Welcome to our Geometry Mini-Math Course!

Geometry is the branch of mathematics that studies lines, angles, shapes and space, and looks at how they all relate to each other. If you have ever tried squeezing your car into a tight parking space or overestimated how much popcorn will fit in the popping machine, you already have experience with geometry in everyday life.

You may take all the time you need to complete each one of the six sessions. For every session, we will follow this format:

Parents:

1. Print out the homework assignments (found in the Math Assignments Outline for the current session). If you do not have a printer, have your students use their math journal for all their work while viewing the assignments online.
2. Please make sure your student has their materials (list below) for *all* geometry math work.
3. If your child needs additional help, there are step-by-step instructional videos for all math work for every session. Your student may also opt to join the weekly live Study Hall sessions with a live teacher (email us for info).

Student:

1. Watch the Math Lesson (live or recorded)
2. Start your math work in the workbook or packet (as appropriate for the lesson)
3. Complete the activities, games, puzzles and challenges for the session
4. Optional: Submit your best work to Aurora in the Private Student Group.

Materials:

Your student will need materials in order to participate in the math lessons and do their assignments. *(Links provided are so you know what we're looking for. Please use what you have available that is similar to these items. Most items can be found easily at office supply stores in your local area.)*

Students will be using these materials *DURING* the live classes *AND* their homework assignments:

- Math journal, either lined or quadrille (print your own graph paper as needed)
- Pencils and eraser
- Protractor
- Compass (one with a set screw adjustment)
- Ruler (inches and cm) 6 inch or 12 inch
- Calculator (here is the one Aurora uses during class)

Make sure to watch the ***Parent Video*** at the top of the page in Geometry Session #1 and let me know if you have any questions as we go along!

See you in class!
Aurora

Session #1: Geometry Basics

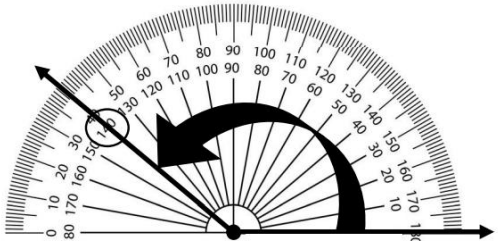
Geometry is the branch of mathematics that studies lines, angles, shapes and space, and looks at how they all relate to each other. Today we will learn fundamental geometry ideas including: lines, points, and rays; discover how to put these together to construct shapes; and finish with a Math Challenge!

HINT: Do you have your MATERIALS for class ready? (Look on previous page for required items!)

The **POINT** indicates location. It does not have any dimension.
The **LINE** is straight and extends infinitely in both directions.
The **LINE SEGMENT** is a part of a line. It was two endpoints.
A **RAY** starts at an *endpoint* and goes on infinitely in one direction.
A **VERTEX** is the point of *intersection* of 2 or more segments, lines, and rays.
A **DEGREE** (^{o}) of measure is the unit that we use to measure an angle.

An **ANGLE** is formed by 2 rays or line segments with the same *vertex*.

