

Name(s): [REDACTED]		Lesson length: 25 minutes
Grade Level: 6th	Subject: Math	Topic: Polygons on the Coordinate Plane

I. Standards	
Utah State Core Curriculum Strand(s) and Standard(s):	6.G.3 Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems.
Summative Assessment:	Module 11 Test
Central Focus:	Graphing Polygons on a Coordinate Plane
Rationale:	Students are learning how to graph polygons on a coordinate plane. It's important for students to understand graphing polygons so that in future lessons they can find perimeter and area of these polygons as well as future grades when they move to more complex topics using the coordinate plane. This builds on their knowledge of graphing points on the coordinate plane.

II. Intended Learning Outcomes	
Learning Objective/Goal/Target/Indicator: (Know and Do)	Know: Student will know how to graph polygons on a coordinate plane Do: Students will graph polygons on the coordinate plane

III. Assessment of Student Progress	
Pre-assessment:	Students will answer what a polygon is, examples of polygons and how many sides each of them have.
Informal assessment(s):	Stop and go cards during the lesson. Used as a way to inform the teacher how the students are feeling about a concept/understand it.
Formal assessment:	Check Understanding in Into Math pg 352 #1 A

IV. Preparation	
Students' prior knowledge, skills and assets:	Prior Knowledge: Graphing points on the coordinate plane.

	<p>Prior Skills: Shape sense and part of the coordinate plane.</p> <p>Assets: Collaborative class, friends with everyone, respectful to teacher.</p>
Student preparation (if applicable):	N/A
Teacher preparation:	Review slides and student notes they're given.
Technology integration (as applicable):	Electronic whiteboard, ActiveInspire program.

V. Instructional Procedures (including models of instruction, strategies, assessments, differentiation, transitions, etc.)

Call on a student to read the learning target: We can graph polygons on a coordinate plane.

Have a student read the definition of a polygon (a polygon is a closed plane figure formed by three or more line segments that intersect only at their endpoints) and examples of polygons (triangles, quadrilaterals, pentagons and hexagons). Ask students how many sides each polygon has and have them call them out.

Hook: Does anyone know what a seven/nine/ten sided polygon is called? "Write it on your whiteboards and if you don't know, put a question mark and that's okay you'll learn something new."

Identifying a quadrilateral as a parallelogram (opposite sides must be parallel), trapezoid (quadrilateral with at least one pair of parallel sides), rectangle (quadrilateral with four right angles) and rhombus (quadrilateral must have sides of equal length and parallel opposite sides. Differentiating a square from a rhombus (a square is a rhombus whose sides meet at right angles.) Draw each of these on the whiteboard and have students write down.

Call on a student to read what a vertex is (a vertex is the point where two or more straight lines meet. The plural of vertex is vertices.)

Three figures are shown that are open and closed, regular/irregular. Students are asked what they notice about them and if it is a polygon. "Discuss with tables and then I'll call on a table so be ready."

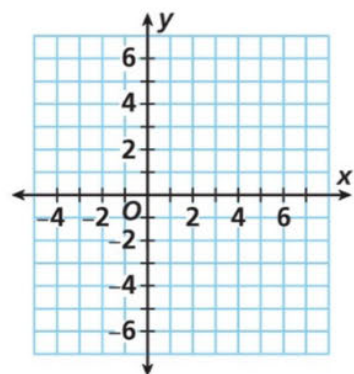
Model how to plot the points, connect them, how many vertices it has and classify the shape given.

Describe the polygon with vertices $F(2, 5)$, $G(7, 1)$, $H(2, -6)$, and $J(-3, 1)$.

Plot the points on the coordinate plane.

Connect the points drawing straight lines from F to G , G to H , H to J , and J to F . Classify the polygon you drew by the number of sides.

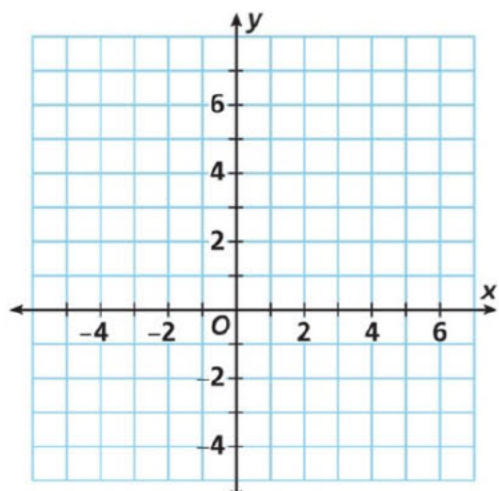
How many vertices does it have?



