

Description

- Develop a formula for finding the area of a trapezoid.

Materials

- BLM 16.1

Assessment Opportunities

Minds On ...

Whole Class → Sharing

Discuss and clarify the task on BLM 16.1.

Pairs → Think/Pair/Share

Give students two minutes to think about and to record independently the process that they will use to find the rule for the area of a trapezoid. Students share strategies with a partner. Using a different colour, students record any changes they wish to make in their process.

Action!

Individual → Assessment Activity

Curriculum Expectations/Investigation/Checkbric: Focus this assessment on communication and inquiry, as well as patterning skills (BLM 16.2).

Students work through BLM 16.1, using manipulatives and materials, as appropriate. They state a rule and provide justification for their conjecture. It is more important that students use the inquiry process established in the previous lessons than that they generate the usual form for the rule or formula.

Consolidate Debrief

Whole Class → Sharing

Collect student work. Students discuss the processes they used and rules that they discovered.

Home Activity or Further Classroom Consolidation

Identify as many trapezoids as possible in your home, school, and community. Answer “Is This Always True?”

Application

Area of a trapezoid is in Term 3 cluster of expectations.

Students should keep their work for Term 3.

Generate a list of trapezoids that students discovered for reference in Term 3.

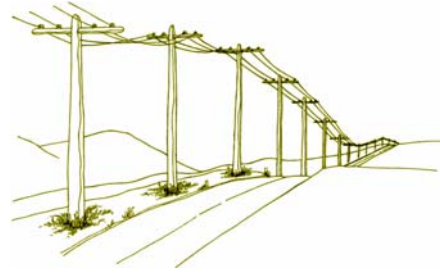
When returning graded work to students, consider photocopying samples of Level 3 and 4 responses with student names removed. Select and discuss with the class, samples that show a variety of strategies.

See page 18, *Developing Perimeter and Area Formulas* content-based package.

16.1: Area of a Trapezoid

Name:

Date:



Your company has been hired to seal paved highways. Sealant is applied in trapezoidal sections to ensure bonding. As there are curves and intersections, the trapezoids change size and shape for each area. Engineers need to determine the amount of sealant required to cover any trapezoidal area.

Trapezoids are four-sided polygons with two parallel sides. Some examples are provided:



Task

Determine a rule the engineers could use to calculate the area of any trapezoid.

Suggested methods include:

- Use pattern blocks to construct various trapezoids that are then sketched on dot paper.
- Draw several trapezoids on dot paper and determine their areas.
- Construct a variety of trapezoids and take useful measurements for calculating the area.
- Cut out the trapezoids and cut them further into basic shapes, like squares, rectangles, and triangles.

Record any numerical data that may help you identify patterns in an organized fashion.

Describe how to find the area for any trapezoid. Express your rule as clearly as possible, using words, pictures, and symbols.

Your process and communication are important for assessment purposes.

16.2 Assessment Tool: Area of a Trapezoid

Note: Since this performance task is to be assessed for inquiry, it is important that students not have been introduced to finding the area of the trapezoid previously. Students should not be expected to develop the standard form for the formula for the required area. Rather, any form, e.g., verbal, symbolic, or diagrammatic, for the area should be given full credit.

Mathematical Process (Category)	Criteria	Below Level 1	Level 1	Level 2	Level 3	Level 4
Knowing Facts and Procedures (Application)	Correctness	Use a marking scheme.				
Reasoning and Proving (Problem Solving)	Gathering appropriate measurement data connected to area of trapezoids					
	Connection between the pattern identified in areas of trapezoids and the areas of particular trapezoids					
Demonstrating Understanding (Understanding of concepts)	Appropriateness of the strategy chosen for calculating areas of trapezoids					
	Completeness of the strategy chosen					
Communicating (Communication)	Use of conventions accurately, effectively, and fluently					
	Clarity of rule					