Angles are measured with a **PROTRACTOR.**

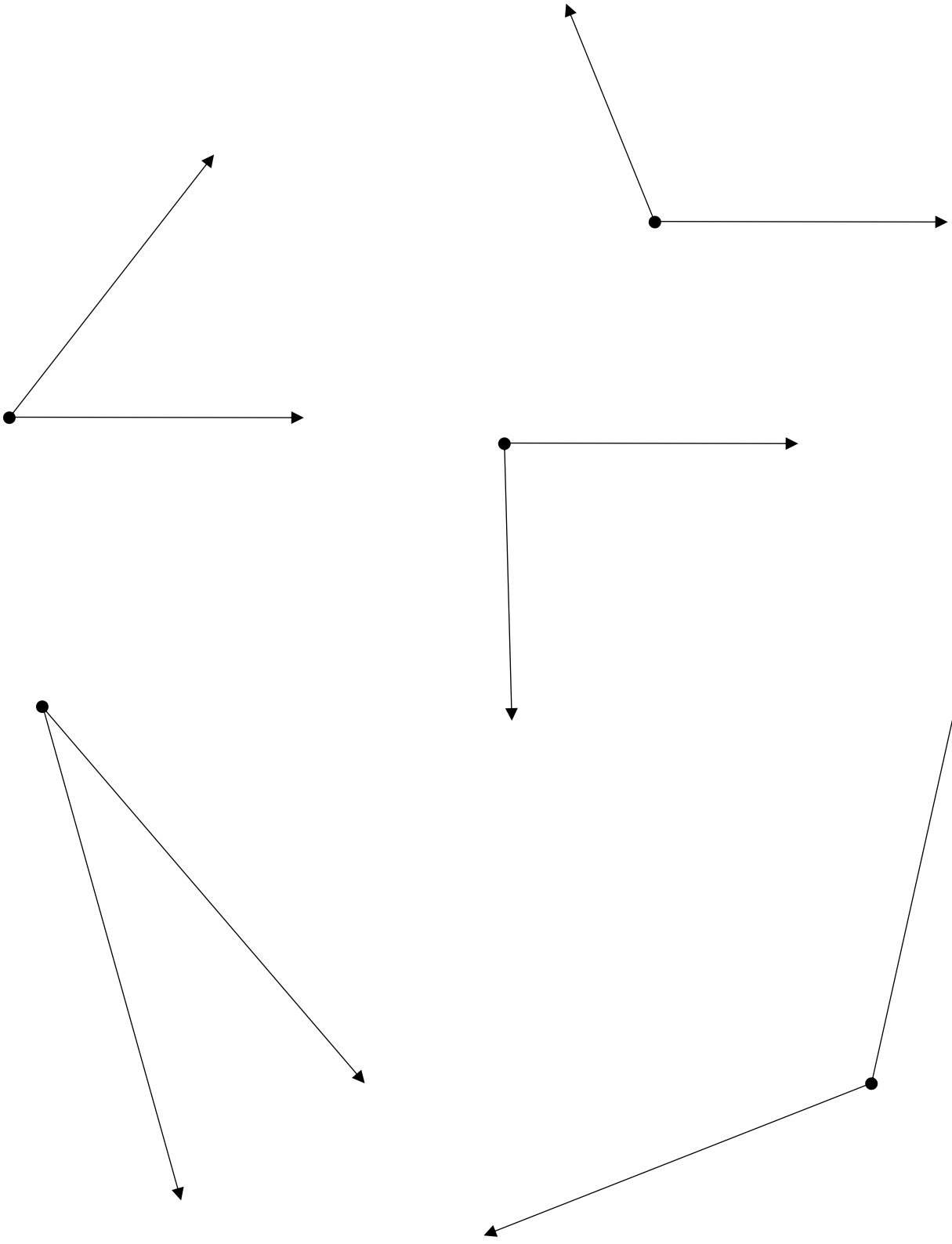


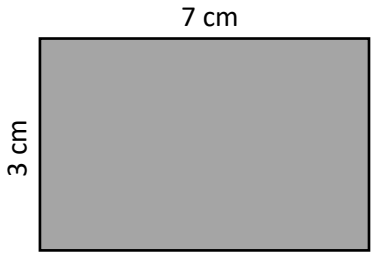
PARALLEL LINES never meet.
They are always the same distance apart.

PERPENDICULAR LINES intersect to form *right angles.*

Right Angles are 90^{o} angles are made from a line that is perpendicular to a straight line.

MEASURE THE ANGLES



COLINEAR POINTS lie along the same line.	**PERIMETER** is the length along the outline (or boundary) of a 2D shape. 
CONGRUENT means to match exactly. It means two figures are both the same size *and* same shape.	

Parallel lines	Congruent	Ray	Point
Colinear	Line Segment	Protractor	Line
Perimeter	Perpendicular Lines	Square	Angle
Vertex	Rectangle	Intersection	Degree
Right Angle	Boundary	Parallel	Vertex

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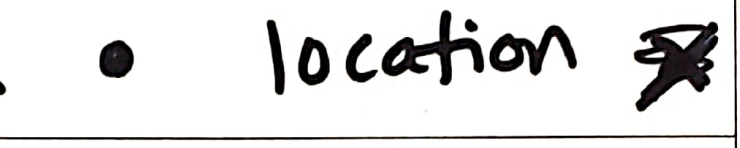
Point 

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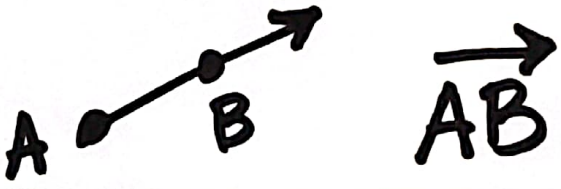
Line 

The **LINE SEGMENT** is a part of a line.
It was two endpoints.

