DEVELOPING MATHEMATICAL INQUIRY COMMUNITIES

Geometry – Shape and Space

Level 1 (Year 0/NE)

Copy Masters

Task 1

Can you use your square tiles to make the same shape?

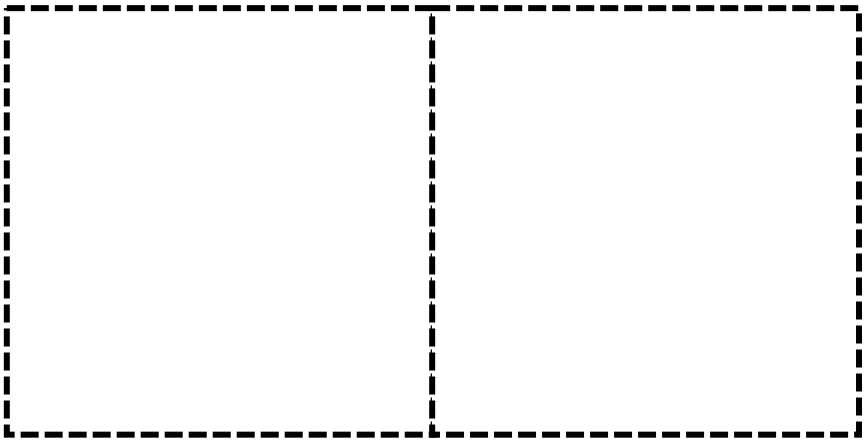
First check that they are the same size. Now can you use them to make the same shape as this one?

What about if I turn it like this? Can you use your squares to make this shape?

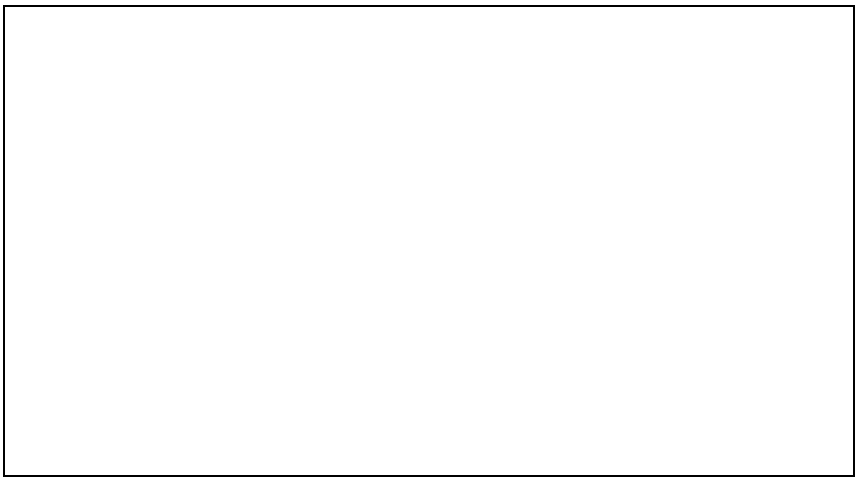
Talk with you buddy about how this new shape you have made is the same as the first one you made. How is it different?

Task 1 (Template)

1.



2.



Task 1 (independent)

Have a look at the rectangle made of two squares.

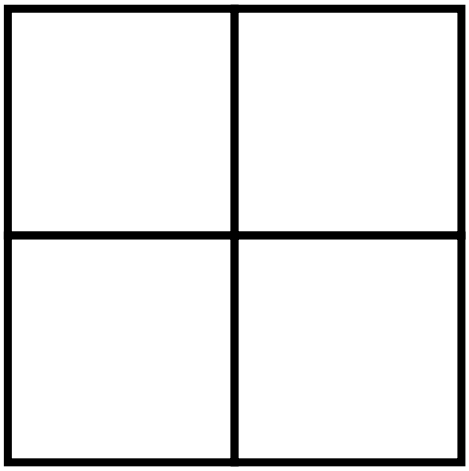
Now hide the rectangle and draw the shape from memory.

Check if your drawing was the same.

Keep repeating this activity until your drawing is close to the rectangle on the sheet.

