



Visualizing Pathways Day 1

Introduction

This activity is an opportunity for students to think visually to make sense of the different pathways connecting two points on a geometric prism. Students work to justify a pathway as the shortest and develop their reasoning using multiple pieces of evidence.

Agenda

Activity	Time	Description/Prompt	Materials
Mindset Message	10 min	Play the mindset video, <i>The Importance of Struggle</i> , https://www.youcubed.org/weeks/week-4-community-college/	Mindset Video day 1, <i>The Importance of Struggle</i>
Launch	10 min	<ul style="list-style-type: none"> Introduce the activity to students. Have groups select a geometric solid to start with. 	<ul style="list-style-type: none"> Visualizing Pathways handout Geometric solids or paper nets
Investigate	30 min	<ul style="list-style-type: none"> Investigate the different geometric solids and pathways. Record conjectures and justifications. Describe the shortest pathway between the two points on any shape traveling on the surface. 	<ul style="list-style-type: none"> Maths journals Pencils
Discuss	15 min	<ul style="list-style-type: none"> Share possible pathways and conjectures and justifications for the shortest pathway. Define the shortest pathway between the two points on any shape. 	
Debrief Mindset Message	5 min	Ask students to reflect on the struggles they had while they explored the activity. Invite them to share the moments when they were challenged the most and what they learned from going through that challenge. Remind them of the idea that they are learning the most when they are struggling at the edge of their understanding.	



Activity

Set students up to work in groups. Let them know that working in groups on this activity is beneficial because it allows them to see and discuss lots of possibilities which allows them to explore many different ways to visualize this problem and justify their conjectures.

Introduce the problem by showing any of the geometric solids and telling students they will be exploring the question, "What is the shortest pathway between two points on the solid traveling on the surface?" Show them the points on the solid. Tell them they will need to develop justifications for their conjectures about which pathway they believe is the shortest.

Display the images of the solids and invite groups to decide which one they would like to start with. Encourage them to select a solid they think would be challenging. Make the paper solids available for students and invite them to take one to use at their table. If you have made a set of paper solids for the class instruct them not to draw on it.

As groups are exploring, suggest they record the different pathways, conjectures, and justifications in their maths journal. Encourage groups to be specific in their conversations about how they know the pathway is the shortest, which will help them write thorough justifications.

Once groups have explored 2-3 shapes bring the class together. Invite groups to share their conjectures and justifications for the shortest pathways.

Visualizing Pathways

What is the shortest pathway between two points on the solid traveling on the surface? Include your conjectures, assumptions and visuals or diagrams.