Line Segment $\overline{AB}$ 

A **RAY** starts at an *endpoint* and goes on infinitely in one direction.

Ray 

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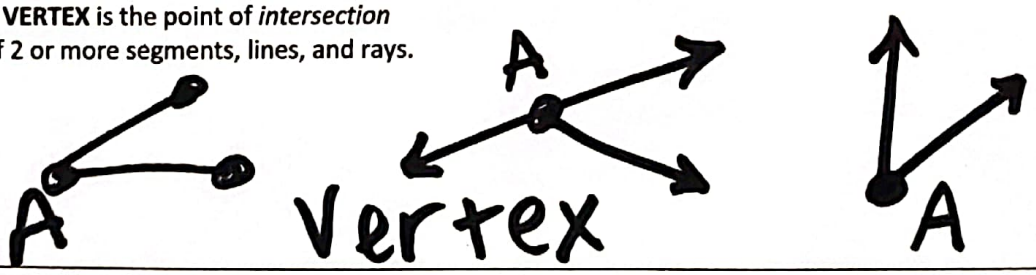
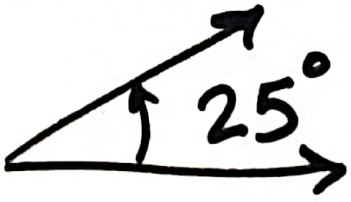
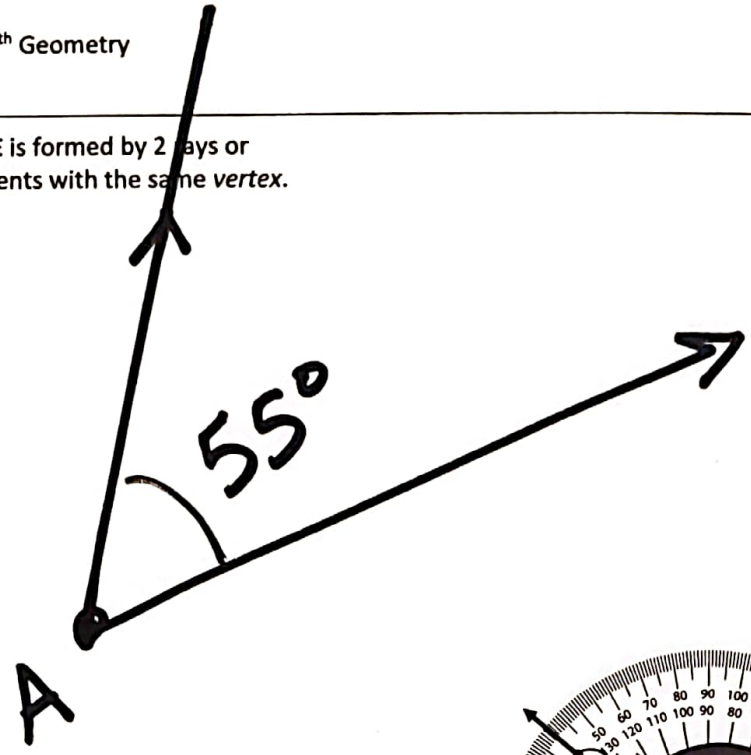


A **DEGREE** (°) of measure is the unit that we use to measure an angle.



An **ANGLE** is formed by 2 rays or line segments with the same *vertex*.



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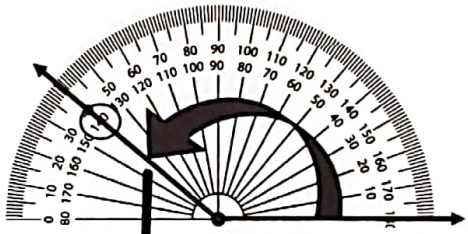

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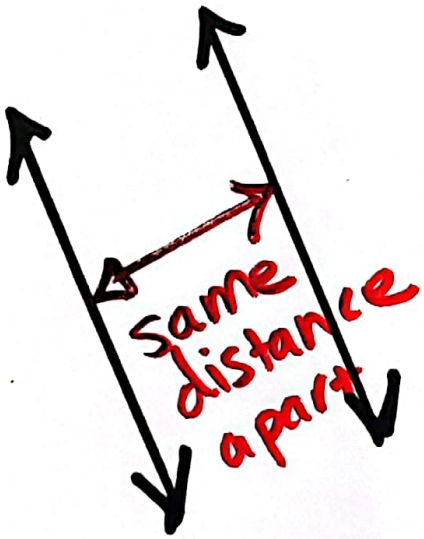

