



4th
Basic

5th
Advanced

Helping With Math

USA
GRADES

Points and Lines

*Suitable for students
aged 8-10*



This pack is suitable for learners aged 8-10 years old or 4th to 5th graders (USA). The content covers fact files and relevant basic and advanced activities involving points, lines, and planes.

Points

A (Point A)
•

B (Point B)
•

A point is an exact location. It has no size, only position. They are illustrated as dots so you can see them, but a point really has no size at all!

Points usually have a name, we name a point using any uppercase letters like "A", or even "B"

Examples of Points in Life



the end tip of a pencil



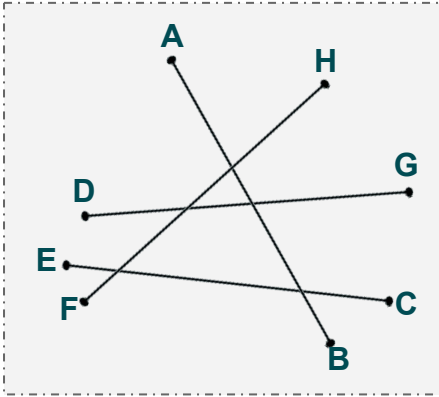
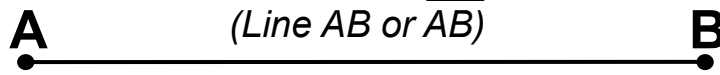
the end tip of a pin



the end tip of a dart pin



LINES



How many lines do you see at the image on the left? Can you name them all?

In geometry, a line is defined as a group of two or more points. It is a straight line with no bends. Line has no thickness and it extends infinitely in both directions.

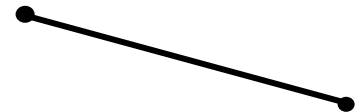
We can name lines using two uppercase letters like line AB, line CE, etc.



Ray



line



Line segment



We all love our family, right? Like us, a line has its own family and they are called as **subsets of line**.

Now, I will introduce them to you!



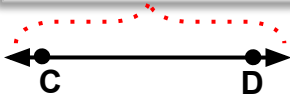
LINES

SUBSETS OF A LINE

LINE

- It extends infinitely to opposite directions.
- It has two arrowheads on opposite ends.

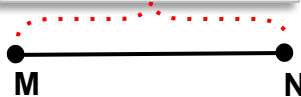
two arrowheads



LINE SEGMENT

- It has no endpoints.
- It has definite length
- It is usually used to indicate measurement such as length, width, height and distance.

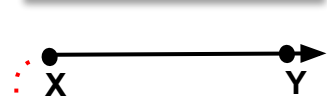
two endpoints



RAY

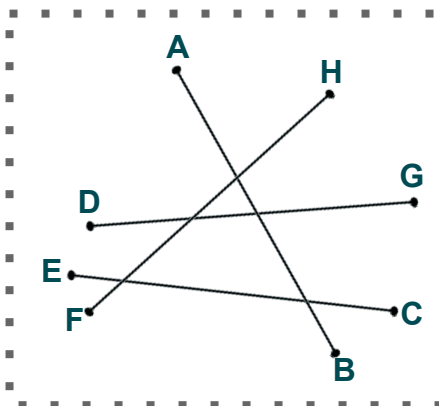
- It has one endpoint and an arrowhead on the other end.
- It is usually used to represent an action from a starting position towards another.

one arrowhead



one endpoint

We use different symbols to name a line, line segment and ray. These symbols are drawn above the two letters that represents points on each subset of line.



How many points are in there?

How many lines are in there?

Can you name all the points?

Can you name all the lines?



TABLE OF ACTIVITIES

Ages 8-9 (Basic)		<u>4th Grade</u>
1	Stationery Items	
2	Michaela's Promotion	
3	Pen's Power	
4	Next in Line	
5	Post-It Notes	
Ages 9-10 (Advanced)		<u>5th Grade</u>
6	Our Rulers	
7	Project Polygon	
8	DIY Geom Drawing	
9	Stamp Facts	
10	Geom in Life	



STATIONERY ITEMS

G4
Basic

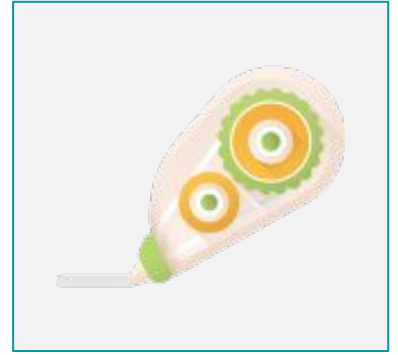
Look at these cute and colorful stationery items below. Put a check on the box if the item represents a point in real life.



