

GCSE MATHEMATICS

Collecting Like Terms

Eduqas-style Topic Practice

Based on WJEC Eduqas GCSE (9–1) Mathematics (C300QS)

Tier: Foundation and Higher

Name _____

Date _____

ADDITIONAL MATERIALS

- A ruler may be required.
- Section A: the use of a calculator is not permitted.
- Section B: a calculator may be used.

INSTRUCTIONS TO CANDIDATES

- Use black ink or black ball-point pen. You may use a pencil for graphs and diagrams only.
- Answer all the questions in the spaces provided.

INFORMATION FOR CANDIDATES

- You should give details of your method of solution when appropriate.
- Unless stated, diagrams are not drawn to scale. Graphs drawn on a grid are accurate.
- The number of marks is given in brackets at the end of each question or part-question.
- The questions suit both Foundation and Higher tier students.
- You are reminded of the need for good English and orderly, clear presentation in your answers.
- The maximum mark for this paper is 42.

For Examiner's use only

Question	Maximum Mark	Mark Awarded
1.	3	
2.	2	
3.	4	
4.	5	
5.	5	
6.	5	
7.	2	
8.	2	
9.	1	
10.	4	
11.	2	
12.	2	
13.	3	
14.	2	
Total	42	

These are original practice questions written in the style of WJEC Eduqas GCSE Mathematics. They are not official WJEC Eduqas examination questions and are not endorsed by WJEC.

SECTION A

You must not use a calculator in this section.

1. Simplify each of the following.

(a) $4t + 7t$ [1]

.....

.....

(b) $3g + g + 5g$ [1]

.....

.....

(c) $2y + 8y + 5y + 3y$ [1]

.....

.....

2. Here is a list of terms.

$5p$	$2q$	$3p^2$	$-4p$	pq	6	p^2
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(a) From the list, write down the term that is a like term with $5p$. [1]

.....

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(b) From the list, write down the term that is a like term with $3p^2$. [1]

.....

.....

3. Simplify each of the following.

(a) $3m + 8 + 4m + 1$

[1]

.....

.....

(b) $5 + 2k + 6 + k$

[1]

.....

.....

(c) $6h + j + 2h + 4j$

[2]

.....

.....

.....

.....

4. Simplify each of the following.

(a) $9y - 5y$

[1]

.....

.....

(b) $2e - 7e$

[1]

.....

.....

(c) $7w - 2w - 4w$

[1]

.....

.....

(d) $4r - 9r + 4r$ [1]

.....

.....

(e) $6u - u - 5u$ [1]

.....

.....

5. Simplify each of the following.

(a) $8b - 3 - 7b + 10$ [1]

.....

.....

(b) $5m - 4n - 9m + n$ [2]

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.....

.....

(c) $3 + 6c - 2d - 8 - 6c + 5d$ [2]

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6. Simplify each of the following.

(a) $2p^2 + 6p^2$

[1]

.....

.....

(b) $5m^2 - 2n^2 - 3m^2 + 7n^2$

[2]

.....

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.....

.....

(c) $3x^2 - 4x + 1 + 5x - 6 - x^2$

[2]

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.....

.....

.....

7. Complete each of the following by writing the missing term in the space.

(a) $4h + \dots - 2 = 9h - 2$

[1]

(b) $6a^2 - 3a + \dots = 6a^2 + a$

[1]

8. Dafydd simplifies $3k^2 + 3k^2$. He writes $6k^4$.

Explain the mistake Dafydd has made, and write down the correct answer.

[2]

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9. Siân says,

“ $7pq - 3qp$ cannot be simplified, because pq and qp are different terms.”

Is Siân correct? Give a reason for your answer.

[1]

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.....

10. Simplify each of the following.

(a) $4ab - 3a + 2ba + a$

[2]

.....

.....

.....

.....

(b) $2xy + 5x - 3y - 2yx + y$

[2]

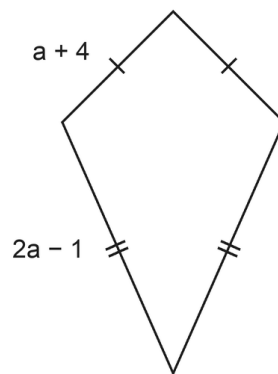
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11. The diagram shows a kite.



The lengths of the sides are in centimetres.

Find an expression for the perimeter of the kite. Give your answer in its simplest form.

[2]

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12. Simplify.

$$4m^2 - 2mn + 3 + mn - 4m^2 + 5nm - 7$$

[2]

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.....

.....

SECTION B

You may use a calculator in this section.