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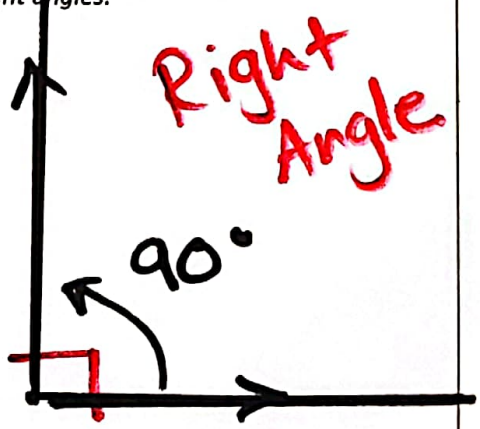

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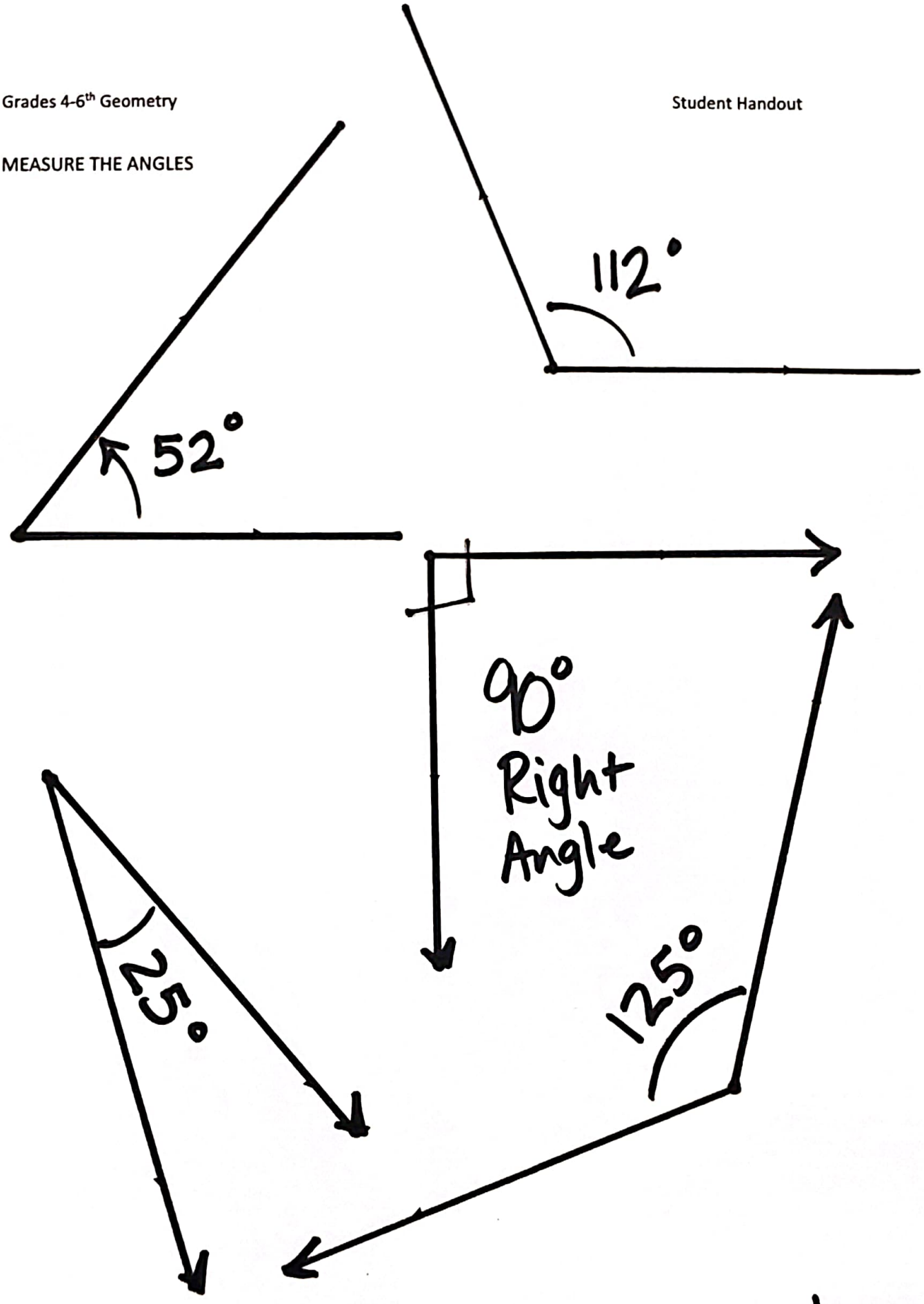
MEASURE THE ANGLES