1.



2.



3.



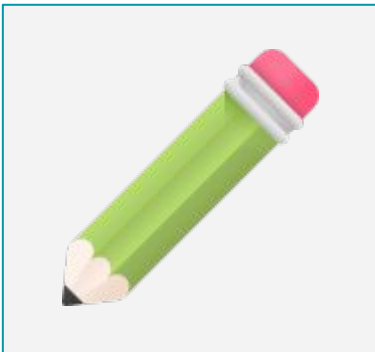
4.



5.



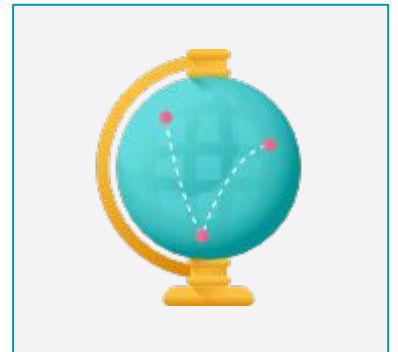
6.



7.



8.



9.



MICHAELA'S PROMOTION

G4
Basic

Michaela loves stationery items. As she is about to have a promotion next week, she need to complete this task related to points.

TRIVIA!

Collinear points refer to two or more points that lie on the same line or path.



Which among these three sets show collinear points? Put a check on the box.

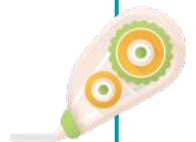
• A • B • C • D • E



• A • B • C • D • E



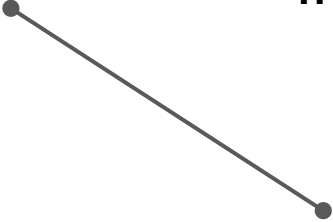

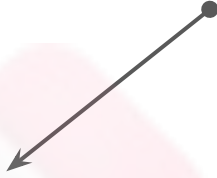
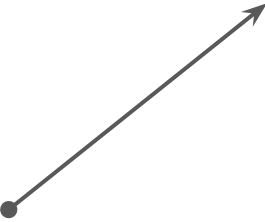

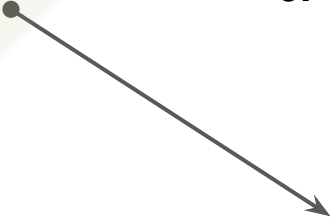

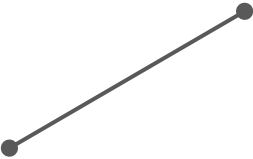

• A • B • C • D • E



PEN'S POWER

G4
Basic

Your best friend's favorite stationery is pencil. He/she draws the following lines. Can you identify which among them are rays or segments?

<p>1.</p>  <input type="text"/>	<p>2.</p>  <input type="text"/>	<p>3.</p>  <input type="text"/>
<p>4.</p>  <input type="text"/>	<p>5.</p>  <input type="text"/>	<p>6.</p>  <input type="text"/>
<p>7.</p>  <input type="text"/>	<p>8.</p>  <input type="text"/>	<p>9.</p>  <input type="text"/>



NEXT IN LINE

G4
Basic

The following images show the different types of line in real life except some. Cross out the unrelated images.



POST- IT NOTES

G4
Basic

Given the post-it notes below, create a graphic organizer that will show the concepts of points and lines.

My Graphic Organizer



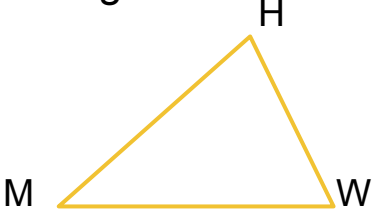
GOOD
JOB

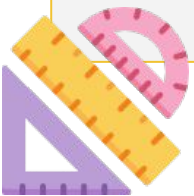


OUR RULERS

G5
Advanced

Let's relate points and lines to polygons. Complete the details of the table below. Oh! You need to prepare a ruler and pen too!

