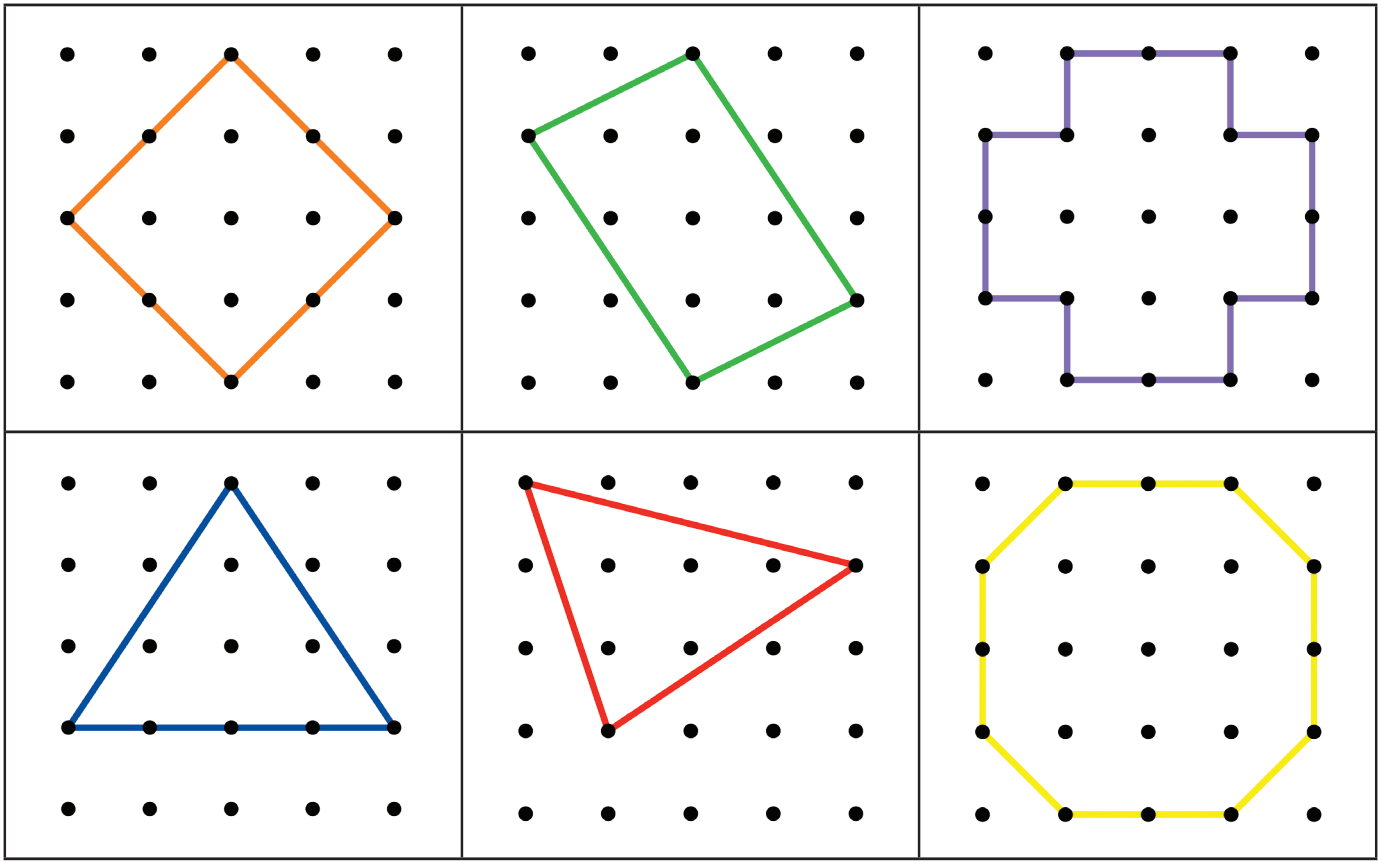
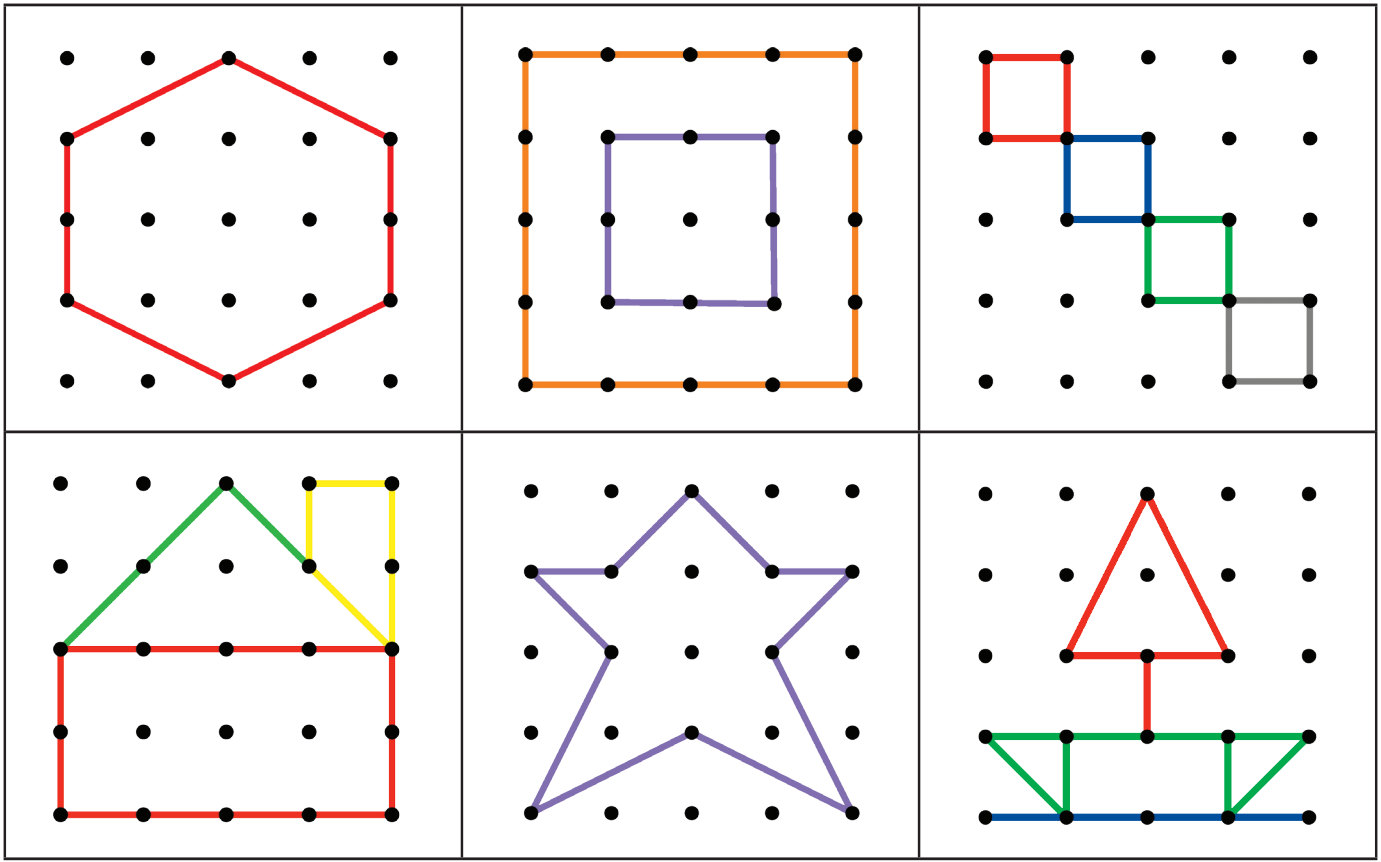
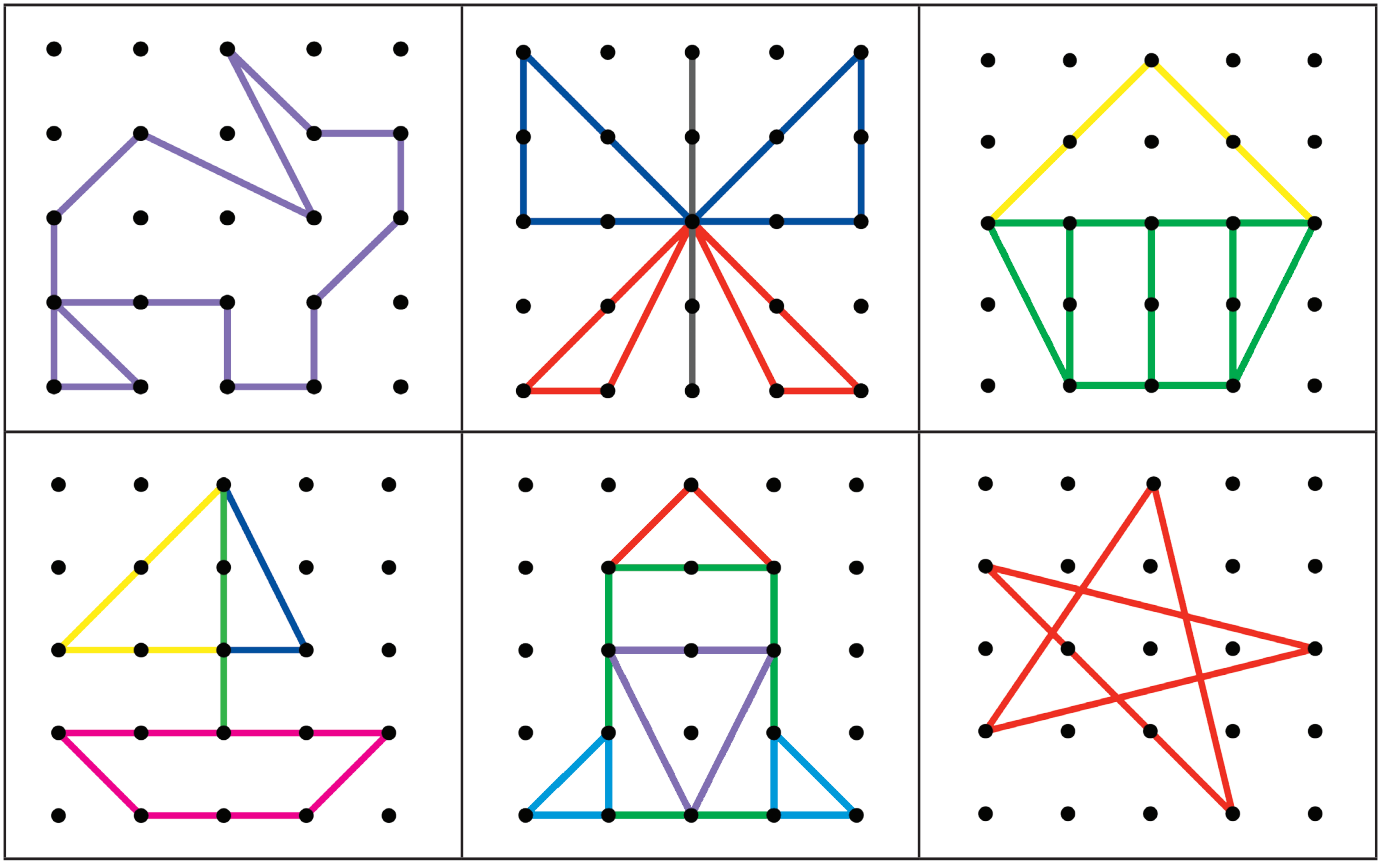
Make each picture on a geoboard.



