2.7 Writing an Expression: Test Pack

EDEXCEL 1MA1 · Calculator allowed · about 60 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Write down an expression for each of the following.

(a) 4 more than x **(1)**

(b) y multiplied by 6 **(1)**

(Total for Question 1 is 2 marks)

2 Write down an expression for 6 more than a number n.

(Total for Question 2 is 1 mark)

3 n sweets are shared equally between 5 friends.

(a) Write an expression, in terms of n, for the number of sweets each friend receives. **(1)**

(b) Instead, each of 5 friends is given t sweets. Write an expression, in terms of t, for the total number of sweets given out. **(1)**

(Total for Question 3 is 2 marks)

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4 A number is x.

(a) Write an expression, in terms of x, for 'x multiplied by 5, then decreased by 3'. **(1)**

(b) Work out the value of your expression when x = 4. **(1)**

(Total for Question 4 is 2 marks)

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5 A taxi company charges £3 plus £5 for each mile travelled. (a) Write an expression for the cost, in pounds, of a journey of m miles. (b) Work out the cost of a journey of 5 miles.

(Total for Question 5 is 3 marks)

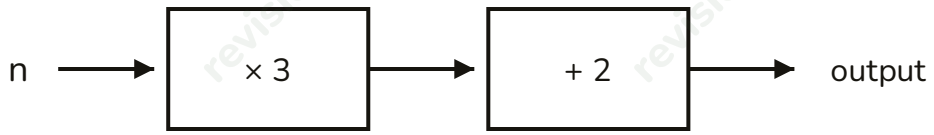
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6 Tom is x years old. Ann is 4 years older than Tom. Jo is 4 times as old as Tom. Write an expression for the sum of their three ages, in its simplest form.

(Total for Question 6 is 3 marks)

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7 A function machine takes a number n. It multiplies n by 3, then adds 2, to give the output.



(a) Write an expression, in terms of n, for the output of the function machine. **(1)**

(b) Work out the output when n = 5. **(1)**

(Total for Question 7 is 2 marks)

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8 Tom is t years old. Ann is 3 years older than Tom. Jo is 4 times as old as Tom. Write an expression for the sum of their three ages, in its simplest form.

(Total for Question 8 is 3 marks)

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9 Priya and Amir were each asked to write an expression for '7 less than twice a number, x'. Priya wrote 2x - 7. Amir wrote 7 - 2x. Who is correct? Explain your answer.

(Total for Question 9 is 2 marks)

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10 Which expression correctly represents 'the sum of a number, y, and 9, all divided by 3'?

- ☐ A) y + 9/3
- ☐ B) (y + 9)/3
- ☐ C) y/3 + 9
- ☐ D) 3(y + 9)

(Total for Question 10 is 1 mark)

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11 The table shows the cost, in pounds, of hiring a rowing boat on a lake.

Hours, h	1	2	3
Cost (£)	8	13	18

(a) Write an expression, in terms of h, for the cost, in pounds, of hiring the boat for h hours. **(1)**

(b) Work out the cost of hiring the boat for 6 hours. **(1)**

(Total for Question 11 is 2 marks)

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12 Write down an expression for the cube of a number q.

(Total for Question 12 is 1 mark)

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13 A number is n. 8 is subtracted from n, and the result is multiplied by 5. Write an expression, in terms of n, for the final answer.

(Total for Question 13 is 2 marks)

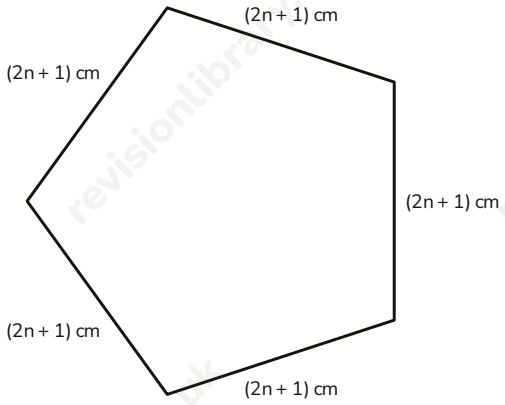
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14 The number of stickers Freya has is given by the expression 3n + 5, where n is the number of stickers her brother has. Describe, in words, what the expression 3n + 5 means in this context.

