

11+ Maths Practice Paper

Year 5 · Intermediate

Lesson 5.3: Algebraic expressions and substitution

Read this with your child:

1. This paper has **24 questions** in two parts. Work through them in order. The questions get harder as you go.
2. **Part 1** is multiple choice. Choose **one** answer, A, B, C, D or E, and mark it on the separate answer sheet by drawing a firm line through the box next to its letter. If you change your mind, rub the line out completely and mark your new answer.
3. **Part 2** asks you to write your answer. Write it in the boxes on the answer sheet, **one digit in each box**, starting from the left.
4. If a question is hard, leave it and come back to it at the end.
5. You may use rough paper for working out. You may **not** use a calculator.
6. Suggested time: **30 minutes**.

The answer sheet is after the questions. The answers, with a short explanation of each, are at the back for a parent to mark with.

These are original practice questions written by Elite Learners in the style of 11+ entrance tests. They are not produced by, or connected with, GL Assessment or Cambridge University Press & Assessment (CEM).

Example

Here is an expression: $3n + 1$

$$n = 4$$

What is the value of the expression?

A 13

B 12

C 15

D 35

E 8

Answer: A Multiply first: $3 \times 4 = 12$, then $12 + 1 = 13$.

The answer, A, has already been marked on your answer sheet.

Now turn over and start Part 1.

Part 1: Multiple choice

1

Here is an expression: $7n$

$$n = 5$$

What is the value of the expression?

A 57

B 75

C 35

D 2

E 12

2

Think of a number, n . Multiply it by 5, then take away 2.

Which expression is this?

A $n + 5 - 2$

B $5n - 2$

C $5(n - 2)$

D $5n + 2$

E $2 - 5n$

3

Here is an expression: ab

$$a = 6 \text{ and } b = 7$$

What is the value of the expression?

A 76

B 13

C 67

D 1

E 42

4

Here is an expression: n^2

$$n = 9$$

What is the value of the expression?

A 11

B 29

C 92

D 81

E 18

5

Here is an expression: $5y + 3$

$$y = 4$$

What is the value of the expression?

A 12

B 35

C 23

D 20

E 57

6

Here is an expression: $t + t + t + t$

Which expression is the same?

- A** $t \div 4$ **B** $t + 4$ **C** $4 + t$ **D** t^3 **E** $4t$
-

7

Think of a number, n . Add 4, then multiply by 3.

Which expression is this?

- A** $4n + 3$ **B** $3(n + 4)$ **C** $3 + n + 4$ **D** $n + 12 + 3$ **E** $3n + 4$
-

8

Here is an expression: $n \div 4 + 5$

$n = 24$

What is the value of the expression?

- A** 11 **B** 33 **C** 9 **D** 101 **E** 6
-

9

Here is an expression: $2a + b$

$a = 5$ and $b = 3$

What is the value of the expression?

- A** 11 **B** 16 **C** 10 **D** 13 **E** 28
-

10

A plumber charges $40h + 25$ pounds for a job that takes h hours.

How many pounds does a 3 hour job cost?

- A** 120 **B** 95 **C** 145 **D** 68 **E** 1120
-

11

Here is an expression: $12 - n + 4$

Which expression is always the same?

- A** $n - 12 + 4$ **B** $4 - 12 + n$ **C** $12 + n - 4$ **D** $12 - 4 + n$ **E** $12 + 4 - n$
-

12

Here is an expression: $3(m - 2)$

$$m = 7$$

What is the value of the expression?**A** 17**B** 19**C** 21**D** 15**E** 8

13

Here is an expression: $n + 8$

$$n = -3$$

What is the value of the expression?**A** -5**B** 5**C** -11**D** 11**E** 24

14

Here is an expression: $p^2 - q$

$$p = 6 \text{ and } q = 2$$

What is the value of the expression?**A** 34**B** 36**C** 10**D** 38**E** 4

15

Here is an expression: $50 - 3n$

$$n = 8$$

What is the value of the expression?**A** 376**B** 26**C** 74**D** 12**E** 21

16

In this question, $a = 4$ and $b = 9$.**Which expression has the largest value?****A** a^2 **B** $b - a$ **C** $2a + b$ **D** $a + b$ **E** ab

17

A box holds c crayons. Mo has 4 boxes and 7 loose crayons.**Which expression shows how many crayons Mo has?****A** $7c + 4$ **B** $11c$ **C** $c + 4 + 7$ **D** $4c + 7$ **E** $4(c + 7)$

18

Here is an expression: $n - 3$

$$n = -4$$

What is the value of the expression?

A -7

B 7

C 12

D 1

E -1

Part 2: Write your answer

19

Here is an expression: $9n - 7$

$$n = 8$$

What is the value of the expression?

Write your answer in the boxes on the answer sheet, one digit in each box.

20

Here is an expression: $3a + 2b$

$$a = 6 \text{ and } b = 5$$

What is the value of the expression?