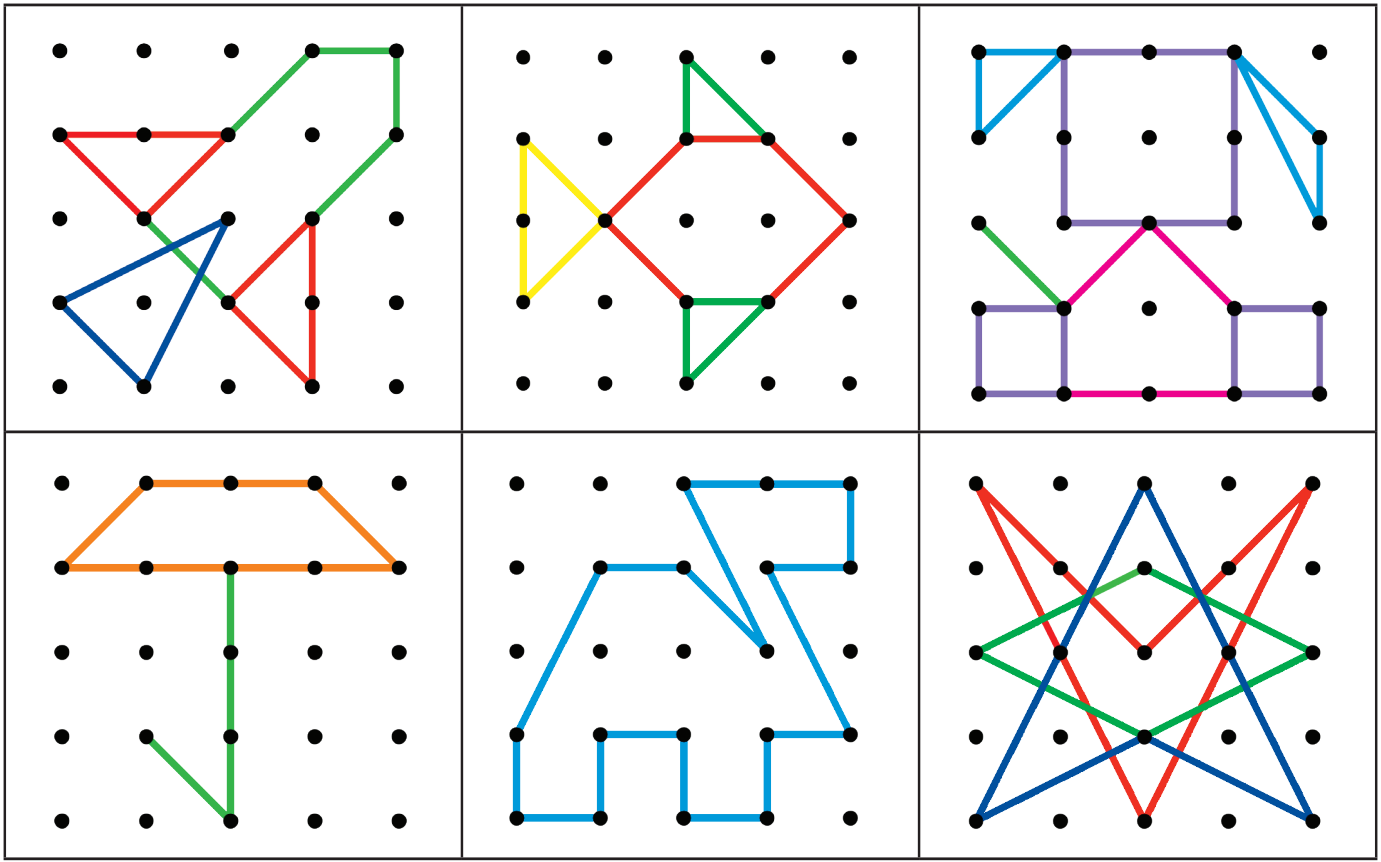
Make each picture on a geoboard.