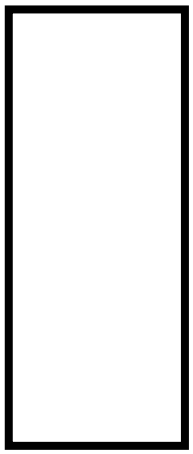
Task 2

Look at this shape. I wonder what it reminds you of?



Can you use your shapes to make this shape? As you make the shape talk with your buddy about how you are making it and what you notice about it.

Task 2 and 3 – Resources



Task 2 (independent)

1. Make 2 squares with your sticks. How many sticks did you need?

2. Make a rectangle with the sticks which is made up of 2 squares joined together.

3. Make 4 squares with your sticks. How many sticks did you need?

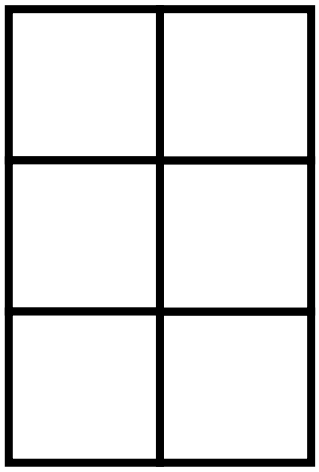
4. Make a 2 by 2 large square with the sticks which is made of 4 squares joined together to make one large square. How many sticks did you need this time? Why do you need less?

5. On your paper draw without looking at the picture a rectangle made of 2 squares.

6. On your paper draw without looking at the picture a 2 by 2 large square made up of the 4 smaller squares.

Task 3

Look at this picture. Talk with your buddy about how it is made and what you notice about it?



Can you use your shapes to make this? Make sure you are talking with your buddy about what you are doing when you are making it.

What about if we turn it this way? Talk with your buddy about how many squares you can see. How is this shape the same or different from the first one?

Task 3 (independent)

1. Draw what you think a 2 by 3 shape looks like which is made of 6 squares which are all the same. Check whether you are right. If you need to, keep drawing it until you are right.

2. Use the grid and/or dotty paper to draw the 2 by 1 shape, the 2 by 2 shape and the 2 by 3 shape. Can you make these larger and smaller?

Task 4

With your buddy you are going to explore all the different shapes you can make with your squares.

After you have finished making a shape talk with your buddy about what you notice.

Now both you and your buddy need to draw it. Keep checking that your drawing looks like the shape you have made.

Task 4 (independent)

Use the dotty and/or squared paper to draw squares and rectangles which are made up of many different smaller squares. Keep talking with a buddy about what you notice about the lines.

Task 5

Talk with your buddy about what you notice about the shape of these different things.

Can you sort them into groups which you think are the same?

Can you sort them into groups which you think are different?

Task 5 – Array Resource

Task 5 (independent)

Work with a buddy to sort your objects. Make sure that you are talking about why they are the same or why they are different. After you have finished sorting them into their groups count how many objects you have in each group.

Task 6

With your buddy can you find some shapes that are the same as this? Talk about what you notice about this shape.

Now with your buddy can you find some shapes that are the same as this? Talk about what you notice about this shape.

With your buddy can you find some shapes that are the same as this? Talk about what you notice about this shape.

Task 6 (independent)

- Sort your objects into cuboids, cylinders, and spheres. Talk with a buddy about why they are cuboids, cylinders, and spheres.

- Now count how many cuboids there are, how many cylinders there are, and how many spheres there are.

- Now play a game with your buddy of "guess what I have behind my back".

- Hide one of your shapes behind your back and ask your buddy to guess whether it is a cuboid, cylinder or sphere.

Task 7

Can you sort these shapes into different groups?

As you sort them, talk with your buddy about what you notice about them. Be ready to explain and justify how the shapes in each group are the same and how they are different from the shapes in the other groups.

