Virtual Lesson: Tips on Implementing Area of Polygons

About the lesson

This lesson was developed by Rob Stroud, Math Teacher at Westerly Middle School during the spring of 2020 as part of an NCII community of practice focused on virtual intervention delivery. Please note that NCII does not endorse specific intervention programs. As such, any programs noted in these documents are used for illustrative purposes only, or as potential resources for source materials (e.g., sample text, graphic organizers).

The accompanying PowerPoint presentation has activities associated with finding the area of various polygons, the area of circles, and the relationship between the area formulas, as well as a final activity exploring the area of a parallelogram and the area of a circle. This PowerPoint presentation is not intended to be used in one virtual session but as guidance for a unit of study related to the area of polygons. This unit was created to support making the connections between various polygons and their areas rather than just providing formulas to compute.

Materials needed to implement the lesson

- A virtual conferencing platform for synchronous sessions
- A platform to host the materials, such as Google Classroom or Seesaw
- Paper and pencil
- Internet access: If you have students who do not have internet access, please see the additional support materials that can printed for them as a packet, *or* they can print the materials on their own.

Additional support materials

- Printable supplemental materials
- Video of the activity in action
- Videos of how to use the Geoboard app, draw on Google Slides, and share work on Geoboard

Sample schedule for lesson implementation

<table>
<tr><th></th><th colspan="2">Day 1</th><th colspan="2">Day 2</th><th colspan="2">Day 3</th><th colspan="2">Day 4</th></tr>
<tr><th></th><th>Synchronous</th><th>Asynchronous</th><th>Synchronous</th><th>Asynchronous</th><th>Synchronous</th><th>Asynchronous</th><th>Synchronous</th><th>Asynchronous</th></tr>
<tr><td>Pre-Activity</td><td></td><td>Have students create a Frayer Model for the area of polygons. A paper version is included in the supplemental materials, and an electronic version is on Slide 3.</td><td></td><td>Complete the Exploring Area Polygons Worksheet.</td><td></td><td>Review properties of circles Khan Video Slide 19.</td><td></td><td>Finalize the activity. E-mail photos of work and worksheet. View the video on slide 40.</td></tr>
<tr><td rowspan="3">Lesson</td><td colspan="2">Review area of polygons.</td><td rowspan="2">Select small groups of students or individuals to meet with for 15–20 minutes to ensure understanding of technology, math content, or check in. Depending on needs</td><td rowspan="2">Have students continue independently for area of triangle and area of trapezoid (Slides 10–17).</td><td rowspan="2">Bring the group together to review Slides 20–27.

Decide to have students work in breakout rooms, independently or in small groups. This is another opportunity for a specialist or special educator to more explicitly support students in a smaller group.</td><td rowspan="2">If students do not have access to the internet to join the call, you can send paper versions of the slides to the students, along with the supplemental handout, which walks through the circle and parallelogram activity. (Scheduling a phone call to walk through the information would be beneficial.)</td><td rowspan="3">Come together for a review/debrief. Arrange student work in a purposeful progression, take time to ensure you have the work from every student, and, at the end of the debrief, troubleshoot with students who are struggling.</td><td rowspan="3"></td></tr>
<tr><td>Model: How to use the Geoboard app, the tools on Google Slides, or printing and drawing the shapes to explore the relationship to parallelograms</td><td>Upload a video modeling how to use the app, Google Slides, or drawing the shapes.</td></tr>
<tr><td>Review Slides 6–9 as a group. While you are in session, have students complete the activity on Slide 8 and share their results link in the chat box or by pasting it into a slide.</td><td>Share the slides with students to complete independently (Slides 3–9).</td><td colspan="2">Review the Basics of Geometry with Euclid Video Story (Slide 17) in preparation for Day 3 activities.</td><td colspan="2">Begin working on the circle and parallelogram activity (Slides 27–39).</td></tr>
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What to Submit	• Completed Frayer Model in various formats, depending on access • Evidence of work from Slide 8 activity	• Exploring Area of Polygons Worksheet *without area of circle information* • Evidence of work from Slides 13 and 16 activities		• Circle and parallelogram activity results

Resources

Math Learning Center Geoboard app:
https://apps.mathlearningcenter.org/geoboard/
YouTube video: Circles: radius, diameter, circumference and Pi | Geometry | Kahn Academy
https://www.youtube.com/watch?v=jyLRpr2P0MQ&feature=youtu.be
YouTube video: How to make a square from a circle - Euclid
https://www.youtube.com/watch?v=7CMqvLef_1g&list=PLBC2C30303C0DEAE3&index=6&t=0s
YouTube video: Area of a circle, how to get the formula
https://www.youtube.com/watch?v=YokKp3pwVFc