Cache Code Math Computer Lab Activity: Geometry (Guess the Quadrilateral)

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Guess the quadrilateral

Create a quiz for your classmates to try
GET READY

Go to the link below:
https://scratch.mit.edu/projects/637976933

Click Sign in. Skip signing in if your teacher tells you to.

Click Remix if you’re logged in and then the See inside button.

The program has 6 pre-made blocks that you will use later

Set 1

<table>
<thead>
<tr>
<th>Code Block</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>ask</code></td>
<td>Is this a regular polygon or is not a regular polygon? Type 1 for regular polygon or type 2 for not a regular polygon, and wait</td>
</tr>
<tr>
<td><code>say</code></td>
<td>Yes, you got it! for 5 seconds</td>
</tr>
<tr>
<td><code>say</code></td>
<td>No, the correct option was 1: regular polygon because all sides are congruent and all angles are congruent. for 5 seconds</td>
</tr>
</tbody>
</table>

Set 2

<table>
<thead>
<tr>
<th>Code Block</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>ask</code></td>
<td>Is this a rectangle or a square? Type 1 for rectangle or 2 for square, and wait</td>
</tr>
<tr>
<td><code>say</code></td>
<td>Yes, you got it! for 5 seconds</td>
</tr>
<tr>
<td><code>say</code></td>
<td>No, the correct option was 1: rectangle. A square is a special kind of rectangle, but this rectangle is not a square. for 5 seconds</td>
</tr>
</tbody>
</table>

TRY IT

Click the code blocks to see what they do
Nano is located at the origin, which is x=0, y=0 or (0,0).

Nano will go to coordinates (0, 0).

Change the size of the sprite to 30 or lower so that you can see what nano is drawing.

Set the pen size to 5.

The sprite (Nano) will look at 90 degrees.
This polygon is a square. It is a special quadrilateral because it has 4 equal sides and 4 right angles.

The code added to the square block will draw a square.
The sides of the square are all congruent. This means they are the same length.

After you connect the Quiz code, nano asks a question. Since a square is a regular polygon, the correct answer is 1.
Nano is located at the *origin*, which is $x=0$, $y=0$ or (0,0).

Disconnect and delete this part of the code.
Nano is still at the origin (0,0).

Click the green flag to start

The code added to the rectangle block will draw a rectangle.

TRY IT

GET READY

Add this code

1

ADD THIS CODE

Drag the rectangle block you created (find it in My Blocks) to the end of the code from the previous slide.

TRY IT

Click the green flag to start
Is this a rectangle or a square? Type 1 for rectangle or 2 for square.

Yes, you got it!

No, the correct option was 1: rectangle. A square is a special kind of rectangle, but this rectangle is not a square.
Go to the link below:
https://scratch.mit.edu/projects/637985634

The program has 6 pre-made blocks and the set-up code

Set 1

Set-up code

Set 2

TRY IT

Click the code blocks to see what they do
Challenge Task:
Change the code so that nano draws a parallelogram.

This polygon is a **parallelogram**. A **parallelogram** is a quadrilateral with opposite sides that are congruent and parallel.

Fill in the x and y values for the two remaining sides of a parallelogram.

**Try It**
Click the green flag to start

**GET READY**
Name this block parallelogram and then click OK

**ADD THIS CODE**
1. Drag the parallelogram block you created (find it in My Blocks) to the end of the set-up code from the previous slide.
2. Fill in the x and y values for the two remaining sides of a parallelogram.

**Add This Code**
- Choose My Blocks
- Select Make a Block
- My Blocks
- Make a Block
- Cancel
- OK
Is this a rectangle or a parallelogram? Type 1 for rectangle and 2 for parallelogram.

You will need these blocks for this step:

- Control
- Operators
- Sensing

Use the blocks above to complete the hidden code. You should get the output you see on the left hand side of this slide.

GET READY

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TRY IT

Click the green flag to start
Nano is located at the origin, which is x=0, y=0 or (0,0).

Disconnect and delete this part of the code.
Challenge Task:
Change the code so that nano draws a trapezoid.

This shape is a trapezoid, a quadrilateral with at least one pair of parallel sides.

GET READY
Name this block trapezoid and then click OK

ADD THIS CODE
Drag the trapezoid block you created (find it in My Blocks) to the end of the code from the previous slide.

TRY IT
Click the green flag to start
GET READY

You will need these blocks for this step.

ADD THIS CODE

Use the blocks above to complete the hidden code. You should get the output you see on the left hand side of this slide.

TRY IT

Click the green flag to start.
Math Definitions

Coordinate Plane

x-axis - the horizontal number line on the grid
y-axis - the vertical number line on the grid
Origin - the location where the x-axis and y-axis intersect at the point (0,0)

Ordered Pair - every point on the coordinate plane is described by an ordered pair with an x-coordinate (horizontal location) and y-coordinate (vertical location)
Math Definitions

Quadrilaterals
Congruent - having the same size and shape
Polygon - a closed plane figure formed by three or more line segments that meet at points (vertices)
Regular polygon - polygons that have all sides are congruent and all angles are congruent
Quadrilateral - a polygon with four sides and four angles
Trapezoid - a quadrilateral with at least one pair of parallel sides
Parallelogram - a special trapezoid with opposite sides that are congruent and parallel
Rhombus - a parallelogram with four congruent sides
Challenge Task Solution

Parallelogram
- x=100, y=0
- x=150, y=100
- x=50, y=100
- x=0, y=0

Trapezoid
- x=100, y=0
- x=75, y=50
- x=25, y=50
- x=0, y=0