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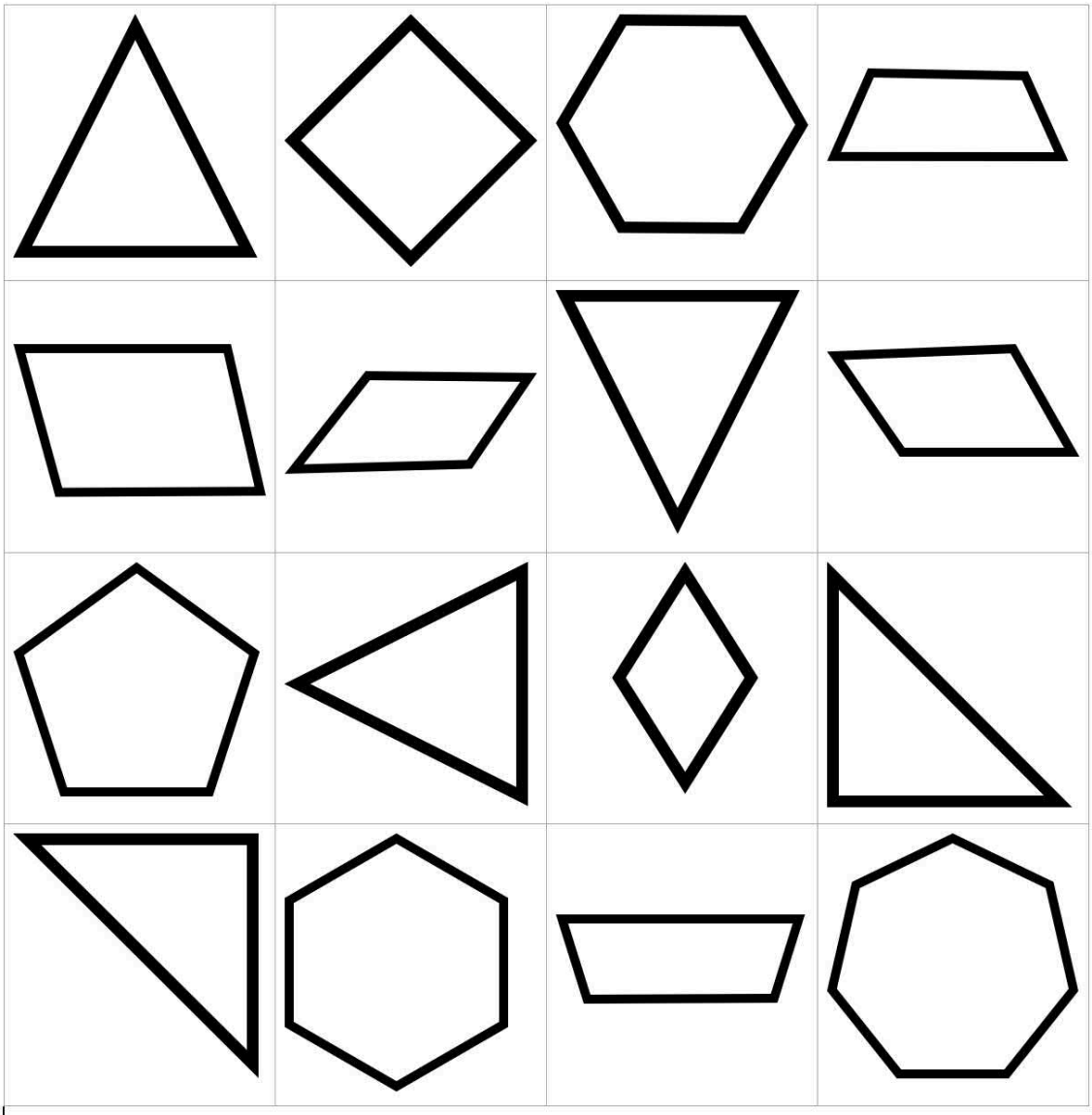
Task 7 – Resource



Task 7 (independent)

Draw each of these shapes.

You might need to make a lot of drawings of them until your picture really looks like the shape.

Task 8

Can you sort these shapes into different groups?

As you sort them, talk with your buddy about what you notice about them. Be ready to explain and justify how the shapes in each group are the same and how they are different from the shapes in the other groups.

