Expressions using Letter-Numbers

Standard difficulty · 20 questions · 40 marks · Time: 30 minutes

Name: _____ Date: _____ Score: ____ / 40

Show your working for Sections B and C. Answers are on the last page — try every question first!

Section A — Choose the correct answer — 8 × 1 = 8 marks

1. If y = 10, the value of 7y + 17 is:
(a) 189 **(b)** 34 **(c)** 727 **(d)** 87

2. 11k + 9k equals:
(a) $20k^2$ **(b)** 20 **(c)** 20k **(d)** 99k

3. In 5n, the letter n stands for:
(a) the number 10 **(b)** nothing **(c)** 5 **(d)** any number

4. Which expression means "2 less than 9 times a number k"?
(a) 9k − 2 **(b)** 2k − 9 **(c)** 2 − 9k **(d)** 9(k − 2)

5. Which of these is a like term of 7p?
(a) 7px **(b)** 7x **(c)** 7 **(d)** 14p

6. The perimeter of an equilateral triangle of side a is:
(a) 6a **(b)** 3a **(c)** a + 3 **(d)** 4a

7. Matchstick squares in a row need 3n + 1 sticks for n squares. For 10 squares you need:
(a) 13 **(b)** 30 **(c)** 31 **(d)** 40

8. If x = 7 and y = 2, the value of 7x + 9y is:
(a) 67 **(b)** 77 **(c)** 144 **(d)** 25

Section B — Short answer — 8 × 2 = 16 marks

9. Simplify (8y + 17) + (11y − 16).

10. Find 6t + 4 for t = 5, 6 and 7.

11. Vikram has x marbles. Dev has 11 more than 2 times as many as Vikram. Write an expression for Dev's marbles.

12. A row of triangles, each sharing a side with the next, is made with matchsticks. Write an expression for the sticks needed for n triangles, then use it for n = 13.

13. Simplify (14y + 23) − (8y + 5).

14. Check that 9(x + 4) and 9x + 36 are equal when x = 5.

15. In a 3 × 3 square of dates on a calendar the middle date is 19. Write the nine dates as expressions in m, and find their sum.

16. Simplify 9(k + 9) + 6k.

Section C — Word problems — 4 × 4 = 16 marks

17. A zoo ticket costs Rs 193 for an adult and Rs 122 for a child. Write an expression for the cost of a adults and c children, then find it for 6 adults and 9 children.

18. Zoya is a years old. Zoya's mother is 4 years more than 3 times Zoya's age. Write her age as an expression, and find it when Zoya is 10.

19. A rectangle's length is 15 cm more than its breadth b. Write an expression for its perimeter, and find the perimeter when b = 11 cm.

20. In a growing pattern, figure n has 2n + 1 tiles. How many tiles are in figure 1, figure 2 and figure 19? How many tiles are added each time?

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Answer key

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Q	Answer	Working
1	**(d) 87**	7 × 10 + 17 = 87
2	**(c) 20k**	11 + 9 = 20
3	**(d) any number**	5n means 5 × n
4	**(a) 9k − 2**	—
5	**(d) 14p**	the same letter part
6	**(b) 3a**	3 equal sides: 3 × a
7	**(c) 31**	3 × 10 + 1
8	**(a) 67**	49 + 18
9	**19y + 1**	8y + 11y = 19y; 17 − 16 = 1
10	**34, 40, 46**	each time it goes up by 6
11	**2x + 11**	2 × x + 11
12	**2n + 1; 27 sticks**	3 for the first, then 2 for each new one: 3 + 2(n − 1) = 2n + 1
13	**6y + 18**	14y − 8y = 6y; 23 − 5 = 18
14	**both are 81**	9 × 9 = 81; 45 + 36 = 81
15	**m − 8 … m + 8; sum 9m = 171**	the dates pair up around the middle: the sum is 9 × the middle
16	**15k + 81**	9k + 81 + 6k
17	**193a + 122c; Rs 2,256**	193 × 6 + 122 × 9
18	**3a + 4; 34 years**	3 × 10 + 4
19	**2(2b + 15) or 4b + 30; 74 cm**	2 × (b + b + 15)
20	**3, 5, 39; 2 added each time**	2 × 19 + 1 = 39

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