



INVESTIGATIONS

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NUMBER SEARCH

Number Search is a versatile maths routine that's great for primary classrooms across Levels 1–6. It's short, repeatable and engaging. What's more, it's a powerful way to help students build skills in multiplication, division and shape.

HOW IT WORKS

Present students with an arrangement of shapes. See the picture for an example. Give students time to make sense of the image. Then present the problem: *'The blue rhombus is worth 2. What are the other shapes worth?'*

Students might work on the problem on their own or with a partner. Many will find it helpful to use pattern blocks or a print-out of the image. Then, open up discussion – ask students for answers, but importantly also for the reasons behind these. The focus on strategy makes for lively discussion. It also gives you valuable evidence of what your students understand.

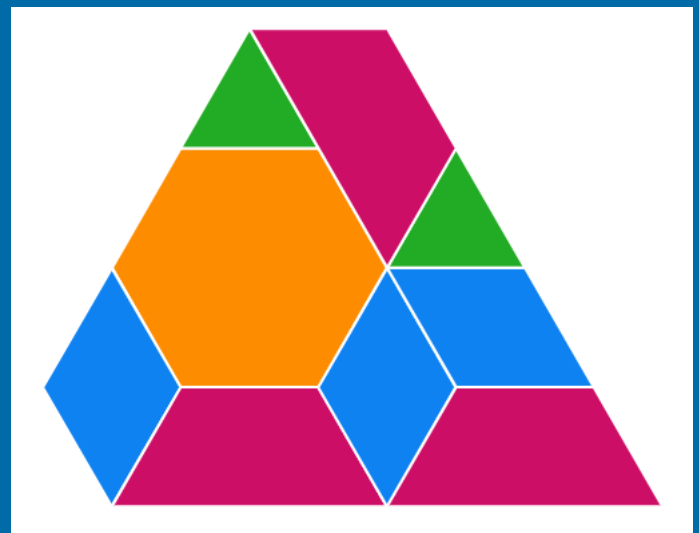
An important point to highlight is *what* students are calculating. Typically, they will calculate the *areas* of shapes. Other interpretations, however, could be the value of the perimeter, or a rule for the number of corners (i.e. corners minus 2). You may want to steer students towards one interpretation, or leave it open – always with the expectation that students can justify their solutions.

GO FURTHER

By keeping this routine short, but returning to it regularly, students will become familiar with how it works. They'll be able to look at more complex images or prompts over time, forming new insights and mathematical connections. Help students to go deeper, by asking questions such as:

- If we are thinking about area, how can we work out the value of the orange hexagon?
- What's a different way you can find the value of the pink trapezium?
- Discuss Lee's solution with a partner. Why does it work?
- Take a strategy you've heard someone else describe. Can you use it for this next example?

Using the exact same image in later lessons, you can also help students to practice strategies and stretch their thinking. Here are some other prompts you might use:



- The blue rhombus is worth 4 (or 3, 1, etc.)
- The pink trapezium is worth 2 (or 5, $\frac{1}{2}$, etc.)
- The whole shape is worth 14 (or 10, 1, etc.)

WHY USE IT?

Number Search gives learners valuable practice in: multiplication and division, proportional reasoning, visualising fractions, spatial reasoning, comparing shapes, justifying and explaining their thinking.

TIPS FOR GETTING STARTED

- Start with an easy prompt: All students can then get involved and understand the routine.
- Make it short and keep coming back. This builds skills over time.
- Write what students say. This helps strategies to be shared and understood. It also reduces the cognitive load and helps students to focus. Scan the QR code to get more variations and prompts.



What kinds of investigations have you used in your classroom as a launch for mathematical exploration? Our readers would love to hear your experiences. You can share your ideas with us at primenumber@mav.vic.edu.au.