13. Simplify each of the following.

(a) $2.6d + 1.9d$

[1]

(b) $3.5p - 0.8q - 1.2p + 2.4q$

[2]

14. Simplify $1.4h^2 + 0.6h - 0.9h^2 - 1.5h$

[2]

END OF QUESTIONS

Mark scheme

Codes: M marks are for a correct method. A marks are for an accurate answer and depend on the M mark before them. B marks are independent of method. E marks are for an explanation. SC marks are for special cases. FT means follow through from an earlier answer, ISW ignore subsequent working, oe or equivalent, and CAO correct answer only.

For methods not covered by the mark scheme, give equivalent marks for equivalent correct work.

Section A: Non-calculator	Mark	Comment
1.(a) 11t	B1	CAO Do not accept $11t^2$ or $28t$.
1.(b) 9g	B1	CAO Do not accept 8g or $9g^3$.
1.(c) 18y	B1	CAO
	(3)	

Section A: Non-calculator	Mark	Comment
2.(a) $-4p$	B1	CAO Do not accept $4p$, $3p^2$, p^2 or pq .
2.(b) p^2	B1	CAO Do not accept $5p$, $-4p$ or pq .
	(2)	

Section A: Non-calculator	Mark	Comment
3.(a) $7m + 9$	B1	oe, e.g. $9 + 7m$ Do not accept $16m$.
3.(b) $3k + 11$	B1	oe, e.g. $11 + 3k$ Do not accept $2k + 11$ or $14k$.
3.(c) $8h + 5j$	B2	oe, e.g. $5j + 8h$
B1 for 8h or 5j in an expression in which no unlike terms are combined		13hj scores B0.
	(4)	

Section A: Non-calculator	Mark	Comment
4.(a) $4y$	B1	CAO
4.(b) $-5e$	B1	CAO Do not accept $5e$.
4.(c) w	B1	CAO Do not accept $1w$.
4.(d) $-r$	B1	CAO Do not accept $-1r$ or r .
4.(e) 0	B1	CAO Do not accept $0u$ or u .
	(5)	

Section A: Non-calculator	Mark	Comment
5.(a) $b + 7$	B1	oe, e.g. $7 + b$ Do not accept $1b + 7$, $b - 7$ or $8b$.
5.(b) $-4m - 3n$	B2	oe, e.g. $-3n - 4m$
B1 for $-4m$ or $-3n$ in an expression in which no unlike terms are combined		$4m - 3n$ and $-4m + 3n$ each score B1.
5.(c) $3d - 5$	B2	oe, e.g. $-5 + 3d$
B1 for $3d$ or -5 in an expression in which no unlike terms are combined		An answer that still contains a c term, e.g. $0c + 3d - 5$, scores B1 only.
	(5)	

Section A: Non-calculator	Mark	Comment
6.(a) $8p^2$	B1	CAO Do not accept $8p^4$.
6.(b) $2m^2 + 5n^2$	B2	oe, e.g. $5n^2 + 2m^2$
B1 for $2m^2$ or $5n^2$ in an expression in which no unlike terms are combined		$7m^2n^2$ scores B0.
6.(c) $2x^2 + x - 5$	B2	oe, terms in any order
B1 for two of $2x^2$, x , -5 in an expression in which no unlike terms are combined		$2x^2 + 1x - 5$ scores B1 only.
	(5)	

Section A: Non-calculator	Mark	Comment
7.(a) 5h	B1	CAO Do not accept 13h or 5.
7.(b) 4a	B1	CAO Accept +4a. Do not accept $-2a$ or $4a^2$.
	(2)	

Section A: Non-calculator	Mark	Comment
8. The powers have been added: adding the terms does not change the power, so the k^2 stays as k^2	E1	oe, e.g. "only the numbers in front are added"
$6k^2$	B1	CAO E1 needs a statement that the power (index) should not change, or that only the coefficients are added. Do not award E1 for "the answer is $6k^2$ " on its own.
	(2)	

Section A: Non-calculator	Mark	Comment
9. No, because pq and qp are like terms ($pq = qp$)	E1	oe The reason must state that pq and qp are like terms, or that $pq = qp$. "No" on its own, or "No, it simplifies to $4pq$ " with no reason, scores E0.
	(1)	

Section A: Non-calculator	Mark	Comment
10.(a) $6ab - 2a$	B2	oe, e.g. $-2a + 6ab$; accept 6ba for 6ab
B1 for 6ab or $-2a$ in an expression in which no unlike terms are combined		4ab or $4a^2b$ scores B0.
10.(b) $5x - 2y$	B2	oe, e.g. $-2y + 5x$
B1 for $5x$ or $-2y$ in an expression in which no unlike terms are combined		An answer that still contains an xy term, e.g. $0xy + 5x - 2y$, scores B1 only.
	(4)	