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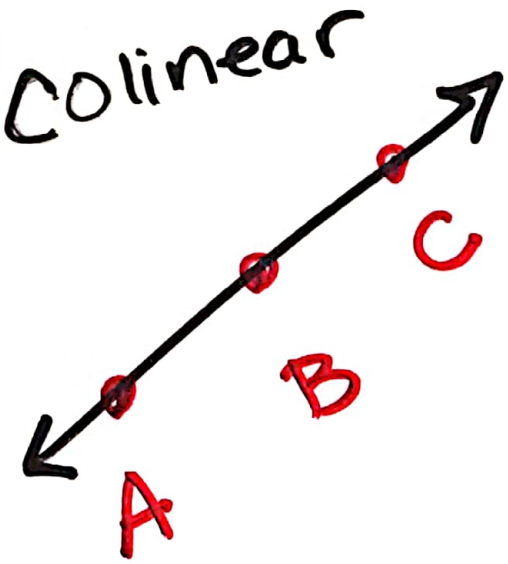

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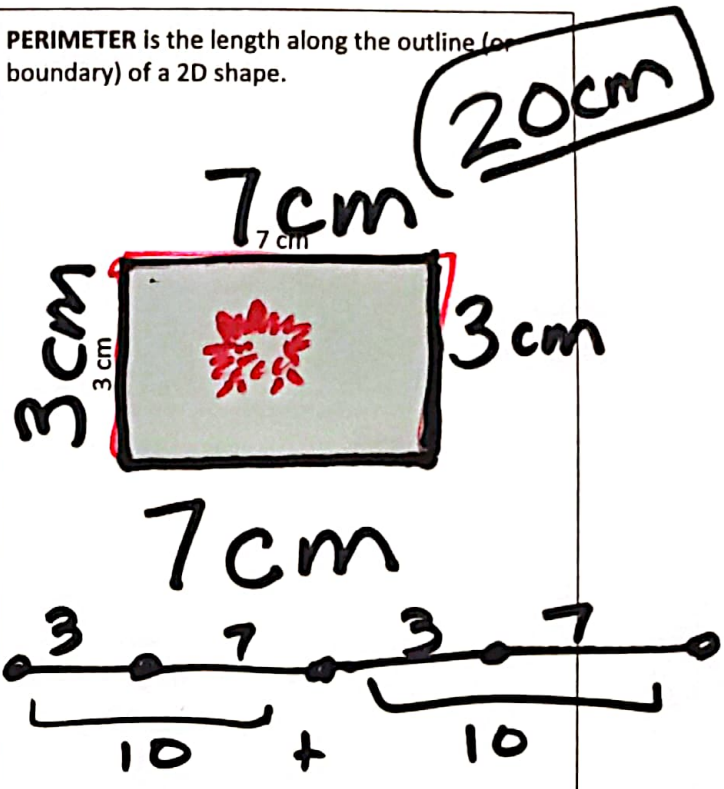

