d}$ $3r = \frac{n-7}{6d} - 1$ $r = \frac{n-7}{18d} - \frac{1}{3}$	One correct algebraic step Two correct algebraic steps Correct final answer or in equivalent form	1 1 1
5.15 (a)	$mp - ap = q$ $p(m-a) = q$ $p = \frac{q}{m-a}$	Bringing both terms with p to the same side Factorising Correct answer	1 1 1
5.15 (b)	$\frac{1}{p} = \frac{1}{t} - \frac{1}{r}$ $\frac{1}{p} = \frac{r-t}{rt}$ $p = \frac{rt}{r-t}$	Making $\frac{1}{p}$ the subject Combining two fractions Correct answer	1 1 1
5.16 (a)	$26 \times 10^5 = 2\,600\,000$ codes	Correct product Correct final answer	1 1
5.16 (b)	$26 \times 10 \times 9 \times 8 \times 7 \times 25 = 3\,276\,000$	Correct product Correct final answer	1 1

Question	Answer	Extra information	Marks
5.17	$0.78\dot{3}$ Let $x = 0.783333...$ $100x = 78.3333\ldots\ 1000x = 783.3333\ldots$ $1000x - 100x = 783.3333\ldots - 78.3333\ldots$ $900x = 705$ $x = \frac{705}{900}$ $x = \frac{47}{60}$	$100x = 78.3333....\ 1000x = 783.3333...$ Subtract $100x$ from $1000x$ Divide and simplify	1 1 1