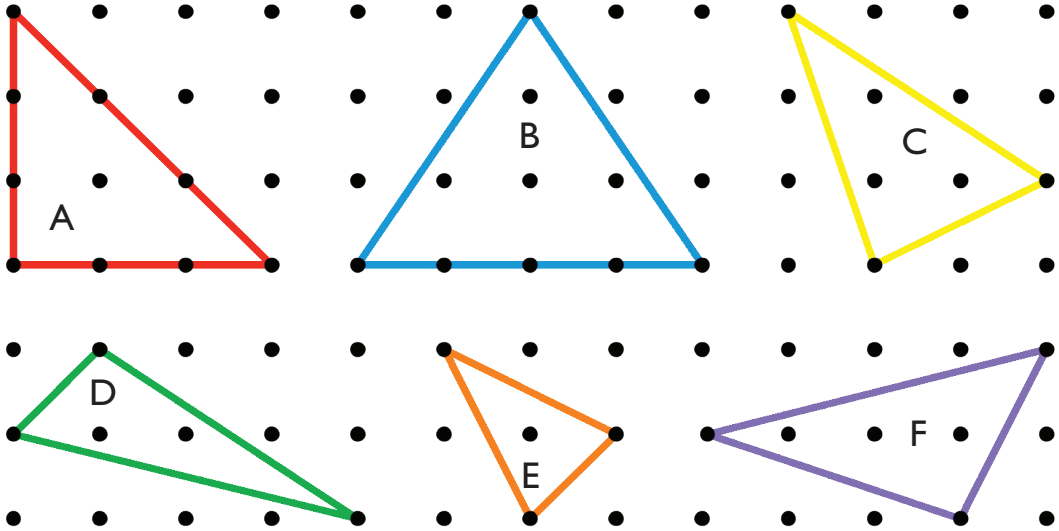
Make each picture on a geoboard.



Make each picture on a geoboard.