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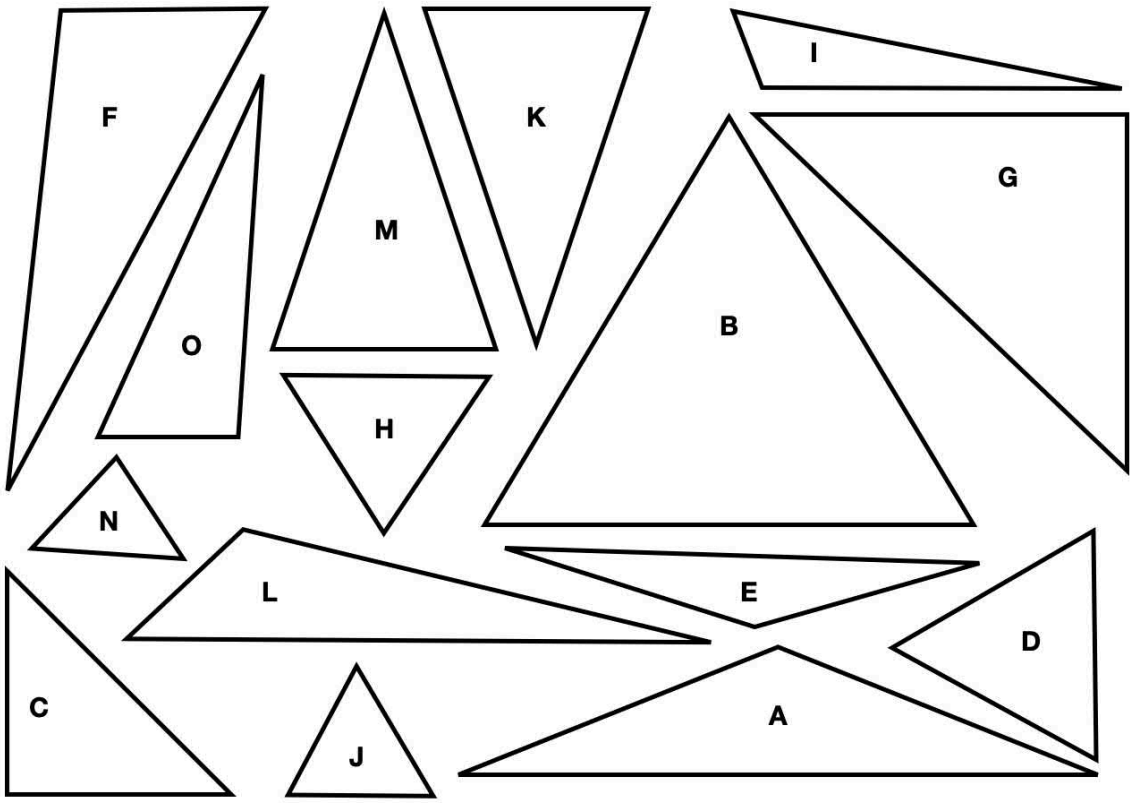
Task 8 – Resource

Task 8 – Triangles Resource



Task 8 (independent)

Make a triangle with play dough or in the sand then draw it on your paper.

Now make a different triangle with play dough or sand and draw it.