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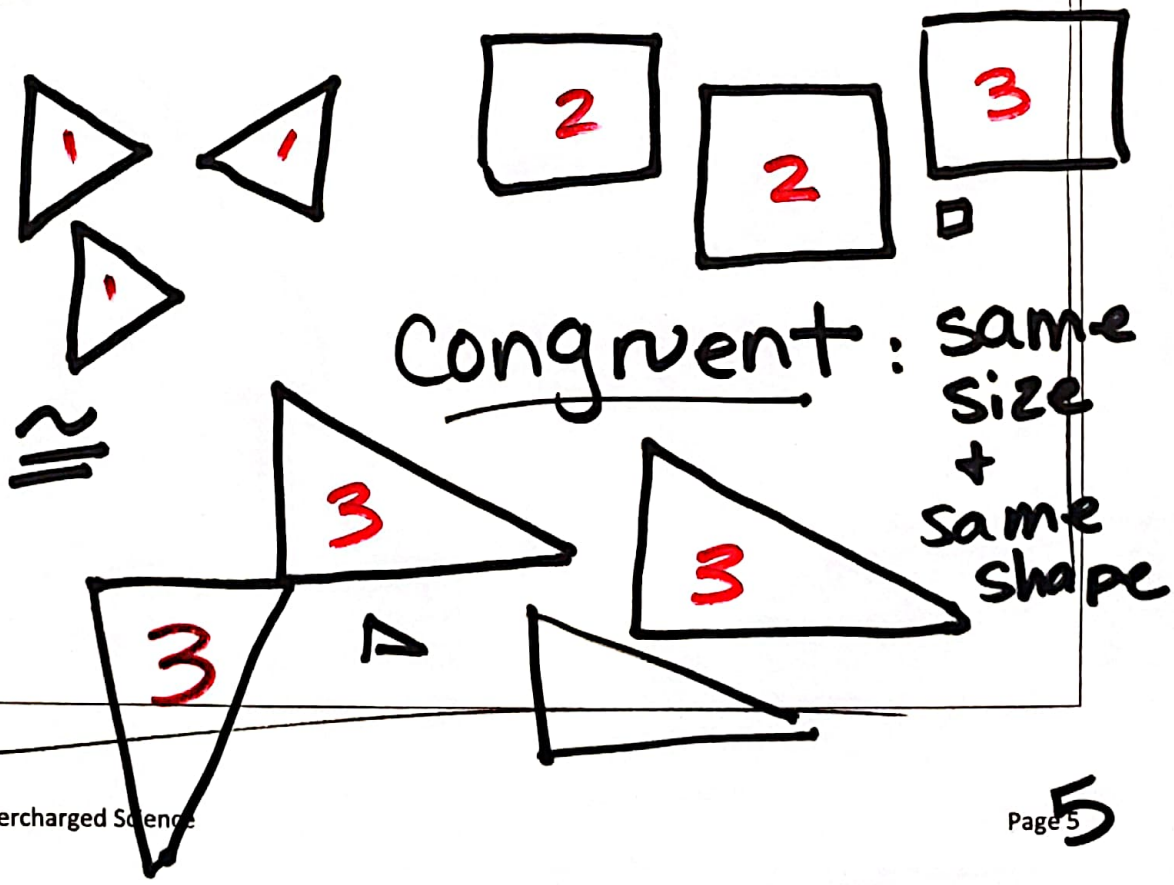
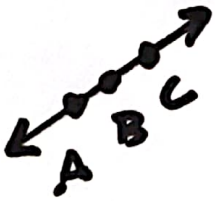
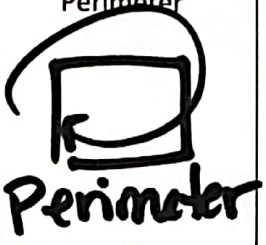
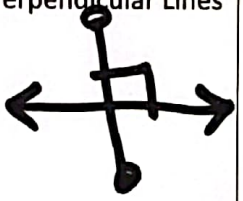


Parallel lines lines on notebook paper	Congruent • Same size, same shape • a perfect copy of something	Ray flashlight or laser	Point Star in night sky
Colinear • is always straight • 3 dots on a pencil	Line Segment • has 2 endpoints • is always straight	Protractor • tool for measuring angles	Line • goes forever in both directions
Perimeter • how much fence we need for a garden	Perpendicular Lines • square has two sets • angle formed by these is always 90°	Square • a shape where all 4 sides are same length	Angle • A square has four right 4's!
Vertex • where 2 lines meet at a pt	Rectangle • a shape with two sets of congruent sides • a book	Intersection Where 2 roads meet	Degree • A right angle is 90 degrees
Right Angle • 2 perpend. lines always make this • "square corner"	Boundary • outline that defines a shape	Parallel • Railroad tracks • 2 lines always ~~the same~~ distance apart	Vertex • a triangle has 3 of these

Free!

Parallel lines 	Congruent 	Ray 	Point 
Colinear 	Line Segment 	Protractor 	Line 
Perimeter 	Perpendicular Lines 	Square 	Angle 
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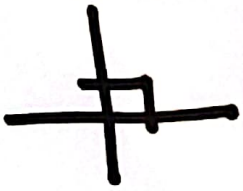
Right Angle 	Boundary 	Parallel 	Vertex