Year 5 | Olympiad Mathematics

Non-routine puzzles: explain your strategy even if unsure

Student name: _____ Date: _____

Suggested time: 50 minutes. Work independently where possible. Show your thinking. This is a learning snapshot, not a pass/fail exam.

Patterns and mathematical structure

1. Find the next two terms: 2, 5, 11, 23, 47, __, __. Explain the rule.

2. The sum of three consecutive whole numbers is 72. What are the numbers?

3. Using digits 1, 2, 3 and 4 exactly once, make the greatest possible even four-digit number.

4. A two-digit number has digits that add to 11. Reversing the digits makes the number 27 smaller. Find the original number.

Logic, counting and strategy

5. There are 5 children. Each child shakes hands once with every other child. How many handshakes occur?

6. A snail climbs 4 m each day and slips 2 m each night. How many days to reach the top of a 10 m wall?

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7. A 3 by 3 grid of small squares is drawn. How many squares of all sizes are there?

8. You have 8 coins. One is heavier than the others. Using a balance scale, what is the fewest weighings needed to guarantee finding it? Explain.

9. Three boxes are labelled Apples, Oranges, Mixed. Every label is wrong. You may take one fruit from one box. Which box should you choose, and how can you relabel all boxes?

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10. How many different three-digit numbers can you make using 1, 2, 3 without repeating digits?

11. A farmer has chickens and rabbits: 12 heads and 34 legs altogether. How many rabbits are there?

12. A square has perimeter 32 cm. Four identical smaller squares fit exactly into it in a 2 by 2 arrangement. What is the perimeter of one small square?

Olympiad Mathematics | Parent Guide

How to use this guide

Allow the child to work independently first. Read instructions aloud if needed, without explaining the answer. Record whether each response was independent, prompted, or supported. Discuss reasoning after the assessment.

Suggested answers and what to observe

1. 95, 191; double and add 1.

Look for: Explaining a general rule.

2. 23, 24, 25.

Look for: Using symmetry around the middle number.

3. 4312.

Look for: Largest even arrangement; compare valid endings.

4. 74; tens digit 7 and ones digit 4.

Look for: Translating a digit relationship into logic.

5. 10 handshakes.

Look for: Counting each pair once.

6. 4 days: after three nights at 6 m; reaches 10 m on day four.

Look for: Avoiding an unnecessary final slip.

7. 14 squares: nine 1x1, four 2x2, one 3x3.

Look for: Systematic counting.

8. 2 weighings: split 3,3,2; compare 3 vs 3, then narrow to 1 of 3 or 2.

Look for: Efficient decision tree.

9. Pick from Mixed; because label is wrong, it is a single-fruit box. Deduce the other two from incorrect labels.

Look for: Elimination and consistency.

10. 6 numbers.

Look for: Permutations 3 x 2 x 1.

11. 5 rabbits, 7 chickens.

Look for: Extra legs over all chickens: (34-24)/2.

12. 16 cm; large side 8 cm, small side 4 cm.

Look for: Geometric scaling.

Parent reflection and next steps

Strengths observed: _____

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Skills to revisit: _____

One helpful next activity: _____

Avoid treating one result as a fixed ability label. Look at explanations, independence and willingness to try unfamiliar tasks. Revisit selected skills after practice.

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