Guided practice on a similar problem of a real-world situation. Ask questions on how the teacher would graph and how to connect. On their white boards show the teacher how many sides and what it is classified as.

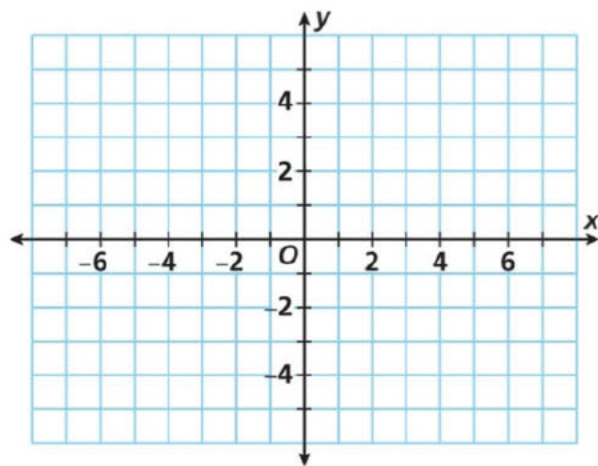
Wesley designs a shark fin for a costume. He chooses the points $K(1, 7)$, $L(3, 5)$, $M(6, -3)$, $N(-5, -2)$, and $P(-1, 1)$ to model the fin.

- A. Graph the points on the coordinate plane.
 - B. Connect the points in order from K to L to M to N to P , and back to K .
 - C. How many sides does the polygon that you drew have? Classify the polygon by the number of sides.
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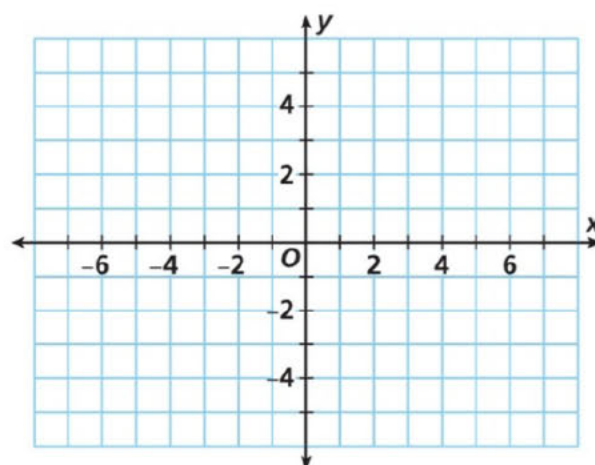
Have students hold up stop and go cards about how they're feeling so far with their eyes closed. Take a mental note of who holds up red/yellow cards. Model a problem where two points are given and we have to find possible coordinates for a point to make the figure a right triangle. Plot the points and connect.

Consider the points $K(1, 2)$ and $L(3, 5)$. What possible coordinates for Point J will make Figure JKL a right triangle with the right angle at Point J ? Graph Triangle JKL on the coordinate plane shown.



Guided practice with a similar problem but we are finding coordinates of a point for an isosceles triangle and has to be in quadrant IV. Graph the points and connect. On their whiteboards give possible coordinates. Talk with a partner and explain how we would use a ruler to check.

MP Use Tools An isosceles triangle has two sides of the same length. Isosceles triangle DEF has vertices $D(4, -5)$ and $E(-2, -5)$. What are possible coordinates for Point F in section of Quadrant IV shown in the coordinate plane? Explain how you could use a ruler to check your answer.



This is a problem from your homework!

Have students hold up stop and go cards if they can do it- green, kind of do it- yellow and I'm super confused- red with their eyes closed again. Students try on their own in their workbooks on check understanding page 352 #1 A and also Into Math: Polygon on a Coordinate Plane Day 1.

VI. Academic Language

Language Function:	Graphing
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Language Demand

Vocabulary:	Polygon, vertex, vertices, heptagon, nonagon, decagon
Syntax:	N/A
Discourse:	Oral and written

Language Supports:

	Vocabulary:	On a slideshow and discussion
	Syntax:	N/A
	Discourse:	Class notes and slides

VII. Addressing Learners' Needs - Use what you have learned in these courses to respond to these items.

Differentiation/ Individualization:	Provide written notes, visuals and hands on practice for a variety of learners. Have a variety of ways to share knowledge including having groups of students share at tables, partners, on whiteboards and calling out.
Support for ELLs:	Provide vocabulary in slideshow as well as when needed during practice on their own.
Accommodations/ Modifications for IEPs/504s:	Math aide support for 504 for thirty minutes. Extended time on math assignments for the student with 504 and students with IEPs. Check understanding in a quiet room with minimized distractions and practice problems on paper for behavior IEP.