Factors and multiples topic test

12 questions | 24 marks | 30 minutes

Factor pairs, positive multiples, divisibility tests and clear factor-finding procedures.

Equivalent correct methods earn the corresponding marks.

1. Write one multiplication fact that proves 4 is a factor of 28. [1 mark]

Four divides twenty-eight without a remainder.

Answer: $4 \times 7 = 28$.

2. List all positive factors of 12 in order. [2 marks]

Use pairs 1×12, 2×6 and 3×4.

Answer: 1, 2, 3, 4, 6, 12.

3. Write the first four positive multiples of 7. [1 mark]

Multiply seven by one, two, three and four.

Answer: 7, 14, 21, 28.

4. Is 246 divisible by 3? Show a divisibility check. [2 marks]

$2 + 4 + 6 = 12$, which is divisible by three.

Answer: Yes.

5. Which of 2, 5 and 10 divide 135 exactly? [1 mark]

Its final digit is five, which is odd and not zero.

Answer: 5 only.

6. List the positive common multiples of 4 and 6 that are at most 30. [2 marks]

Both twelve and twenty-four occur in the two multiplication lists.

Answer: 12 and 24.

7. Find all positive factor pairs of 24. [2 marks]

Check candidate divisors in order and record both partners.

Answer: 1×24, 2×12, 3×8 and 4×6.

8. Explain why 9 is not a multiple of 6, although 3 is a factor of both numbers. [2 marks]

The multiples of six around nine are six and twelve.

Sharing a factor does not make one number a multiple of the other.

Answer: No whole number of sixes equals nine.

9. For a target of 36, should a factor-pair algorithm test candidate 6 before stopping? Explain. [2 marks]

6×6 equals thirty-six, so this is a valid factor pair.

Stop only once the candidate square is greater than the target.

Answer: Yes.

10. A school has 36 chairs. Arrange them in rectangular rows with at least two chairs and two rows. Give every factor pair, ignoring turns. [3 marks]

List all pairs: 1×36, 2×18, 3×12, 4×9, 6×6.

Remove 1×36 because one row is not allowed.

Answer: 2×18, 3×12, 4×9 and 6×6.

11. Fill the square in $42\square$ with a digit so the number is divisible by both 5 and 3. Find every answer and show your checks. [3 marks]

The five test allows zero or five.

420 has digit sum six and works. 425 has digit sum eleven and fails.

Answer: 0.

12. Ben's factor rule tests only even candidates. Use 21 to show why the rule fails, then describe a repair. [3 marks]

Twenty-one has pairs 1×21 and 3×7.

Both small factors are odd, so even candidates cannot find them.

Answer: It misses all factor pairs of 21. Start at one and test each positive candidate in order up to the square stopping point.