1. Make each shape on a geoboard.

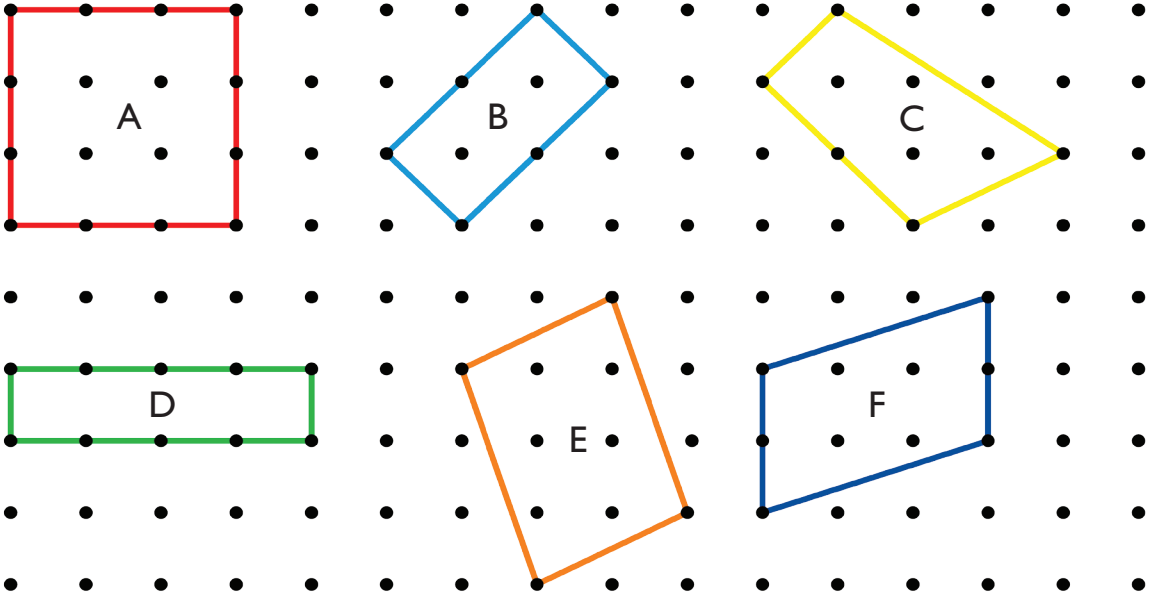


2. What is the same about all of the shapes?

3. What do we call these shapes?

4. What is different about these shapes?

1. Make each shape on a geoboard.



2. What is the same about all of the shapes?

3. Which shapes are rectangles?

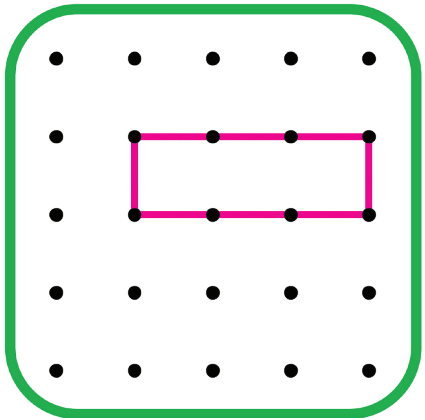
4. What is different about these shapes?

1. Sabelo makes a rectangle on his geoboard. Copy his rectangle on a geoboard.

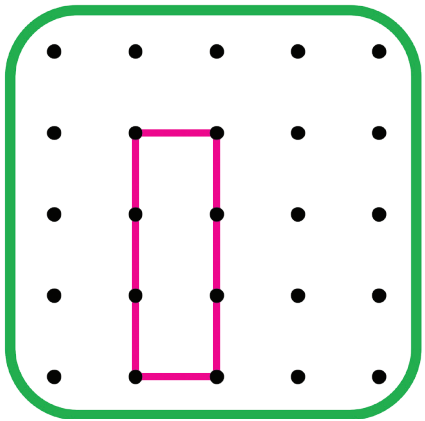
2. Harriet also makes a rectangle on her geoboard. Copy her rectangle on a geoboard.

3. Is Harriet's rectangle different from or the same as Sabelo's rectangle? Discuss your answer with a friend and then with your teacher.

4. Make another rectangle on a geoboard that is different from Sabelo's rectangle and different from Harriet's rectangle. How many rectangles can you make?

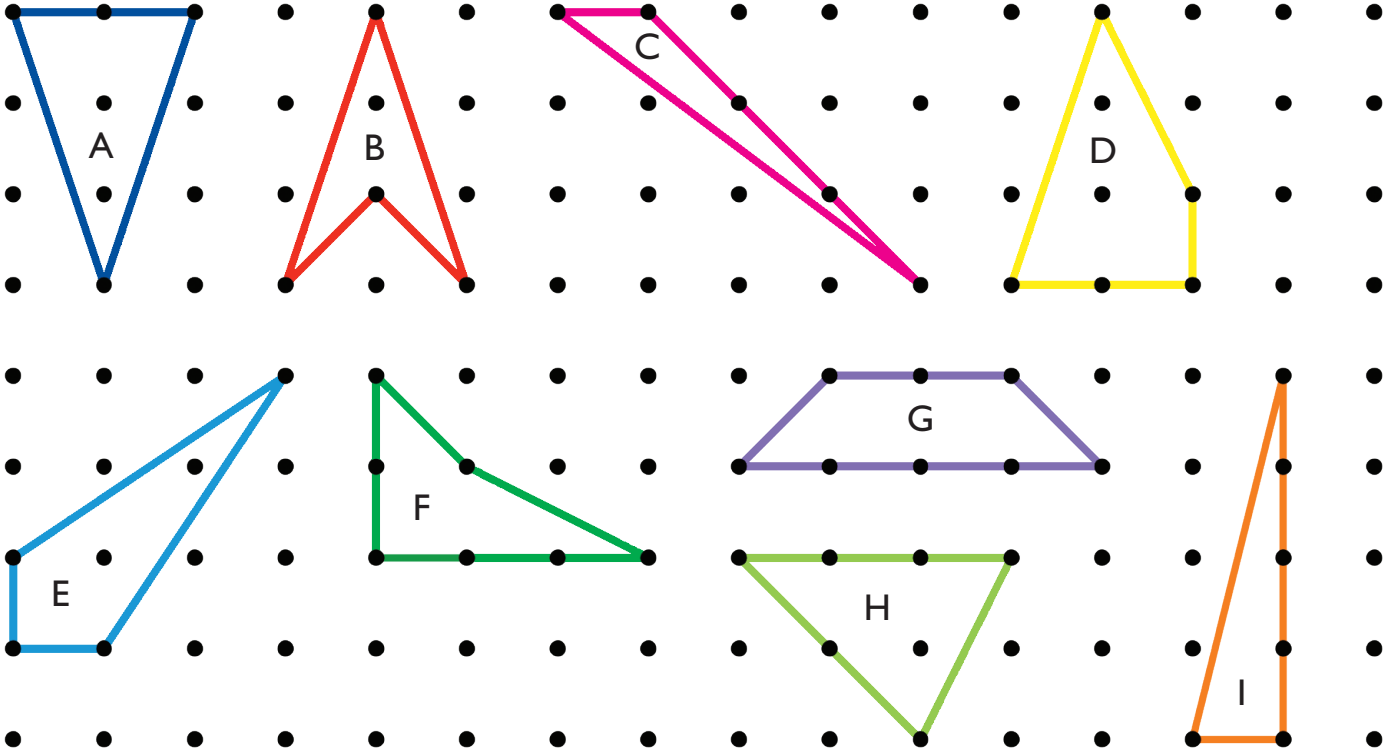


Sabelo's rectangle



Harriet's rectangle

Make each shape on a geoboard.



Which shapes are triangles? How do you know?

