

INVESTIGATIONS

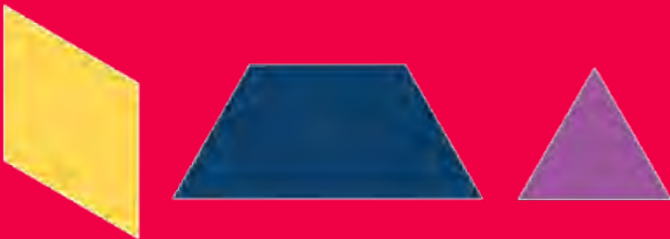
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POLYGON PLAY

With just a few shapes to use, Polygon Play quickly invites learners into an unsuspecting and fun problem solving challenge that draws on geometry, transformations and strategy.

HOW IT WORKS

Just three shapes are needed to launch Polygon Play.



After presenting the shapes to students, ask: What do you notice? What do you wonder?

These two questions will help students to slow down their thinking and make sense of the features of the shapes, before you then pose the main challenge:

Join these three polygons in any way. What's the most sides you can get?

Providing students either with pattern blocks or printed copies of each shape will help them to easily play with the different orientations of each shape and test out ideas.

When students think they have a solution, asking 'Are you sure?' will prompt them to use reasoning and justify their thinking.

A powerful way to wrap up Polygon Play is to invite students to share their solutions. It's an opportunity to look at similarities and differences between students' creations, and to also introduce relevant vocabulary, such as regular, irregular and rotation.

Note: A key observation is to notice the total number of sides for the three shapes (i.e. 11), and to then consider: How can I join the shapes so that all sides of each shape are counted?

GO FURTHER

Here are examples you could use as a follow-up to the original problem. These will help students take their strategies and their thinking ever further:

- What's the least number of sides you can get with these same three shapes?
- Give two copies of each shape (i.e. six in total). What's the most sides you can get? Least?
- Add a square to the original set. Choose any three polygons. Can you use them to make a shape with 11 sides? Are other combinations possible?

You can also turn Polygon Play into a regular routine. Each time, give the same (or a similar) prompt but with a new combination of shapes. Doing so will allow students to go deeper over time, forming new insights and getting stronger in their spatial reasoning and thinking.

WHY USE IT?

Polygon Play gives learners valuable practice in:

- Creating and naming shapes
- Identifying the properties of shapes
- Understanding transformations
- Spatial reasoning
- Organising and making sense of data
- Making and breaking conjectures.

CURRICULUM LINKS

Polygon Play links to many content descriptors within Space and Measurement in the new Victorian Curriculum, including: VC2M1M01 and VC2M1M02 (Level 1), VC2M2SP01 and VC2M2M01 (Level 2), VC2M3SP01 (Level 3), VC2M4SP01, VC2M4SP02 and VC2M4M02 (Level 4), VC2M5SP03 and VC2M5M02 (Level 5).

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.