

GCSE (9–1) MATHEMATICS

Collecting Like Terms

Pearson Edexcel-style Topic Practice**Mixed Non-Calculator and Calculator Topic Practice**

Based on Pearson Edexcel GCSE Mathematics (1MA1)

Name _____

Date _____

Instructions

- Answer all questions.
- Write your answers in the spaces provided.
- You must show all your working.
- Section A: you must not use a calculator.
- Section B: you may use a calculator.

Information

- The marks for each question are shown in brackets.
- The questions suit both Foundation and Higher tier students.
- Diagrams are not drawn accurately unless the question says they are. Graphs drawn on a grid are accurate.
- The total mark for this paper is 39.

These are original practice questions written in the style of Pearson Edexcel GCSE Mathematics. They are not official Pearson examination questions.

Total marks

39

SECTION A

You must not use a calculator in this section.

1 Simplify

(a) $4m + 5m$

Answer

(1)

(b) $3k + k + 6k$

Answer

(1)

(c) $2y + 7y + y + 3y$

Answer

(1)

(Total for Question 1 = 3 marks)

2 Simplify

(a) $5p + 3 + 2p + 8$

Answer

(1)

(b) $6 + 4t + 9 + t$

Answer

(1)

(c) $3a + 5b + 4a + b$

Answer

(1)

(Total for Question 2 = 3 marks)

3 Simplify

(a) $9n - 4n$

Answer

(1)

Question 3 continued

(b) $7d - 2d - 5d$

Answer

(1)

(c) $3e - 8e + 4e$

Answer

(1)

(Total for Question 3 = 3 marks)

4 Simplify

(a) $8w - 3 - 5w + 9$

Answer

(1)

(b) $4c - 7d - c + 2d$

Answer

(1)

(c) $2 - 5h + 4 + 6h$

Answer

(1)

(Total for Question 4 = 3 marks)

5 Here are seven terms.

6x	2x ²	5y	-3x	4xy	x ²	9
----	-----------------	----	-----	-----	----------------	---

(a) Write down a pair of like terms.

Answer

(1)

Question 5 continued

- (b) Add together all seven terms. Give your answer in its simplest form.

Answer

(2)

(Total for Question 5 = 3 marks)

6 Simplify

- (a) $6x^2 + 2x^2$

Answer

(1)

- (b) $3x^2 + 4y^2 - x^2 + 2y^2$

Answer

(1)

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

Answer

(2)

(Total for Question 6 = 4 marks)

7 Leah was asked to simplify $6p^2 + 2p - p^2 - 5p$

Here is her working.

$$6p^2 + 2p - p^2 - 5p = 5p^2 + 7p$$

- (a) Explain the mistake Leah has made.

.....

(1)

Question 7 continued

(b) Simplify $6p^2 + 2p - p^2 - 5p$

Answer

(1)

(Total for Question 7 = 2 marks)

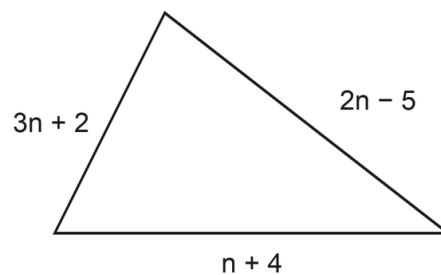
- 8 Tom says, " $4x + 3y$ simplifies to $7xy$."

Is Tom correct? You must give a reason for your answer.

.....
(1)

(Total for Question 8 = 1 mark)

- 9 The diagram shows a triangle.



The lengths of the sides of the triangle are in centimetres.

Write an expression, in terms of n , for the perimeter of the triangle. Give your answer in its simplest form.

Answer cm

(2)

(Total for Question 9 = 2 marks)

10 Write down the missing term in each of these.

(a) $5x + \dots\dots\dots + 2y = 3x + 2y$

Answer

(1)

(b) $7a - 3b + \dots\dots\dots = 7a + b$

Answer

(1)

(Total for Question 10 = 2 marks)

11 Simplify

(a) $3xy + 5x - xy + 2x - 4$

Answer

(2)

(b) $5ab - 2a + 3ba - 4b + a$

Answer

(2)

(Total for Question 11 = 4 marks)

12 Simplify fully

(a) $2x^2 - 3xy + 4 - 5x^2 + xy - 9 + 3x^2$

Answer

(2)

(b) $4p - 3q + 2r - p + 5q - 2r - 3p$

Answer

(1)

(Total for Question 12 = 3 marks)

SECTION B

You may use a calculator in this section.

