MINISTRY OF EDUCATION, YOUTH & INFORMATION
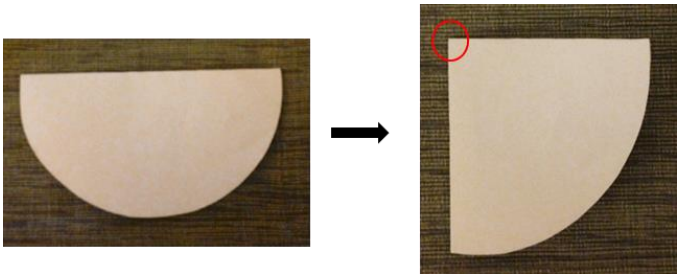*Every Child Can Learn, Every Child Must Learn*

MATH COUNTS

Geometry Unit Plan

Standard:
Explore paths, geometric shapes and space and make generalization about geometric relationships within the environment.

Objectives	Main Concepts	Teaching/Learning Activities	Assessment/Homework Activities
• Differentiate between concepts of point, space, curved/horizontal/vertical/oblique lines or line segments. • Identify and name rays and associate them with the formation of angles. • Investigate the idea of a 'turn' and associate it with the formation of an angle • Use capital/common letters to name angles/rays. • Recognize right angles when drawn or seen in the environment. • Use estimation to identify angles less than, greater than or equal to a right angle. • Identify angles from	• line • line segment • ray • turn • angle • right angle • ray	1. Discuss geometric ideas using pre-prepared notes in *Learning Activity*. (*Geometry Resource Document, Pages 1-2*) 2. Give students a page with drawings of angles which are right angles and non - right angles. The right angles symbol should be placed on those which are right angles. Ask them to sort angles into groups using whatever characteristics they wish. Discuss with students the differences and similarities within and across the groups formed. 3. Get students to create right angles through a paper folding activity. Give students a circular piece of paper. Let students fold it in half and then in quarter as shown below. Allow students to use the right they just made to identify angles which are right angle, less than right angle and greater than right angle	1. **Worksheet 1** – This worksheet allows students to name estimate and classify angles using right angles as a benchmark. (*Geometry Resource Document, 3 – 4*)

different perspective and orientations. ***Benchmark*** • *Compare and order angles less than, greater than or equal to 90o from different orientations.*		4. Compare the sizes of angles in the environment and determine which are less than, greater than, or equal to right angle. Create '*anglegs*' using a push pin to hold two fudge sticks together and allow students to manipulate the sticks to create angles greater/less than or approximately equal to right angle. 5. Identify right angles in the environment and discuss how objects (such as houses) would look if they were not at right angle to ground.	
• Associate symmetry with reflection; • Identify the mirror line of a reflection; • Identify the mirror line as being a line of symmetry; • Show the diameter of a circle as a line of symmetry; • Identify the possible lines of symmetry in geometric shapes and objects.	• symmetry • reflection • mirror line • line of symmetry • object • image	1. Allow students to work in pairs with cut out shapes. Fold each shape in half so that one side will fit exactly on the other side. (NOTE: Some will not fit while others will be able to be folded along more than one line). With teacher's guidance, discuss that these are called lines of symmetry or mirror lines. Further discuss why some shapes will not have a mirror line. 2. Allow students to use paint blobbing and paper folding to construct figures having various numbers of lines of symmetry. Further, discuss the congruency of the two parts separated by the line of symmetry. 3. Allow students to draw a figure and place a mirror behind it (perpendicular to the paper) to associate symmetry with reflection. 4. Allow students to use the mirror lines of incomplete shapes to determine how these shapes can be completed in order to preserve symmetry region (*Geometry Resource Document, page 5*) 5. Allow students to create symmetrical designs on grid paper and identify the line of symmetry/mirror line of the design region (*Geometry Resource Document, page 6*) 6. Allow students to identify lines of symmetry/mirror lines in capital letters of the alphabet. Classify letters as having 0, 1 or 2 lines of symmetry. Present the information in a table 7. Draw shapes, including the circle, with any given number of lines of symmetry. With	1. Allow students to carry out research online to determine which Caribbean flags have **designs** that possess lines of symmetry. 2. Allow students to use 3 to 5 colours to make up an **original** design for a flag with a vertical line of symmetry, a flag with a horizontal line of symmetry and a flag with both vertical and horizontal lines of symmetry 3. Allow students to use cut-outs of pictures of furniture/accessories from magazines, brochures or websites to decorate/design their living room or bedroom. Students' designs should have at least 4 instances of symmetry and can be completed by pasting their furniture/accessories within a 'rectangular room' drawn on a sheet of paper. 4. Create symmetric patterns – Problem Solving Activity (*Geometry Resource Document, page 7*) 5. Use presentation software or web image search, to identify and present pictures of things in the environment such as butterfly, skeleton of the human body, starfish and leaf to determine

		teacher's guidance, note that the diameter is a line of symmetry and hence this shape has an infinite number of lines of symmetry. Create a symmetry museum in the classroom using the figures created.	whether or not objects are symmetrical and if they are, the number of lines of symmetry. In groups, use image capturing devices to make a digital story depicting lines of symmetry.
• Describe locations on a grid using rows and columns. • Identify congruent shapes and explain why they are congruent. • Make inferences about congruency when a shape or design is flipped, turned or slid. Identify details in shapes and designs from different orientations and perspective.	• rows • columns • location • congruent • flip • slide • object • orientation • image • size • shape • horizontal	1. Give students a hundred chart with the rows labelled from 1 to 10 and the columns labelled A to J as shown below. Allow them to: a) Identify the number in a given row and column e.g. the number at column H row 9 is 18. b) State the row and column for the location of a given set of numbers | 10	1	2	3	4	5	6	7	8	9	10
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9	11	12	13	14	15	16	17	18	19	20
8	21	22	23	24	25	26	27	28	29	30
7	31	32	33	34	35	36	37	38	39	40
6	41	42	43	44	45	46	47	48	49	50
5	51	52	53	54	55	56	57	58	59	60
4	61	62	63	64	65	66	67	68	69	70
3	71	72	73	74	75	76	77	78	79	80
2	81	82	83	84	85	86	87	88	89	90
1	91	92	93	94	95	96	97	98	99	100
	A	B	C	D	E	F	G	H	I	J	 2. Give students a variety of cut out shapes to find the pairs that match exactly. 3. Represent shapes on grids for students to identify congruent shapes and tell why they are congruent (*Geometry Resource Document, Page 9*) 4. Allow students to map the path of an object to its image by identifying the number of units travelled horizontally then the number of units travelled vertically. 5. Use paper folding activity to identify the image of a shape formed by a flip in a line segment. Give students grid paper and pattern block. Allow them to trace the shape and label it. Allow them to slide the pattern block across the grid and trace again. Let students also trace the pattern block when it is flipped and turned. Engage in a discussion with the students regarding what happened each time.	1. **Worksheet –** This allows students distinguish when a shape is flipped, turned or slid (*Geometry Resource Document,, page 8*).

	• vertical	