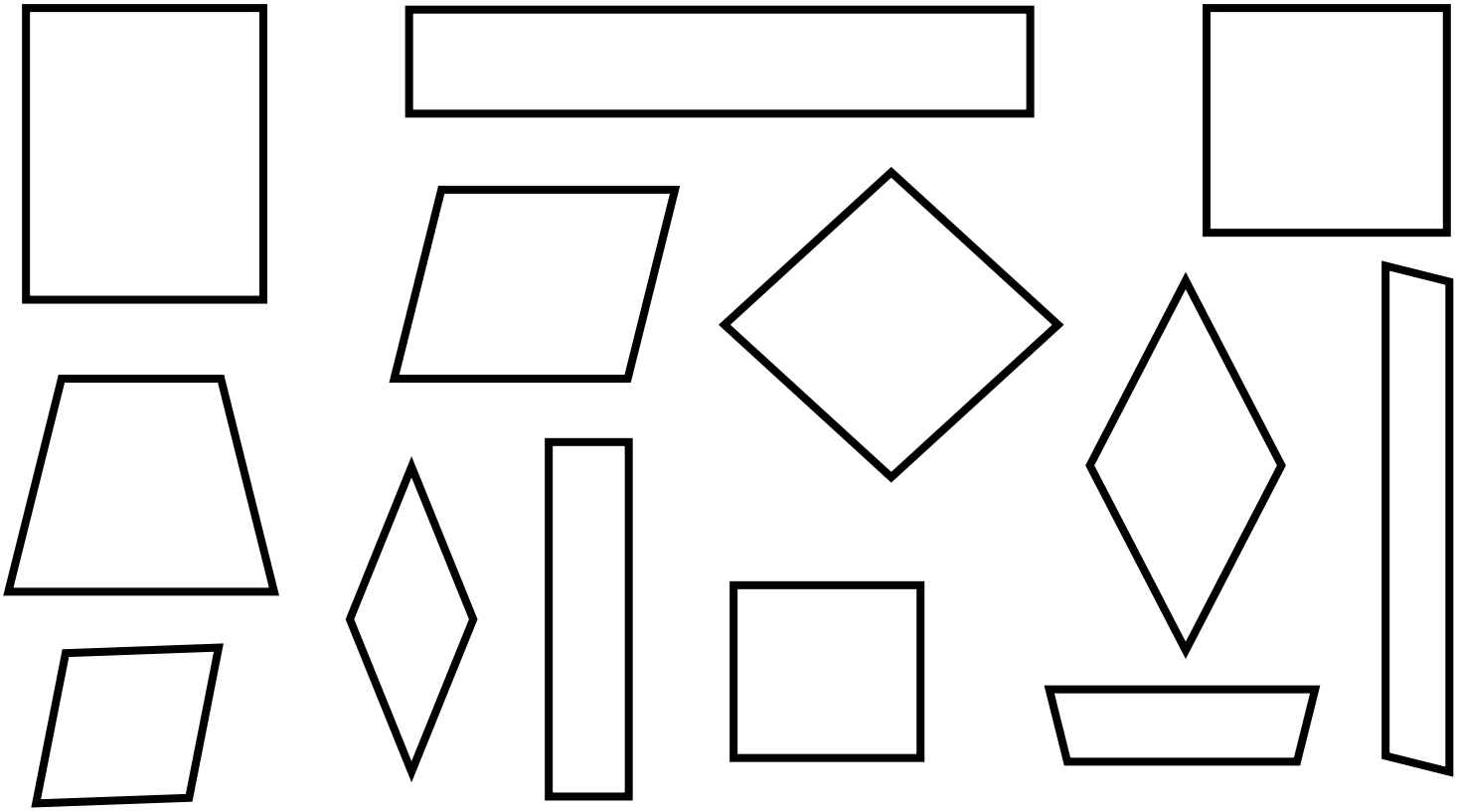
Keep doing this making all sorts of different triangles in the sand or with dough and drawing them until your paper is full of triangles.

Task 9

Can you sort these shapes into different groups?

As you sort them, talk with your buddy about what you notice about them. Be ready to explain and justify how the shapes in each group are the same and how they are different from the shapes in the other groups.

Task 9 – Quadrilateral resource



Task 9 (independent)

With your buddy can you find some shapes that are the same? Talk about what you notice about this shape.

Draw these shapes and record everything you know about them.

Now with your buddy can you find some shapes that are different? Talk about what you notice about these shapes.

Draw these shapes and record everything you know about them.

Task 10

Let us use all our 2D shapes to make a train.

Each person is going to get a turn to add a carriage.

Listen to what the person before you say about their shape. Then choose another shape to add which has all the attributes the same and only one attribute which is different.

Task 10 (independent)

1. Draw what you think a 4 by 3 shape looks like which is made of 12 squares which are all the same. Check whether you are right. If you need to, keep drawing it until you are right.

2. Use the grid and/or dotty paper to draw the 2 by 1 shape, the 2 by 2 shape, and the 2 by 3 shape. Can you make these larger and smaller?

Task 11 (Optional)

Some children are talking about their food in their lunchbox. Sam says that they are all triangles, but Matthew argues that only some of them are triangles.

Do you think they are all triangles? Why or why not? Be ready to explain and justify your reasoning.

Task 11 (Optional Independent Task)

With your buddy you are going to explore all the different shapes you can make with your squares.

After you have finished making a shape talk with your buddy about what you notice.

Now both you and your buddy need to draw it. Keep checking that your drawing looks like the shape you have made.

