MATHEMATICS RESOURCE

GEOMETRY STRAND

Teaching Guides
Learning Activities &
Worksheets

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

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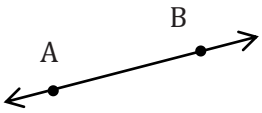
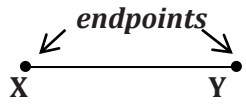
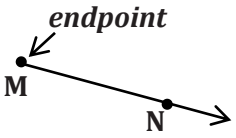
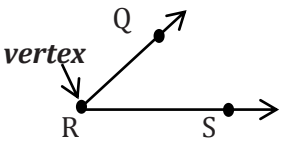
MATH COUNTS

Geometric Ideas- *Teachers' Copy*

Geometric Figure	Description	Symbol	Read
POINT	• Is a location in space • Has no dimensions (*that means it has no length, breadth or height*) • Is represented by a dot	point A	point A
 **LINE**	• Is a one-dimensional object that has no end-points (they continue on forever in a plane) - *By 'one-dimensional' we mean that it has only length* • The shortest distance between two points	$\overleftrightarrow{AB}$ or $\overleftrightarrow{BA}$	line AB or line BA
 **LINE SEGMENT**	• Is a straight line with two end points (*that is, the line does not continue forever*) • A straight path from one point to another	$\overline{XY}$ or $\overline{YX}$	line segment XY or line segment YX
 **RAY**	• an endless straight path starting at a point • Has only one end-point and continues on forever in only one direction	$\overrightarrow{MN}$	ray MN
 **ANGLE**	• Is formed at the point where two straight lines meet • Two rays with common end-point • Is measured in degrees	∠QRS or ∠SQR	angle QRS or angle SQR

Note to Teacher:

- Introduce Geometry to your students. You can consider informing them of the use of Geometric ideas in real-life, such as in the cartoons that they love to watch (do research here).
- Seek to have discussion with the students about the geometric ideas in the table.
- Note that each student's sheet has areas in the table that they should complete. This should be done as you discuss and guide them along in class.
- Feel free to use textbooks for exercises.

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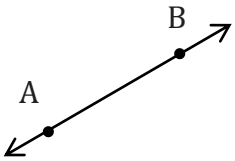
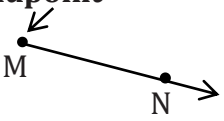
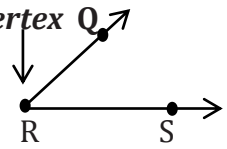
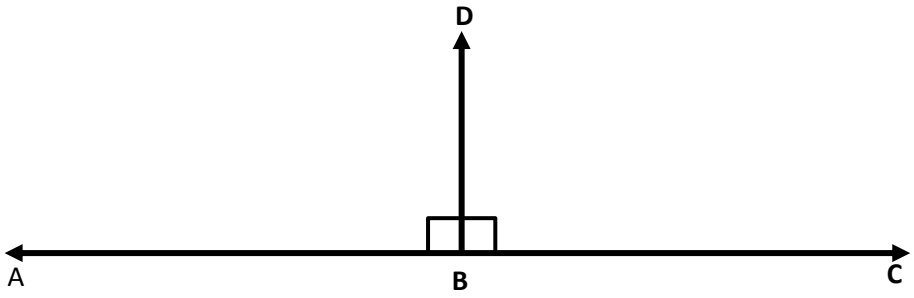
Geometric Ideas – *Student Activity*

Fill in the blank spaces in the table below.

