# 2.4 Introduction to Algebraic Notation: Test Pack

Calculators not allowed · about 60 minutes

Name: _____ Date: ____ / ____ / _____

**Answer ALL questions. Show all your working.**

**1** Write down the algebraic expression for each sentence.

**(a)** A number x increased by 5. **(1)**

**(b)** Three times a number n. **(1)**

**(c)** The product of 6 and a number m. **(1)**

**(d)** A number p divided by 4. **(1)**

**2** Translate each short word problem into an algebraic expression.

**(a)** Sam saves £5 each week. After w weeks he has saved some money. Write an expression for the amount saved. **(1)**

**(b)** A taxi charges a flat fee of £3 plus £2 per mile. For m miles, write an expression for the total fare. **(1)**

**(c)** A garden has length l and width 4. Write an expression for its perimeter. **(1)**


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**3** Simplify p - 5 - p + 5a + 7.

**(3)**

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**4** State the coefficient of the letter in each expression.

**(a)** Coefficient of x in 4x. **(1)**

**(b)** Coefficient of a in 10a + 3. **(1)**

**(c)** Coefficient of t in -2t + 7. **(1)**

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**5** Is 9q + 5x + 7 an expression, an equation or a formula? Give a reason.

**(2)**

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**6** I think of a number, n. I add 6 and then multiply the result by 8. Write an expression for the result.

**(2)**


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**7** Identify the term type in each expression. Choose 'term' for each separate part separated by + or -.

**(a)** In 5x + 2, what are the terms? **(2)**

**(b)** In 3a - 4b + 7, list the three terms. **(2)**

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**8** Simplify -4a - 3b - 3a + 8b.

**(2)**

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**9** Work out the value of each expression when the given letter has the value shown. Include negative values where indicated.

**(a)** If a = -2, find the value of 3a + 5. **(1)**

**(b)** If b = 4, find the value of 2b - 3. **(1)**

**(c)** If c = 0, find the value of 7c + 2. **(1)**

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**10** Work out the value of 3y - 4 when y = -2.

**(2)**


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**11** A plumber charges a call-out fee of £25 plus £15 for every hour worked. Write an expression for the total charge for h hours, then find the charge for a 3-hour job.

**(3)**

**12** Compare the expressions 4x - 1 and 2x + 5 when x = 4. State which is greater and give a reason.

**(3)**

**13** A number t is trebled, then 4 is added. The result is the same as adding 22 to t. Write an equation using this information, and find the value of t.

**(4)**

**14** Stretch. Two expressions are 2x + 7 and 5x - 8. For what value of x are the two expressions equal? Substitute your answer back in to check, and state the common value.

**(4)**


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**15** Find the value of 4x when x = 3.

**(1)**

**16** Simplify 6x + 3x - 2x.

**(2)**


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# Mark scheme · 2.4 Introduction to Algebraic Notation: Test Pack

## Question 1

(a) x + 5 cao — B1

(a) Answer: **x + 5**

(b) 3n cao — B1

(b) Answer: **3n**

(c) 6m cao — B1

(c) Answer: **6m**

(d) p/4 cao — B1

(d) Answer: **p/4**

## Question 2

(a) 5w cao — B1

(a) Answer: **5w**

(b) 3 + 2m or 2m + 3 cao — B1

(b) Answer: **3 + 2m**

(c) 2l + 8 cao — B1

(c) Answer: **2l + 8**

## Question 3

collects at least one pair of like terms correctly — M1

collects a second set of like terms correctly — M1

5a + 2 cao — A1

Answer: **5a + 2**

## Question 4

(a) 4 cao — B1

(a) Answer: **4**

(b) 10 cao — B1

(b) Answer: **10**

(c) -2 cao — B1

(c) Answer: **-2**

## Question 5

Expression — B1

reason: no equals sign — B1

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

## Question 6

one correct operation applied to the letter, eg a product or a sum — M1

8(n + 6) oe cao — A1

Answer: **8(n + 6)**

## Question 7

(a) identifies both parts as separate terms — M1

(a) 5x and 2 cao — A1

(a) Answer: **5x and 2**

(b) identifies three separate terms — M1

(b) 3a, -4b and 7 cao — A1

(b) Answer: **3a, -4b and 7**

## Question 8

collects at least one pair of like terms correctly — M1

-7a + 5b cao — A1

Answer: **-7a + 5b**

## Question 9

(a) -1 cao — B1

(a) Answer: **-1**

(b) 5 cao — B1

(b) Answer: **5**

(c) 2 cao — B1

(c) Answer: **2**

## Question 10

substitutes y = -2 correctly, e.g. 3(-2) - 4 — M1

-10 cao — A1

Answer: **-10**

## Question 11

25 + 15h or 15h + 25 cao — B1

substitutes h = 3 correctly — M1

£70 cao — A1

Answer: **25 + 15h; the charge for 3 hours is £70**

## Question 12

substitutes x = 4 into both expressions correctly (4x - 1 = 15 and 2x + 5 = 13 or equivalent working) — M1

states 4x - 1 is greater cao — A1

gives correct reason: 15 > 13 — A1

Answer: **4x - 1 is greater**

## Question 13

writes 'trebled then 4 added' as 3t + 4 — M1

forms the full equation 3t + 4 = t + 22 — M1

correct rearrangement, e.g. 2t = 18 — M1

t = 9 cao — A1

Answer: **3t + 4 = t + 22; t = 9**

## Question 14

sets the two expressions equal, e.g. 2x + 7 = 5x - 8 — M1

correct rearrangement, e.g. 15 = 3x — M1

x = 5 cao — A1

checks both expressions give 17 when x = 5 — A1

Answer: **x = 5; the common value is 17**

## Question 15

12 cao — B1

Answer: **12**

## Question 16

collects the like terms correctly — M1

7x cao — A1

Answer: **7x**


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