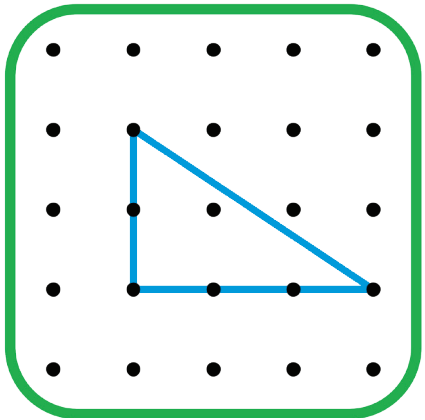
1. Sabelo makes a triangle on his geoboard. Copy his triangle on a geoboard.

2. Harriet also makes a triangle on her geoboard. Copy her triangle on a geoboard.

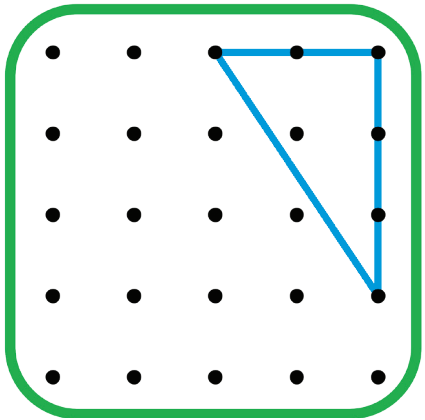
3. Is Harriet's triangle different from or the same as Sabelo's triangle? Discuss your answer with a friend and then with your teacher.

4. On a geoboard, use a new elastic band to make a triangle that is the same as Harriet's triangle, but uses different pegs for its corners.

5. Make another triangle on a geoboard that is different from Sabelo's triangle and different from Harriet's triangle. How many different triangles can you make?



Sabelo's triangle



Harriet's triangle

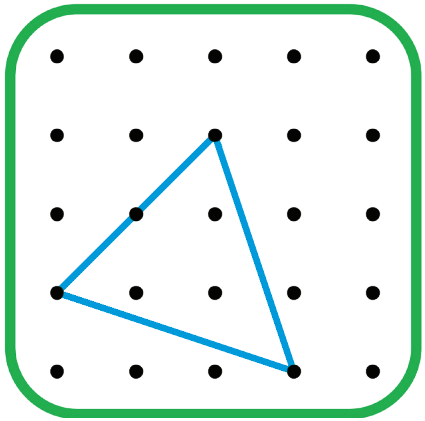
1. Sabelo makes a triangle on his geoboard. Copy his triangle on a geoboard.

2. Harriet also makes a triangle on her geoboard. Copy her triangle on a geoboard.

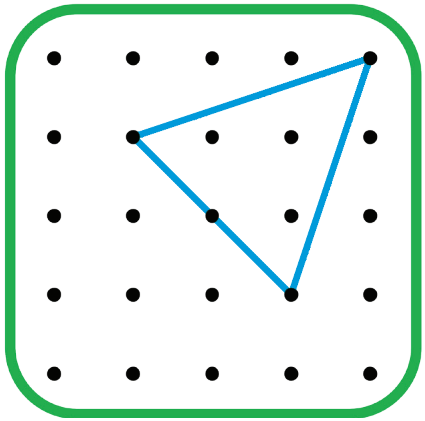
3. Is Harriet's triangle different from or the same as Sabelo's triangle? Discuss your answer with a friend and then with your teacher.

4. On a geoboard, use a new elastic band to make a triangle that is the same as Harriet's triangle, but uses different pegs for its corners.

5. Make another triangle on a geoboard that is different from Sabelo's triangle and different from Harriet's triangle. How many different triangles can you make?



Sabelo's triangle



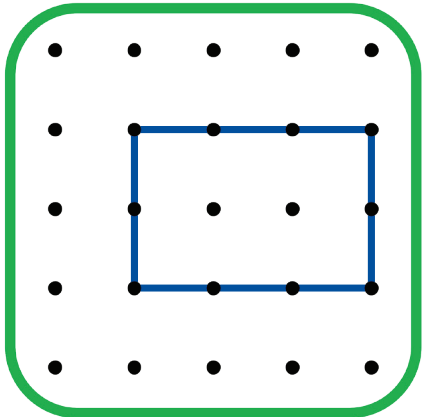
Harriet's triangle

1. Sabelo makes a rectangle on his geoboard. Copy his rectangle on a geoboard.

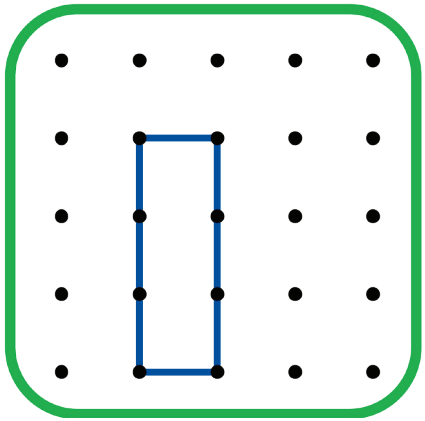
2. How many edges does a rectangle have? How many corners does a rectangle have?

3. On a geoboard, use a new elastic band to make a rectangle that is the same as Sabelo's rectangle, but uses different pegs for its corners. In how many different ways can you do this?

4. Harriet also makes a rectangle on her geoboard. Is Harriet's rectangle different from or the same as Sabelo's rectangle? Discuss your answer with a friend and then with your teacher.