Task 12 (Optional)

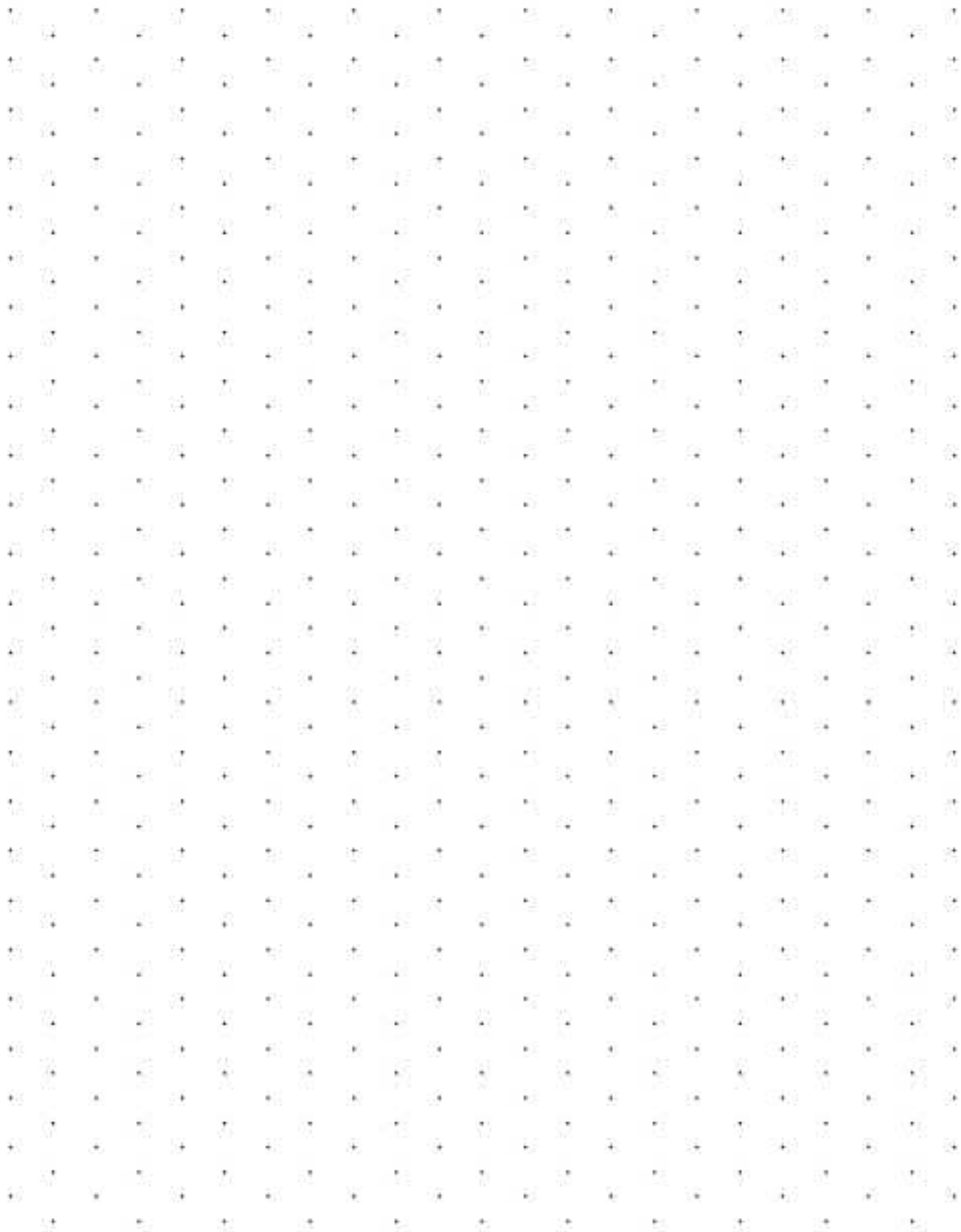
Ravi has bought this piece of tapa to school to show all his friends the geometric patterns he can see.

What are some of the geometric shapes he shows them? What do you notice about them?

Can you make some drawings of the geometric shapes you can see on this piece of tapa?

Dotty Paper

3D Dotty Paper



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Squared Paper