

Algebra & Sequences: Medium Practice Paper

Q1. A number machine multiplies every input by 4 and then adds 3. Which number must go in for 31 to come out?

- A. 5 B. 6 C. 7 D. 8 E. 9

Q2. The table shows how many matchsticks are used to build each pattern. How many matchsticks are needed for pattern 8?

Pattern number	1	2	3	4
Matchsticks	4	7	10	13

- A. 22 B. 25 C. 28 D. 31 E. 34

Q3. Which of these expressions has the same value as $6(n + 2)$?

- A. $6n + 2$ B. $6n + 8$ C. $6n + 12$ D. $n + 12$ E. $12n$

Q4. What is the next number in this sequence?

0.4, 0.9, 1.4, 1.9, ?

- A. 2.1 B. 2.3 C. 2.4 D. 2.5 E. 2.9

Q5. The sequence 3, 7, 11, 15, ... carries on in the same way. Which of these numbers is a term in it?

- A. 30 B. 42 C. 55 D. 61 E. 74

Q6. To work out the cost in pounds of hiring a rowing boat, Sam uses the formula $C = 5h + 12$, where h is the number of hours. What does it cost to hire the boat for 4 hours?

- A. £17 B. £24 C. £29 D. £32 E. £68

Q7. A sequence goes up by the same amount each time. Its 2nd term is 9 and its 6th term is 29. What is the 4th term?

- A. 14 B. 17 C. 19 D. 21 E. 24

Q8. Ella thinks of a number, n . She multiplies it by 5 and then subtracts 6, and her answer is 29. Which equation shows what Ella did?

- A. $5n - 6 = 29$
B. $5n + 6 = 29$
C. $5(n - 6) = 29$
D. $6n - 5 = 29$
E. $6 - 5n = 29$

Q9. Solve for x .

$$24 \div x = 6$$

- A. 3 B. 4 C. 6 D. 8 E. 18

Q10. The n th term of a sequence is $7n - 2$. How much bigger is the 10th term than the 7th term?

- A. 3 B. 7 C. 14 D. 21 E. 28

Q11. Simplify this expression.

$$4 \times p \times 3 \times q$$

- A. $12pq$ B. $7pq$ C. $12p + q$ D. $12 + pq$ E. $43pq$

Q12. Three identical bags of marbles together with 4 loose marbles hold 25 marbles altogether. How many marbles are in each bag?

- A. 5 B. 6 C. 7 D. 8 E. 9

Q13. An equilateral triangle has a perimeter of $(9y + 12)$ cm. Which expression gives the length of one side?

- A. $3y + 12$ B. $9y + 4$ C. $3y + 9$ D. $6y + 12$ E. $3y + 4$

Q14. What is the next term in this sequence?

$\frac{1}{4}, \frac{1}{2}, \frac{3}{4}, 1, ?$

- A. $1 \frac{1}{4}$ B. $1 \frac{1}{3}$ C. $1 \frac{1}{2}$ D. $1 \frac{3}{4}$ E. 2

Q15. Which of these sequences has $4n + 5$ as its n th term rule?

- A. 4, 9, 14, 19
B. 5, 9, 13, 17
C. 9, 13, 17, 21
D. 9, 14, 19, 24
E. 5, 10, 15, 20