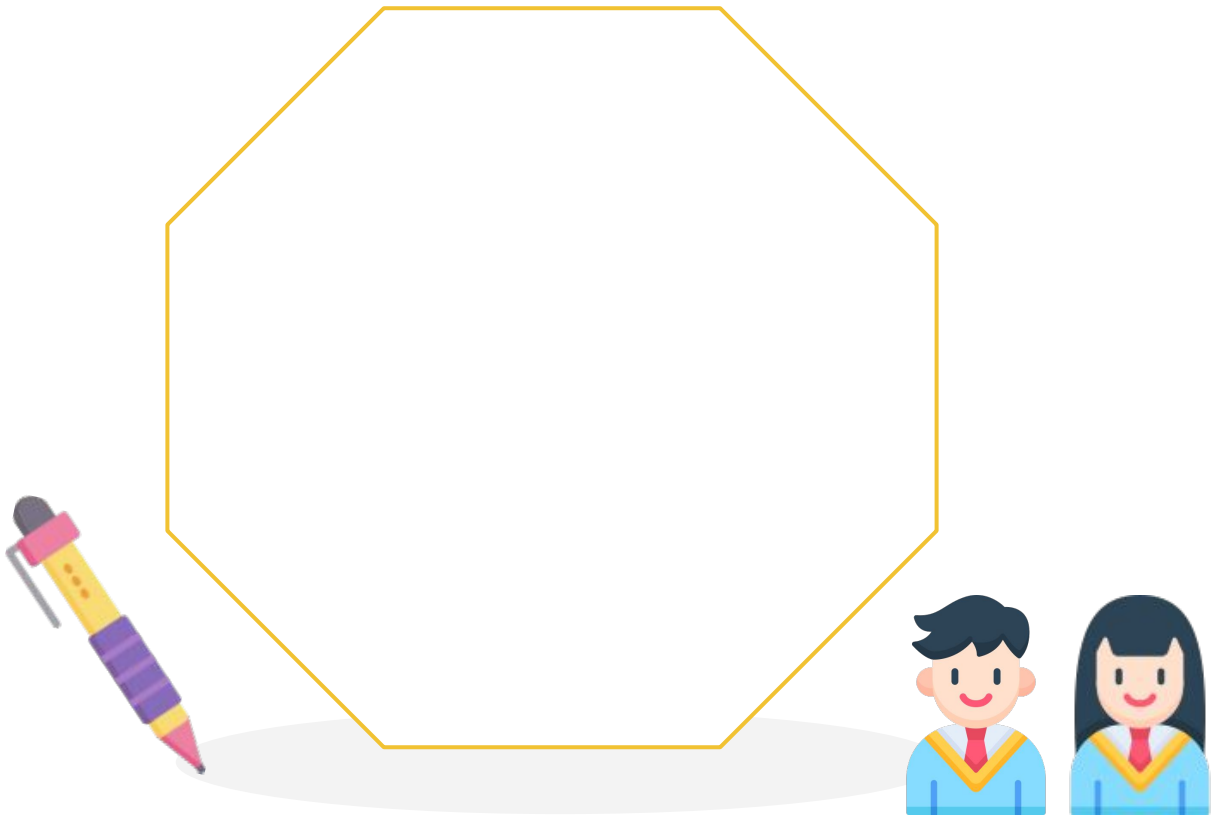
Polygon	Points	Lines
Triangle 	Number of vertices: Name of vertices:	Number of lines: Name of lines:
Square	Number of vertices: Name of vertices:	Number of lines: Name of lines:
Pentagon	Number of vertices: Name of vertices:	Number of lines: Name of lines:
Hexagon	Number of vertices: Name of vertices:	Number of lines: Name of lines:



PROJECT POLYGON

G5
Advanced

Using the stationery items at your house, draw the diagonals of the given polygon below. Then answer the questions that follow.



1. How many vertices are there in this polygon?	
2. Before you draw the diagonals, how many line segments does the polygon have?	
3. How many diagonals were you able to draw?	
4. After you have drawn the diagonals, how many line segments are there in all?	

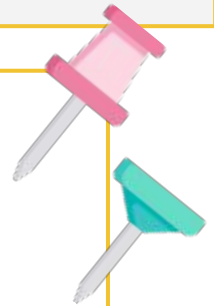


DIY GEOM DRAWING

G5
Advanced

It's time for a D.I.Y. activity! To have more structure, you will be guided by the following steps. Note: bring out your pen, ruler, and protractor.

1. Draw a point and name it with your name's first letter.
2. From that point, draw another point that is 3 in away from the first point. Name it with another uppercase letter.
3. Connect these two points and you will create a segment.
4. Using your first point again, draw three rays. They must be 3.5 in long. As you all know, you just created angles from these rays. Make sure that each angle measures 40 degrees.



STAMP FACTS

G5
Advanced

Read and analyze each statement below. Imagine that you have your own stamp pad. Put a stamp on statements that are correct. Otherwise, correct it by replacing a word/phrase to the underlined given.