- 13** Simplify $2.7m + 1.45n - 0.9m + 3.2n$

Answer

(2)

(Total for Question 13 = 2 marks)

- 14** Simplify $0.5x^2 - 1.25x + 3.1x^2 + 0.4x$

Answer

(2)

(Total for Question 14 = 2 marks)

- 15** A fence is made from three panels in a straight line.

The lengths of the panels are $(2.4w + 0.85)$ metres, $(1.75w - 0.3)$ metres and $(0.6w + 1.25)$ metres.

Write an expression, in terms of w , for the total length of the fence. Give your answer in its simplest form.

Answer metres

(2)

(Total for Question 15 = 2 marks)

TOTAL FOR PAPER = 39 MARKS

Mark scheme

General marking guidance: M marks are method marks for a correct method or partial method. P marks are process marks for a correct process within a problem-solving question. A marks are accuracy marks, normally dependent on the relevant M or P mark. B marks are unconditional accuracy marks: no method is required. C marks are communication marks for a fully correct statement or conclusion with no contradiction or ambiguity. oe means "or equivalent", cao "correct answer only" and ft "follow through".

Question number	Answer	Additional guidance	Mark
1(a)	9m	B1 cao Do not accept $9m^2$ or m9	(1)
1(b)	10k	B1 cao Do not accept 9k	(1)
1(c)	13y	B1 cao Do not accept 12y or $13y^4$	(1)

(Total for Question 1 = 3 marks)

Question number	Answer	Additional guidance	Mark
2(a)	$7p + 11$	B1 for $7p + 11$ oe, e.g. $11 + 7p$ Do not accept 18p	(1)
2(b)	$5t + 15$	B1 for $5t + 15$ oe, e.g. $15 + 5t$ Do not accept $4t + 15$ or 20t	(1)
2(c)	$7a + 6b$	B1 for $7a + 6b$ oe, e.g. $6b + 7a$ Do not accept 13ab or $7a + 5b$	(1)

(Total for Question 2 = 3 marks)

Question number	Answer	Additional guidance	Mark
3(a)	5n	B1 cao	(1)
3(b)	0	B1 cao Do not accept 0d	(1)
3(c)	-e	B1 cao Do not accept -1e, e or $-e^3$	(1)

(Total for Question 3 = 3 marks)

Question number	Answer	Additional guidance	Mark
4(a)	$3w + 6$	B1 for $3w + 6$ oe, e.g. $6 + 3w$ Do not accept $9w$ or $3w + 12$	(1)

Question number	Answer	Additional guidance	Mark
4(b)	$3c - 5d$	B1 for $3c - 5d$ oe, e.g. $-5d + 3c$ Do not accept $3c + 5d$ or $-2cd$	(1)
4(c)	$h + 6$	B1 for $h + 6$ oe, e.g. $6 + h$ Do not accept $1h + 6$ or $7h$	(1)

(Total for Question 4 = 3 marks)

Question number	Answer	Additional guidance	Mark
5(a)	$6x$ and $-3x$ or $2x^2$ and x^2	B1 for either pair Do not award B1 for a pair that includes $4xy$, or for a pair of one x term and one x^2 term	(1)
5(b)	$3x^2 + 4xy + 3x + 5y + 9$	B2 for $3x^2 + 4xy + 3x + 5y + 9$ oe, with the terms in any order B1 for $3x^2$ or $3x$ correct in an expression Do not award B2 if any unlike terms have been combined, e.g. $6x^2$ or $5xy$	(2)

(Total for Question 5 = 3 marks)

Question number	Answer	Additional guidance	Mark
6(a)	$8x^2$	B1 cao Do not accept $8x^4$	(1)
6(b)	$2x^2 + 6y^2$	B1 for $2x^2 + 6y^2$ oe, e.g. $6y^2 + 2x^2$ Do not accept $8x^2y^2$ or $3x^2 + 6y^2$	(1)
6(c)	$3a^2 + 7a - 5$	B2 for $3a^2 + 7a - 5$ oe, with the terms in any order B1 for two of $3a^2$, $7a$, -5 correct in an expression Do not award B2 for $10a^2 - 5$ or $3a^2 + 7a + 5$	(2)

