2.5 Simplifying and Collecting Like Terms: 2-hour Pack

Calculators not allowed · about 120 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Simplify -6x + 8 + 5x + 8p + 9.

(3)

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2 Here is an expression: -2p - 8y + 5

(a) Write down the constant term.

(b) Write down the coefficient of y.

(2)

---

3 Simplify 4x + 7 - 6x - 8m - 8.

(3)

---

4 Here is an expression: -9q + 4n + 1

(a) How many terms does it have?

(b) Write down the coefficient of q.

(2)

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5 Simplify $2q^2 \times 6qc$.

(2)

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6 Simplify $6q^4 \times 3q^3$.

(2)

---

7 Simplify the expressions and write the result in simplest form.

(a) Simplify $3x + 2 - x + 5$ **(2)**

(b) Simplify $6y - 2 + y + 8$ **(2)**

---

8 Write each of these in a simpler form, without multiplication or division signs where possible.

(a) $b \times z \times 7$

(b) $b + b + b$

(2)

---

9 Simplify $36b^4 \div 4b^3$.

(2)

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10 Simplify $6d^2 \times 4d^6$.

(2)

---

11 Write each of these in a simpler form, without multiplication or division signs where possible.

(a) q + q + q

(b) q x q

(2)

---

12 Simplify 2n x 4c.

(2)

---

13 Write each of these in a simpler form, without multiplication or division signs where possible.

(a) a x a

(b) 5 x (a + b)

(2)

---

14 Simplify $8m^2 \times 2mq$.

(2)

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15 Simplify $24n^3 \div 4n^2$.

(2)

---

16 Simplify $8p^2 - 9p - 6p^2 - 9p + 8$.

(3)

---

17 Write each of these in a simpler form, without multiplication or division signs where possible.

(a) b + b + b

(b) 4 x b x b x b

(2)

---

18 Simplify $6p^5 \times 4p^3$.

(2)

---

19 Simplify $3y^2 + 7y + 9y^2 + y - 5$.

(3)

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20 Simplify $9x^5 \times 3x^6$.

(2)

---

21 Is $7z + 8y - 1$ an expression, an equation or a formula? Give a reason.

(2)

---

22 Is $4y + 9b + 8$ an expression, an equation or a formula? Give a reason.

(2)

---

23 Simplify $9n^4 \div 3n^3$.

(2)

---

24 Simplify $5q^6 \times 2q^5$.

(2)

---

25 Simplify $24b^7 \div 6b^6$.

(2)

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26 Write each of these in a simpler form, without multiplication or division signs where possible.

(a) d + d + d

(b) d ÷ 4

(2)

---

27 Simplify -6p + 2x + 5p - 2x.

(2)

---

28 Simplify the following by multiplying coefficients and keeping variables.

(a) Simplify 3 x 2ab **(1)**

(b) Simplify -1 x 7xy **(1)**

---

29 Simplify each quotient by dividing the coefficient only. Keep variables unchanged.

(a) Simplify (12x) ÷ 3 **(1)**

(b) Simplify (9y) ÷ 3 **(1)**

(c) Simplify (-6a) ÷ 2 **(1)**

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30 Expand and simplify 6(3y).

(2)

---

31 Simplify fully: 5x + 3y - 2x + y.

(2)

---

32 Simplify -3a + 7a.

(2)

---

33 Expand and simplify 3(x + 4) + 2x.

(3)

---

34 Simplify fully: 4a + 3b - a + 5b - 2a.

(3)

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35 Expand and simplify 5(2x - 3) - 4x.

(3)

---

36 Expand and simplify 3(x + 2) + 2(x - 5).

(4)

---

37 Simplify fully 4(2x - 1) - 3(x - 2), then find its value when x = 3.

(4)

---

38 Simplify 9y - 4y.

(1)

---

39 Simplify 3 x 4a.

(1)

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40 Simplify 10b / 5.

(1)

41 Simplify 6c + c.

(1)

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Mark scheme · 2.5 Simplifying and Collecting Like Terms: 2-hour Pack

Question 1

collects at least one pair of like terms correctly	M1
collects a second set of like terms correctly	M1
-x + 8p + 17 cao	A1

Answer: **-x + 8p + 17**

Question 2

(a) 5	B1
(b) -8	B1

Answer: **(a) 5, (b) -8**

Question 3

collects at least one pair of like terms correctly	M1
collects a second set of like terms correctly	M1
-2x - 8m - 1 cao	A1

Answer: **-2x - 8m - 1**

Question 4

(a) 3	B1
(b) -9	B1

Answer: **(a) 3, (b) -9**

Question 5

multiplies (or divides) the numbers correctly or the letters correctly	M1
$12q^3c$ cao	A1