1. You can create a line using one point only.

2. A line segment is extending in both directions.

3. The train's railways are examples of lines.

4. The hour hand of a clock is a ray.

5. When naming a point, we can use any letter.

6. When naming a line, we can use three letters.

7. Line segments and light ray are families of lines.

8. The edge of a table is an example of line segment.



GEOM IN LIFE

G5
Advanced

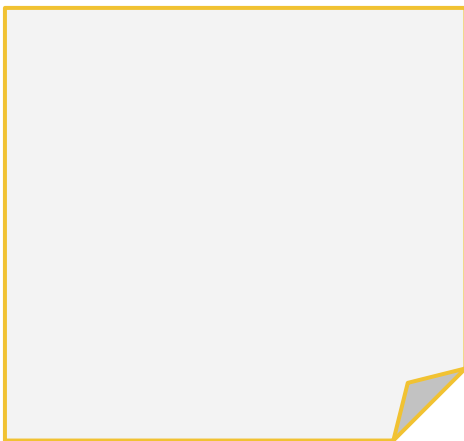
Let's discover geometry in our surroundings. Look around you. Identify three objects that you think have points and lines. You may take a photo of it, print it and paste it here or you may draw them.



Describe it here.



Describe it here.



Describe it here.



ANSWER GUIDE

Activity 1

- | | | |
|------|------|----|
| 1. ✓ | 2. ✓ | 3. |
| 4. | 5. ✓ | 6. |
| 7. ✓ | 8. ✓ | 9. |

Activity 3

- | | | |
|------------|------------|--------|
| 1. segment | 2. ray | 3. ray |
| 4. ray | 5. segment | |
| 6. ray | 7. segment | |
| 8. segment | 9. ray | |

Activity 5 & 10

Answers may vary.

Activity 7

1. There are six vertices.
2. The polygon has eight line segments.
3. There are 4 diagonals.
4. There are 12 line segments.

Activity 9

- | | |
|-------------------------|--------------------------|
| 1. At least two points | 2. Confined/bounded |
| 3. (stamp) | 4. Line segment |
| 5. Any uppercase letter | 6. Two uppercase letters |
| 7. Ray | 8. (stamp) |

Activity 2

The first and the second sets show collinear points.

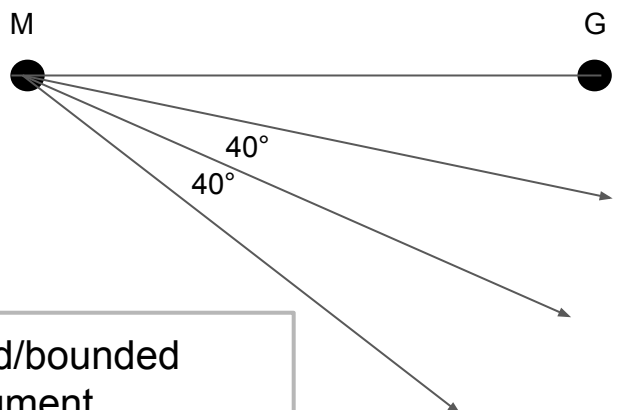
Activity 4

The exempted items are trees and balls.

Activity 6

- Triangle - 3 vertices, 3 lines/sides
- Square - 4 vertices, 4 lines/sides
- Pentagon - 5 vertices, 5 lines/sides
- Hexagon - 6 vertices, 6 lines/sides

Activity 8



Copyright Notice

This resource is licensed under the [Creative Commons Attribution-NonCommercial 4.0](https://creativecommons.org/licenses/by-nc/4.0/) International license.

You are free to:

- **Share** — copy and redistribute the material in any medium or format
- **Adapt** — remix, transform, and build upon the material

Under the following terms:

- **Attribution** — You must give appropriate credit, provide a link to the license, and indicate if changes were made. You may do so in any reasonable manner, but not in any way that suggests the licensor endorses you or your use.
- **NonCommercial** — You may not use the material for commercial purposes.

For more information on this license, visit the following link:

<http://creativecommons.org/licenses/by-nc/4.0/>

Where possible, free-use images are sourced from online repositories such as Wikipedia and Wikimedia Commons. References and sources for images are provided in the speaker notes section of this document.

Thank you!



Thank you

Thank you so much for purchasing and downloading this resource.

We hope it has been useful for you in the classroom and that your students enjoy the activities.

For more teaching and homeschooling resources like this, don't forget to [come back](#) and download the new material we add every week!

Thanks for supporting **Helping With Math**. We can provide teachers with low-cost, high-quality teaching and homeschooling resources because of our loyal subscribers and hope to serve you for many years to come.

- The Entire Helping With Math Team :)