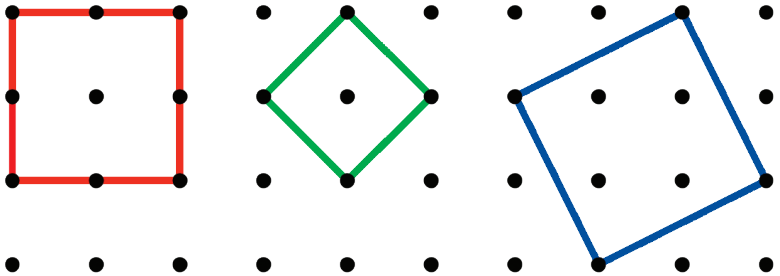


Sabelo's rectangle



Harriet's rectangle

1. Make each shape on a geoboard.

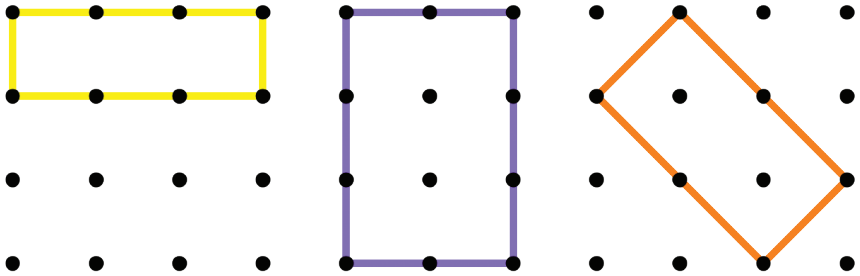


2. What is the same about all of these shapes?

3. What is different about these shapes?

4. What do we call these shapes?

5. Now make each of these shapes on a geoboard.



6. What is the same about these shapes and the first three shapes that you made?

7. What is different about these shapes and the first three shapes that you made?

8. What do we call these shapes?

1. Sabelo makes a shape on his geoboard. Copy his shape on a geoboard.

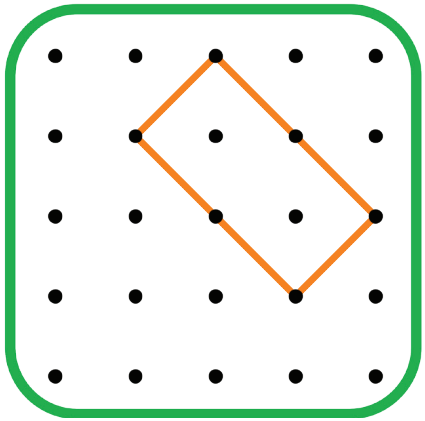
2. Is Sabelo's shape a rectangle? Explain to a friend how you know.

3. On a geoboard, use a new elastic band to make a shape that is the same as Sabelo's shape, but uses different pegs for its corners. In how many different ways can you do this?

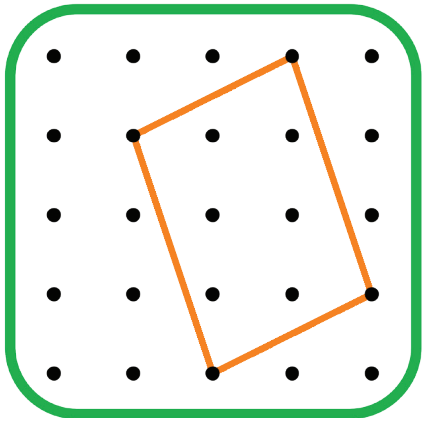
4. Harriet also makes a shape on her geoboard. Copy her shape on a geoboard.

5. Is Harriet's shape a rectangle? Discuss your answer with a friend and then with your teacher.

6. What is the same and what is different about the shapes made by Sabelo and Harriet?



Sabelo's shape



Harriet's shape

On a 5-by-5 geoboard, investigate how many different shapes you can make that:

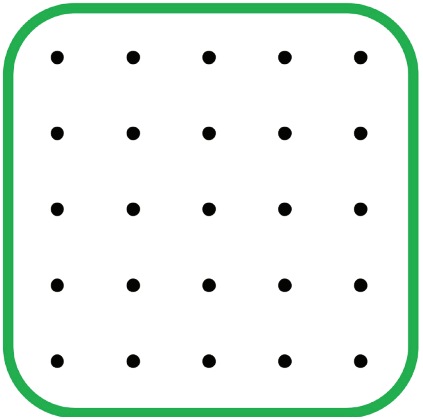
The corners of a shape are also called the vertices of the shape.

1. Have four vertices and three edges.

2. Have four vertices and four edges and no edges that are the same length.

3. Have five vertices and five edges and three edges that are the same length.

4. Have five vertices and five edges and four edges that are the same length.



On a geoboard, investigate how many different shapes you can make that:

The corners of a shape are also called the vertices of the shape.

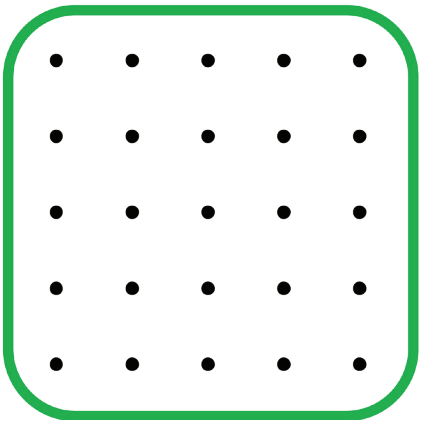
1. Have five vertices and six edges.

2. Have three vertices and three edges and exactly two edges that are the same length.

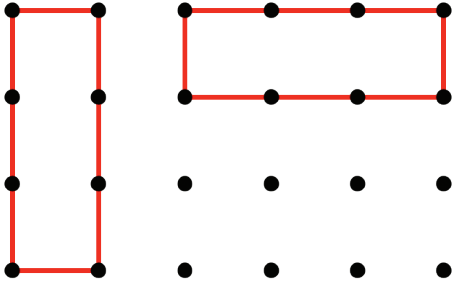
3. Have three vertices and three edges and all three edges that are the same length.

4. Have four vertices and four edges and at least three edges that are the same length.

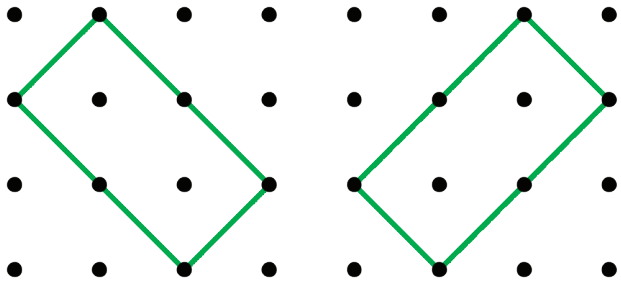
5. Have four vertices and four edges and exactly three edges that are the same length.



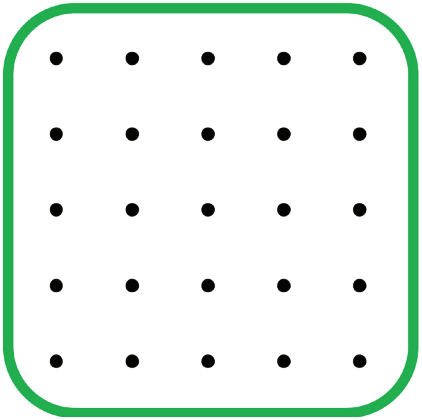
These two rectangles are the same.