Answer: **$12q^3c$**

Question 6

correct coefficient	B1
correct power	B1

Answer: **$18q^7$**

Question 7

(a) collect like x terms and constants	M1
(a) 2x + 7 cao	A1
(a) Answer: **2x + 7**	
(b) collect like y terms and constants	M1
(b) 7y + 6 cao	A1
(b) Answer: **7y + 6**	

Question 8

(a) 7bz	B1
(b) 3b	B1

Answer: **(a) 7bz, (b) 3b**

Question 9

correct coefficient	B1
correct power	B1

Answer: **$9b^1$**

Question 10

correct coefficient	B1
correct power	B1

Answer: **$24d^8$**

Question 11

(a) 3q	B1
(b) q^2	B1

Answer: **(a) 3q, (b) q^2**

Question 12

multiplies (or divides) the numbers correctly or the letters correctly	M1
8nc cao	A1

Answer: **8nc**

Question 13

(a) a^2	B1
(b) 5(a + b)	B1

Answer: **(a) a^2, (b) 5(a + b)**

Question 14

multiplies (or divides) the numbers correctly or the letters correctly	M1
$16m^3q$ cao	A1

Answer: **$16m^3q$**

Question 15

correct coefficient	B1
correct power	B1

Answer: **$6n^1$**

Question 16

collects at least one pair of like terms correctly	M1
collects a second set of like terms correctly	M1
$2p^2$ - 18p + 8 cao	A1

Answer: **$2p^2$ - 18p + 8**

Question 17

(a) 3b	B1
(b) $4b^3$	B1

Answer: **(a) 3b, (b) $4b^3$**

Question 18

correct coefficient	B1
correct power	B1

Answer: **$24p^8$**

Question 19

collects at least one pair of like terms correctly	M1
collects a second set of like terms correctly	M1
$12y^2$ + 8y - 5 cao	A1

Answer: **$12y^2$ + 8y - 5**

Question 20

correct coefficient	B1
correct power	B1

Answer: **$27x^{11}$**

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Question 21

Expression **B1**

reason: no equals sign **B1**

Answer: **Expression, because it has no equals sign**

Question 22

Expression **B1**

reason: no equals sign **B1**

Answer: **Expression, because it has no equals sign**

Question 23

correct coefficient **B1**

correct power **B1**

Answer: **$3n^1$**

Question 24

correct coefficient **B1**

correct power **B1**

Answer: **$10q^{11}$**

Question 25

correct coefficient **B1**

correct power **B1**

Answer: **$4b^1$**

Question 26

(a) 3d **B1**

(b) d/4 **B1**

Answer: **(a) 3d, (b) d/4**

Question 27

collects at least one pair of like terms correctly **M1**

-p cao **A1**

Answer: **-p**

Question 28

(a) 6ab cao **B1**

(a) Answer: **6ab**

(b) -7xy cao **B1**

(b) Answer: **-7xy**

Question 29

(a) 4x cao **B1**

(a) Answer: **4x**

(b) 3y cao **B1**

(b) Answer: **3y**

(c) -3a cao **B1**

(c) Answer: **-3a**

Question 30

multiplies the coefficients correctly, keeping the variable unchanged **M1**

18y cao **A1**

Answer: **18y**

Question 31

collects the x terms correctly, e.g. 5x - 2x = 3x **M1**

3x + 4y cao **A1**

Answer: **3x + 4y**

Question 32

collects the like terms correctly, keeping track of the negative sign **M1**

4a cao **A1**

Answer: **4a**

Question 33

expands the bracket correctly, e.g. 3x + 12 **M1**

collects the x terms correctly, e.g. 3x + 2x = 5x **M1**

5x + 12 cao **A1**

Answer: **5x + 12**

Question 34

collects the a terms correctly, e.g. 4a - a - 2a = a **M1**

collects the b terms correctly, e.g. 3b + 5b = 8b **M1**

a + 8b cao **A1**

Answer: **a + 8b**

Question 35

expands the bracket correctly, e.g. 10x - 15 **M1**

collects the x terms correctly, e.g. 10x - 4x = 6x **M1**

6x - 15 cao **A1**

Answer: **6x - 15**

Question 36

expands the first bracket correctly, e.g. 3x + 6 **M1**

expands the second bracket correctly, e.g. 2x - 10 **M1**

collects all like terms correctly **M1**

5x - 4 cao **A1**

Answer: **5x - 4**

Question 37

expands the first bracket correctly, e.g. 8x - 4 **M1**

expands the second bracket correctly, keeping the sign, e.g. -3x + 6 **M1**

5x + 2 cao **A1**

17 cao when x = 3 **A1**

Answer: **5x + 2; when x = 3 the value is 17**

Question 38

5y cao **B1**

Answer: **5y**

Question 39

12a cao **B1**

Answer: **12a**

Question 40

2b cao **B1**

Answer: **2b**

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Question 41

7c cao **B1**

Answer: **7c**

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