Write your answer in the boxes on the answer sheet, one digit in each box.

21

Here is an expression: $n^2 + n$

$$n = 11$$

What is the value of the expression?

Write your answer in the boxes on the answer sheet, one digit in each box.

22

A bouncy castle costs $15h + 20$ pounds to hire for h hours.

How many pounds does it cost to hire it for 4 hours?

Write your answer in the boxes on the answer sheet, one digit in each box.

23

Here is an expression: $4(y + 3)$

$$y = 7$$

What is the value of the expression?

Write your answer in the boxes on the answer sheet, one digit in each box.

24

Here is an expression: $mn - m$

$m = 9$ and $n = 6$

What is the value of the expression?

Write your answer in the boxes on the answer sheet, one digit in each box.

Answer sheet

11+ Maths Practice Paper · Year 5 · Lesson 5.3: Algebraic expressions and substitution

Name

Draw a firm line through the box next to your answer, like the example.

Part 1: Multiple choice

Ex	A	☒	B	☐	C	☐	D	☐	E	☐
1	A	☐	B	☐	C	☐	D	☐	E	☐
2	A	☐	B	☐	C	☐	D	☐	E	☐
3	A	☐	B	☐	C	☐	D	☐	E	☐
4	A	☐	B	☐	C	☐	D	☐	E	☐
5	A	☐	B	☐	C	☐	D	☐	E	☐
6	A	☐	B	☐	C	☐	D	☐	E	☐
7	A	☐	B	☐	C	☐	D	☐	E	☐
8	A	☐	B	☐	C	☐	D	☐	E	☐
9	A	☐	B	☐	C	☐	D	☐	E	☐
10	A	☐	B	☐	C	☐	D	☐	E	☐
11	A	☐	B	☐	C	☐	D	☐	E	☐
12	A	☐	B	☐	C	☐	D	☐	E	☐
13	A	☐	B	☐	C	☐	D	☐	E	☐
14	A	☐	B	☐	C	☐	D	☐	E	☐
15	A	☐	B	☐	C	☐	D	☐	E	☐
16	A	☐	B	☐	C	☐	D	☐	E	☐
17	A	☐	B	☐	C	☐	D	☐	E	☐
18	A	☐	B	☐	C	☐	D	☐	E	☐

Part 2: Write your answer, one digit in each box

19			
20			
21			
22			
23			
24			

Answers

For a parent to mark with. One mark for each question: the paper is out of 24. Talk through any your child got wrong, using the explanation.

Q	Answer	How to get it
1	C 35	$7n$ means $7 \times n$: $7 \times 5 = 35$, not 75.
2	B $5n - 2$	Multiply first, so no brackets are needed: $5n - 2$.
3	E 42	ab means $a \times b$: $6 \times 7 = 42$.
4	D 81	n^2 means $n \times n$: $9 \times 9 = 81$.
5	C 23	Multiply first: $5 \times 4 = 20$, then $20 + 3 = 23$.
6	E $4t$	Four lots of t is $4t$.
7	B $3(n + 4)$	The adding comes first, so it goes in brackets: $3(n + 4)$.
8	A 11	Divide first: $24 \div 4 = 6$, then $6 + 5 = 11$.
9	D 13	Multiply first: $2 \times 5 = 10$, then $10 + 3 = 13$.
10	C 145	Swap h for 3: $40 \times 3 + 25 = 120 + 25 = 145$. The job costs £145.
11	E $12 + 4 - n$	Each term keeps the sign in front of it: 12, then $+ 4$, then $- n$.
12	D 15	Brackets first: $7 - 2 = 5$, then $3 \times 5 = 15$.
13	B 5	Start at -3 on a number line and jump 8 up: $-3 + 8 = 5$.
14	A 34	p^2 is $6 \times 6 = 36$, then $36 - 2 = 34$.
15	B 26	Multiply first: $3 \times 8 = 24$, then $50 - 24 = 26$.
16	E ab	$ab = 36$, $a + b = 13$, $2a + b = 17$, $b - a = 5$ and $a^2 = 16$. The largest is ab .
17	D $4c + 7$	4 boxes hold $4c$ crayons, and 7 more makes $4c + 7$.
18	A -7	Start at -4 on a number line and jump 3 down: $-4 - 3 = -7$.
19	65	Multiply first: $9 \times 8 = 72$, then $72 - 7 = 65$.
20	28	$3 \times 6 = 18$ and $2 \times 5 = 10$, then $18 + 10 = 28$.
21	132	n^2 is $11 \times 11 = 121$, then $121 + 11 = 132$.
22	80	Swap h for 4: $15 \times 4 + 20 = 60 + 20 = 80$. It costs £80.
23	40	Brackets first: $7 + 3 = 10$, then $4 \times 10 = 40$.
24	45	mn is $9 \times 6 = 54$, then $54 - 9 = 45$.

Score: out of 24