Section A: Non-calculator	Mark	Comment
11. $a + 4 + a + 4 + 2a - 1 + 2a - 1$	M1	oe, all four sides used
$6a + 6$	A1	oe, e.g. $6 + 6a$ A correct answer with no working scores 2 marks. $3a + 3$ (each side used only once) scores M0 A0.
	(2)	

Section A: Non-calculator	Mark	Comment
12. $4mn - 4$	B2	oe, e.g. $-4 + 4mn$; accept $4nm$ for $4mn$
B1 for $4mn$ or -4 in an expression in which no unlike terms are combined		An answer that still contains an m^2 term, e.g. $0m^2 + 4mn - 4$, scores B1 only.
	(2)	

Section B: Calculator	Mark	Comment
13.(a) $4.5d$	B1	CAO
13.(b) $2.3p + 1.6q$	B2	oe, e.g. $1.6q + 2.3p$
B1 for $2.3p$ or $1.6q$ in an expression in which no unlike terms are combined		$3.9pq$ scores B0.
	(3)	

Section B: Calculator	Mark	Comment
14. $0.5h^2 - 0.9h$	B2	oe, e.g. $-0.9h + 0.5h^2$
B1 for $0.5h^2$ or $-0.9h$ in an expression in which no unlike terms are combined		$-0.4h^2$ scores B0.
	(2)	

Elite Learners Specification & Assessment Objectives Summary

For teachers: this section maps the paper to WJEC Eduqas GCSE (9–1) Mathematics content and assessment objectives. It is an Elite Learners teacher resource and is not part of the Eduqas-style mark scheme.

Question	Eduqas content (Foundation / Higher)	AO	Marks
1(a)	FA4 / HA4 Collecting like terms	AO1	1
1(b)	FA4 / HA4 Collecting like terms	AO1	1
1(c)	FA4 / HA4 Collecting like terms	AO1	1
Question 1 total			3
2(a)	FA3 / HA3 Terms; FA4 / HA4 Collecting like terms	AO1	1
2(b)	FA3 / HA3 Terms; FA4 / HA4 Collecting like terms	AO1	1
Question 2 total			2
3(a)	FA4 / HA4 Collecting like terms	AO1	1
3(b)	FA4 / HA4 Collecting like terms	AO1	1
3(c)	FA4 / HA4 Collecting like terms	AO1 ×2	2
Question 3 total			4
4(a)	FA4 / HA4 Collecting like terms	AO1	1
4(b)	FA4 / HA4 Collecting like terms	AO1	1
4(c)	FA4 / HA4 Collecting like terms	AO1	1
4(d)	FA4 / HA4 Collecting like terms	AO1	1
4(e)	FA4 / HA4 Collecting like terms	AO1	1
Question 4 total			5
5(a)	FA4 / HA4 Collecting like terms	AO1	1
5(b)	FA4 / HA4 Collecting like terms	AO1 ×2	2
5(c)	FA4 / HA4 Collecting like terms	AO1 ×2	2
Question 5 total			5
6(a)	FA4 / HA4 Collecting like terms	AO1	1
6(b)	FA4 / HA4 Collecting like terms	AO1 ×2	2
6(c)	FA4 / HA4 Collecting like terms	AO1 ×2	2
Question 6 total			5
7(a)	FA4 / HA4 Collecting like terms	AO1	1
7(b)	FA4 / HA4 Collecting like terms	AO1	1
Question 7 total			2
8	FA4 / HA4 Collecting like terms	AO1 ×1, AO2 ×1	2
Question 8 total			2
9	FA4 / HA4 Collecting like terms	AO2	1

Question	Eduqas content (Foundation / Higher)	AO	Marks
Question 9 total			1
10(a)	FA4 / HA4 Collecting like terms	AO1 $\times 2$	2
10(b)	FA4 / HA4 Collecting like terms	AO1 $\times 2$	2
Question 10 total			4
11	FA4 / HA4 Collecting like terms	AO1 $\times 1$, AO3 $\times 1$	2
Question 11 total			2
12	FA4 / HA4 Collecting like terms	AO1 $\times 2$	2
Question 12 total			2
13(a)	FA4 / HA4 Collecting like terms	AO1	1
13(b)	FA4 / HA4 Collecting like terms	AO1 $\times 2$	2
Question 13 total			3
14	FA4 / HA4 Collecting like terms	AO1 $\times 2$	2
Question 14 total			2
Paper total			42

Assessment objectives

AO1 — use and apply standard techniques	39 marks (92.9%)
AO2 — reason, interpret and communicate mathematically	2 marks (4.8%)
AO3 — solve problems within mathematics and in other contexts	1 mark (2.4%)
Total	42 marks (100%)