(Total for Question 6 = 4 marks)

Question number	Answer	Additional guidance	Mark
7(a)	She has added 5p to 2p. The term is $-5p$, so she should have worked out $2p - 5p$.	C1 for identifying that the 5p should be subtracted, e.g. "she used +5p instead of $-5p$ " or " $2p - 5p$ is $-3p$, not $7p$ " Do not award C1 for "the answer should be $5p^2 - 3p$ " without a reason Do not award C1 for a comment about the p^2 terms only	(1)
7(b)	$5p^2 - 3p$	B1 for $5p^2 - 3p$ oe, e.g. $-3p + 5p^2$ Do not accept $2p^2$	(1)

(Total for Question 7 = 2 marks)

Question number	Answer	Additional guidance	Mark
8	No. $4x$ and $3y$ are not like terms (they have different letters), so they cannot be collected.	C1 for "no" with a correct reason, e.g. "x and y are different variables" or "they are not like terms" Accept a correct counter-example, e.g. "when $x = 1$ and $y = 2$, $4x + 3y = 10$ but $7xy = 14$ " Do not award C1 for "no" on its own	(1)

(Total for Question 8 = 1 mark)

Question number	Answer	Additional guidance	Mark
9	$6n + 1$	M1 for $3n + 2 + 2n - 5 + n + 4$ oe, or for $6n$ or $+1$ seen in an expression from adding the three sides A1 for $6n + 1$ oe, e.g. $1 + 6n$ Do not award A1 for $6n + 11$ or $7n$	(2)

(Total for Question 9 = 2 marks)

Question number	Answer	Additional guidance	Mark
10(a)	$-2x$	B1 cao Do not accept $2x$ or -2	(1)
10(b)	$4b$	B1 cao Accept $+4b$ Do not accept $-2b$ or 4	(1)

(Total for Question 10 = 2 marks)

Question number	Answer	Additional guidance	Mark
11(a)	$2xy + 7x - 4$	B2 for $2xy + 7x - 4$ oe, with the terms in any order B1 for two of $2xy$, $7x$, -4 correct in an expression Accept $2yx$ for $2xy$ Do not award B2 for $9xy - 4$ or $9x - 4$	(2)
11(b)	$8ab - a - 4b$	B2 for $8ab - a - 4b$ oe, with the terms in any order B1 for two of $8ab$, $-a$, $-4b$ correct in an expression Accept $8ba$ for $8ab$ Do not award B2 for $8ab - 1a - 4b$, $5ab + 3ba - a - 4b$ or $2ab - a - 4b$	(2)

(Total for Question 11 = 4 marks)

Question number	Answer	Additional guidance	Mark
12(a)	$-2xy - 5$	B2 for $-2xy - 5$ oe, e.g. $-5 - 2xy$ B1 for $-2xy$ or -5 correct in an expression, or for $0x^2$ seen Do not award B2 if a term in x^2 is left in the answer, e.g. $0x^2 - 2xy - 5$	(2)
12(b)	$2q$	B1 cao Do not accept $0p + 2q + 0r$	(1)

(Total for Question 12 = 3 marks)

Question number	Answer	Additional guidance	Mark
13	$1.8m + 4.65n$	B2 for $1.8m + 4.65n$ oe, e.g. $4.65n + 1.8m$ B1 for $1.8m$ or $4.65n$ correct in an expression Do not award B2 for $6.45mn$	(2)

(Total for Question 13 = 2 marks)

Question number	Answer	Additional guidance	Mark
14	$3.6x^2 - 0.85x$	B2 for $3.6x^2 - 0.85x$ oe, e.g. $-0.85x + 3.6x^2$ B1 for $3.6x^2$ or $-0.85x$ correct in an expression Do not award B2 for $2.75x^2$ or $3.6x^2 + 1.65x$	(2)

(Total for Question 14 = 2 marks)

Question number	Answer	Additional guidance	Mark
15	$4.75w + 1.8$	M1 for $2.4w + 0.85 + 1.75w - 0.3 + 0.6w + 1.25$ oe, or for $4.75w$ or $+1.8$ seen in an expression from adding the three lengths A1 for $4.75w + 1.8$ oe, e.g. $1.8 + 4.75w$ Do not award A1 for $4.75w + 2.4$ or $6.55w$	(2)

(Total for Question 15 = 2 marks)