(Total for Question 14 is 2 marks)

15 The diagram shows a regular pentagon. Each side has length (2n + 1) cm.

Diagram NOT accurately drawn



(a) Write an expression for the perimeter of the pentagon. You do not need to simplify your answer. **(1)**

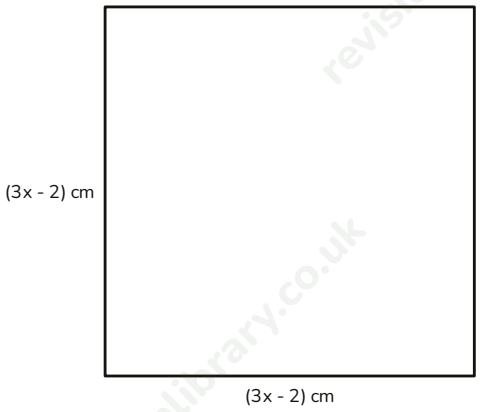
(b) Show that the perimeter of the pentagon can be written as 10n + 5. **(2)**

(Total for Question 15 is 3 marks)

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16 A square has side length (3x - 2) cm. Show that the perimeter of the square can be written as 12x - 8.

Diagram NOT accurately drawn



(Total for Question 16 is 2 marks)

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17 Tariq was asked to write an expression for 'the sum of a number w and 5, then the result doubled'. He wrote 2w + 5.

(a) Explain why Tariq's expression does not match the description. **(1)**

(b) Write down the correct expression, simplified. **(1)**

(Total for Question 17 is 2 marks)

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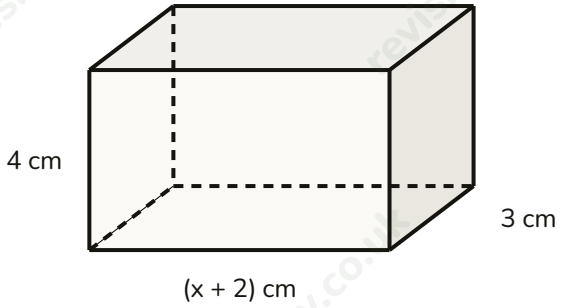
18 Noah is x years old. His younger sister Erin is 6 years younger than him. Write down an expression, in terms of x, for the sum of their ages. Simplify your answer.

(Total for Question 18 is 2 marks)

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19 A cuboid-shaped storage box has length (x + 2) cm, width 3 cm and height 4 cm. Work out an expression, in terms of x, for the volume of the box. Simplify your answer.

Diagram NOT accurately drawn



(Total for Question 19 is 3 marks)

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20 A market trader sells apples at a pounds each and pears at b pounds each. Priya buys 3 apples and 2 pears, and pays with a £20 note. Write down an expression, in terms of a and b, for her change in pounds. Simplify your answer.

(Total for Question 20 is 2 marks)

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21 A company charges a fixed setup fee of £12 plus £4 for every metre of cable and £1.50 for each connector. They supply c connectors and m metres of cable.

(a) Write an expression for the total cost in terms of m and c. **(1)**

(b) Given c = 3m, write the total cost in terms of m and simplify. Give final answer as a fraction where appropriate. **(2)**

(Total for Question 21 is 3 marks)

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Mark scheme · 2.7 Writing an Expression: Test Pack

A correct answer earns full marks unless the question asks for working, a method, proof or explanation.