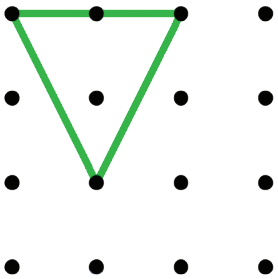


These two rectangles are also the same.



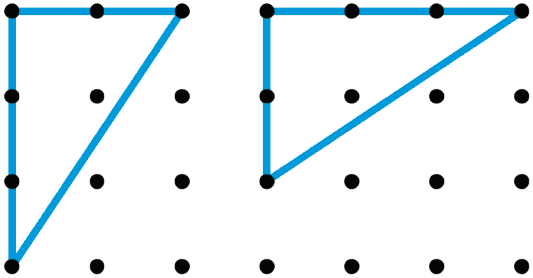
Investigate how many <u>different</u> rectangles you can make on a 5-by-5 geoboard.

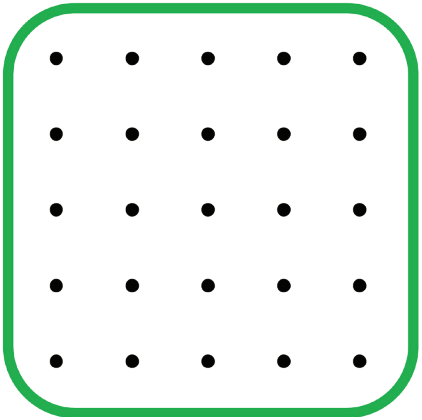




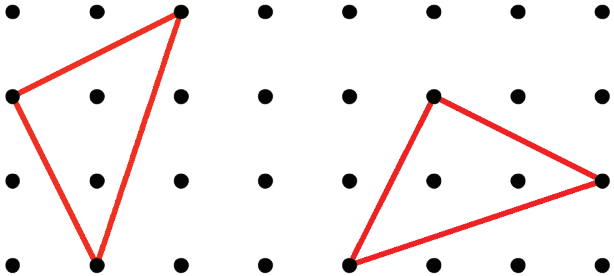
This elastic band joins 3 pins to make a triangle. The triangle has 1 pin inside it.

Investigate how many <u>different</u> triangles you can make on a 4-by-4 geoboard that have exactly 1 pin inside. Remember, these two triangles are the same.



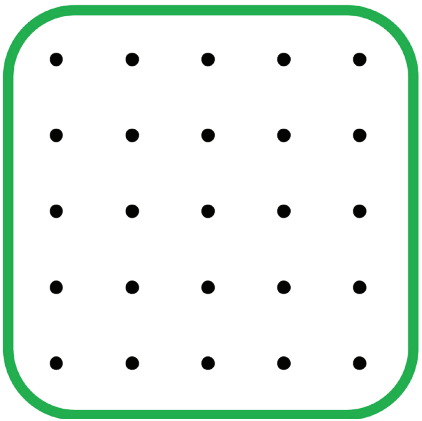


These two triangles are the same.

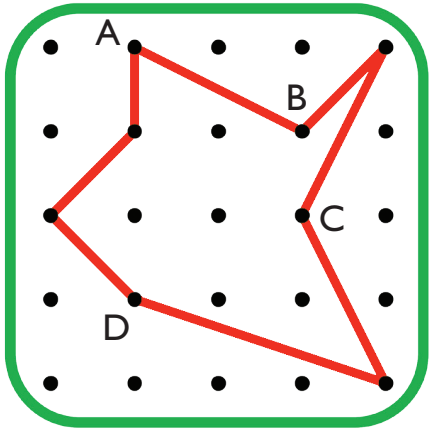


Investigate how many <u>different</u> triangles you can make on a 5-by-5 geoboard that have exactly:

- 1 pin inside
- 2 pins inside
- 3 pins inside
- 4 pins inside
- 5 pins inside
- 6 pins inside

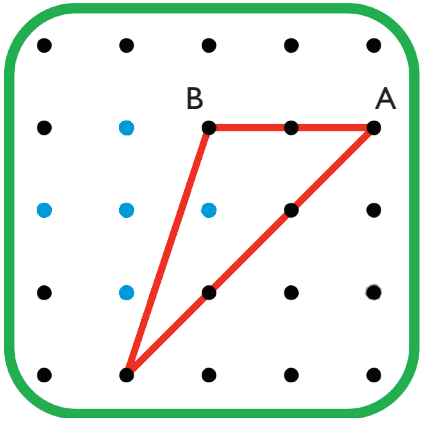


Is it possible to make a triangle that has more than 6 pins inside?



1. Make this shape on a geoboard.
2. How many edges does this shape have?
3. Predict what this shape will look like if you remove the elastic band from pin A. Record your prediction on dotted paper and then check if you are correct. How many edges does this new shape have?
4. Make the shape again. Now predict what this shape will look like if you remove the elastic band from pin B. Record your prediction on dotted paper and then check if you are correct. How many edges does this new shape have?
5. Make the shape again. Now predict what this shape will look like if you remove the elastic band from pin C. Record your prediction on dotted paper and then check if you are correct. How many edges does this new shape have?
6. Make the shape again. Now predict what this shape will look like if you remove the elastic band from pin D. Record your prediction on dotted paper and then check if you are correct. How many edges does this new shape have?
7. What happens to the number of edges in a shape if a vertex (corner) is removed?

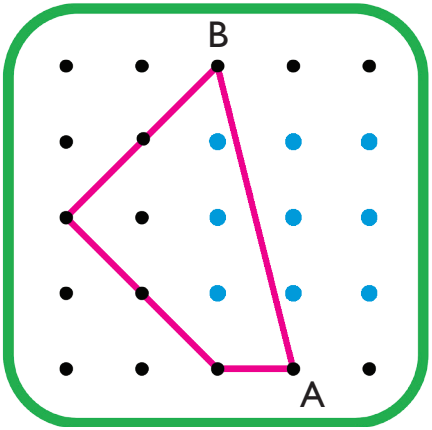
1. Make this triangle on a geoboard.



2. Investigate how many <u>different</u> triangles you can make by moving the elastic band from vertex A to any blue pin.