Question 1

(a) x + 4 oe **B1**

(a) Answer: x + 4

(b) 6y oe **B1**

(b) Answer: 6y

Question 2

n + 6 cao **B1**

Answer: n + 6

Question 3

(a) n/5 oe **B1**

(a) Answer: n/5

(b) 5t oe **B1**

(b) Answer: 5t

Question 4

(a) 5x - 3 oe **B1**

(a) Answer: 5x - 3

(b) 17 (ft their expression) **B1**

(b) Answer: 17

Question 5

5m or 3 seen **M1**

3 + 5m oe **A1**

£28 cao **B1**

Answer: (a) 5m + 3 (b) £28

Question 6

x + 4 and 4x seen **B1**

adds the three **M1**

6x + 4 cao **A1**

Answer: 6x + 4

Question 7

(a) 3n + 2 oe **B1**

(a) Answer: 3n + 2

(b) 17 (ft their expression) **B1**

(b) Answer: 17

Question 8

t + 3 and 4t seen **B1**

adds the three **M1**

6t + 3 cao **A1**

Answer: 6t + 3

Question 9

Priya identified as correct **B1**

Valid explanation, e.g. twice x is 2x, and 7 less than 2x means subtract 7 from 2x, giving 2x - 7; Amir's expression 7 - 2x instead represents 2x subtracted from 7, which is different oe **C1**

Answer: Priya is correct; 2x - 7

Question 10

B ((y + 9)/3) cao **B1**

Answer: B) (y + 9)/3

Question 11

(a) 5h + 3 oe **B1**

(a) Answer: 5h + 3

(b) 33 (ft their expression) **B1**

(b) Answer: 33

Question 12

q^3 cao **B1**

Answer: q^3

Question 13

(n - 8) identified **M1**

5(n - 8) oe 5n - 40 **A1**

Answer: 5(n - 8)

Question 14

Recognises 3n as 3 times the number of stickers her brother has (oe: three times as many as her brother) **B1**

Recognises + 5 as 5 more than that amount (oe: then 5 extra stickers are added on) **B1**

Answer: Freya has 5 more stickers than 3 times the number her brother has.

Question 15

(a) (2n + 1) + (2n + 1) + (2n + 1) + (2n + 1) + (2n + 1) oe (unsimplified), e.g. 5 x (2n + 1) **B1**

(a) Answer: 5 x (2n + 1)

(b) 5 x (2n + 1) expanded, e.g. 10n + 5 seen with at least one correct term shown **M1**

(b) 10n + 5 cso, with the expansion shown clearly **A1**

(b) Answer: 10n + 5

Question 16

recognise perimeter = 4 x side, e.g. 4(3x - 2) **M1**

correctly expand 4(3x - 2) to reach 12x - 8 cso, with no errors seen **A1**

Answer: 12x - 8 (shown)

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Question 17

(a) correct explanation, e.g. Tariq has only doubled w and not the whole sum (w + 5) oe **C1**

(a) Answer: He only doubled w, not the whole sum (w + 5).

(b) 2w + 10 cao (accept 2(w + 5) unsimplified for M0A0 if isw applied, but 2w + 10 is the required simplified form) **B1**

(b) Answer: 2w + 10

Question 18

identify Erin's age as x - 6 and form the sum x + (x - 6) or equivalent **M1**

2x - 6 cao **A1**

Answer: 2x - 6

Question 19

substitute into volume = length x width x height, e.g. 3 x 4 x (x + 2) **M1**

simplify the numerical factor, 12 x (x + 2) or equivalent **M1**

12x + 24 cao **A1**

Answer: 12x + 24

Question 20

form the total cost 3a + 2b or equivalent **M1**

20 - 3a - 2b cao (accept 20 - (3a + 2b)) **A1**

Answer: 20 - 3a - 2b

Question 21

(a) 12 + 4m + 1.50c cao **B1**

(a) Answer: 12 + 4m + 1.50c

(b) substitute c = 3m into 12 + 4m + 1.50c, giving 12 + 4m + 1.50*3m **M1**

(b) 12 + 17/2 m cao **A1**

(b) Answer: 12 + 17/2 m

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