3. Make the triangle again. Predict how many <u>different</u> triangles can be made by moving the elastic band from vertex B to any blue pin. Check your prediction.

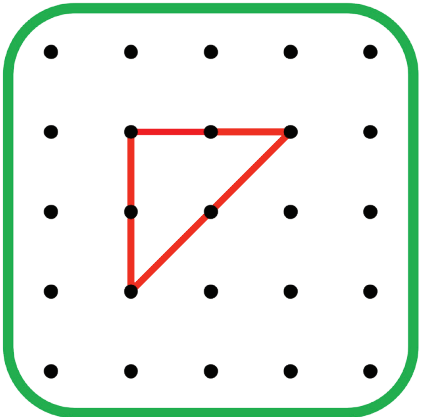
1. Make this shape on a geoboard.



2. Predict how many <u>different</u> shapes can be made by moving the elastic band from vertex A to any of the blue pins. Check your prediction.

3. Make the shape again. Predict how many <u>different</u> shapes can be made by moving the elastic band from vertex B to any blue pin. Check your prediction.

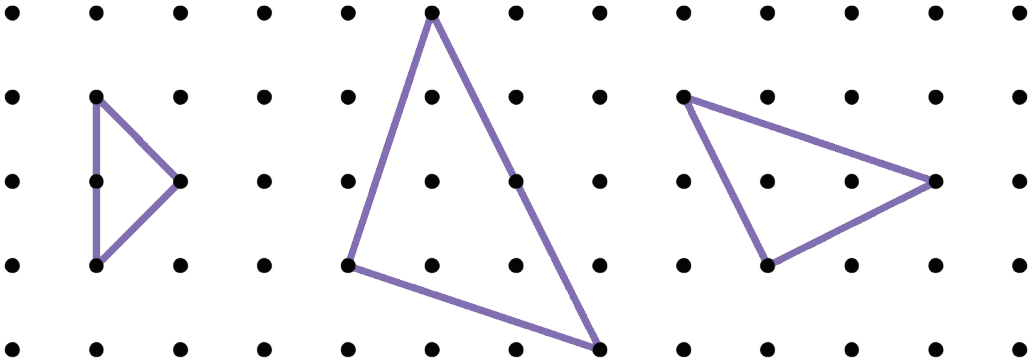
1. Make this triangle on a geoboard.
   Change the triangle into a square in as few moves as possible.

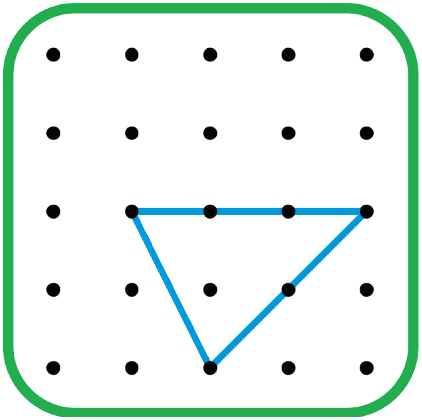


> *A "move" could be stretching the edge of an elastic over a new pin or moving the vertex of a shape from one pin to another pin.*

How many moves do you use?

2. Repeat question 1 for each of the three triangles below. Explain what you are doing.

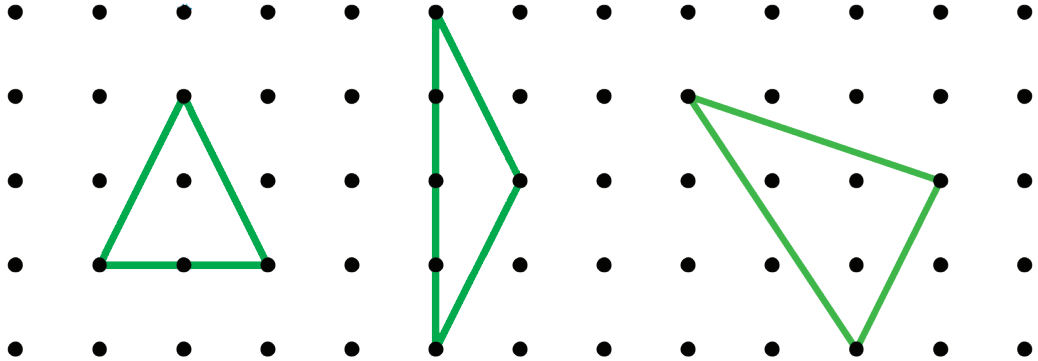


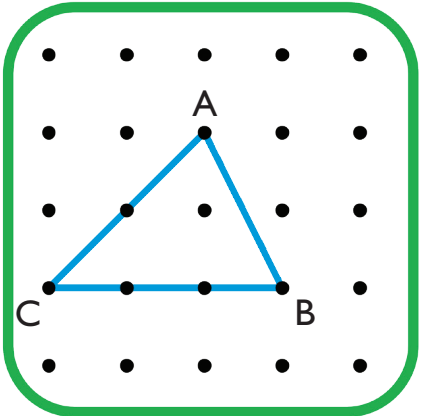


1. Make this triangle on a geoboard. Change the triangle into a square in as few moves as possible. Can you do it in only one move?

2. Make this triangle again. Make a different square using the same number of moves as you did in question 1.

3. Repeat question 1 and 2 for each of the three triangles below. Explain what you are doing.

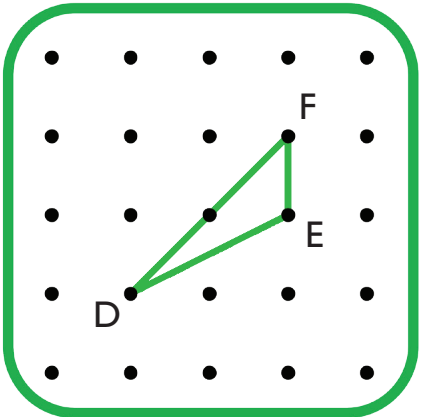




1. Make this triangle on a 5-by-5 geoboard using two elastic bands.

2. Move one elastic band from vertex A to another point on the board so that you have two triangles that are the same. How many different ways are there to do this?

3. Move one elastic band from vertex B to another point on the board so that you have two triangles that are the same. How many different ways are there to do this?



4. Make this triangle on your geoboard using two elastic bands.

5. Move one elastic band from vertex A to another point on the board so that you have two triangles that are the same. How many ways are there to do this? Repeat for vertex B and for vertex C.