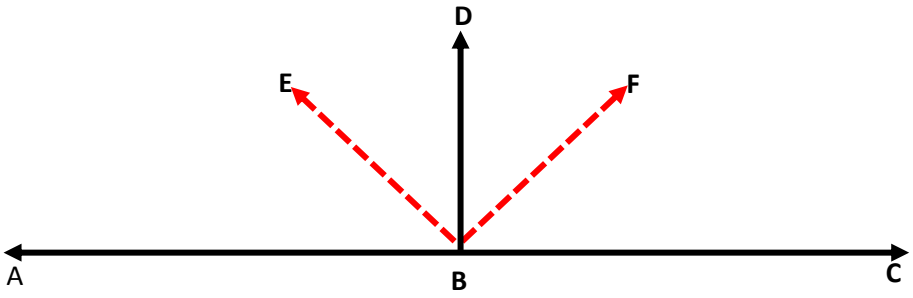
Geometric Idea (Draw it!)	Name & Describe it!	Symbol (Write it!)	Read it!
	Point • Is a location in space • Has no dimensions (*that means it has no length, breadth or height*) • Is represented by a dot	Point A	point A
	_____ • Is a one-dimensional object that has no end-points (they continue on forever in a plane) - *By 'one-dimensional' we mean that it has only length* • The shortest distance between two points	$\overleftrightarrow{AB}$ or $\overleftrightarrow{BA}$	line AB or line BA
	_____ • Is a straight line with two end points (*that is, the line does not continue forever*) • A straight path from one point to another	$\overline{XY}$ or $\overline{YX}$	line segment XY or line segment YX
Endpoint 	***Ray***	$\overrightarrow{MN}$	ray MN
Vertex **Q** 	_____		

Lines and Angles

Wendy is playing with some lines. She starts with a horizontal line and a vertical line. The lines intersect to form two right angles: angle BAC and angle DAC.



If she divides each right angle into 2 equal angles, she obtains:



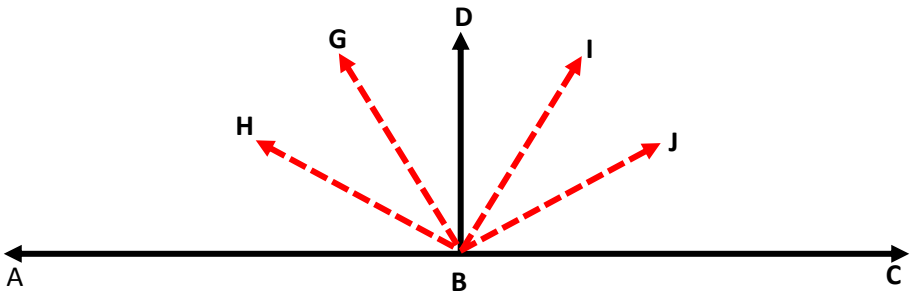
1. Which angles are

a. smaller than right angle? _____

b. larger than right angle? _____

c. equal to right angle? _____

If she divides each right angle into 3 equal angles, she obtains:



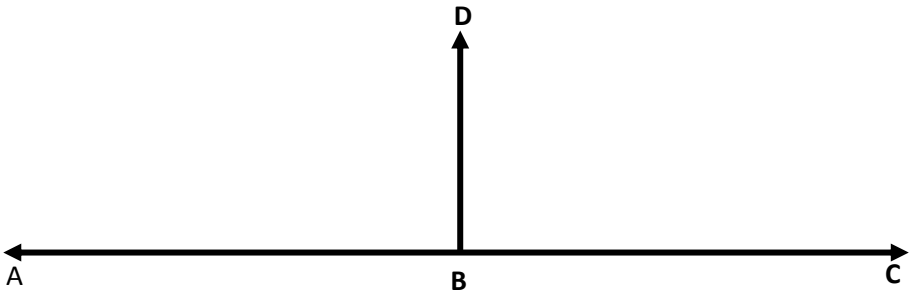
2. Which angles are

a. smaller than right angle? _____

b. larger than right angle? _____

c. equal to right angle? _____

3. In the space below, draw how the shape would look if Wendy divides each right angle into 4 equal pieces.



4. Try to work out which angles are smaller than/larger than right angle and which ones are equal to right angle.

Identify Symmetrical Halves

Below are 14 halves of various 'stick-men'. **There are 7 different 'stick-men' in total and each is symmetrical**. Which halves can be joined to give a **symmetrical** stick man?

A

B

C

D

E

F

G

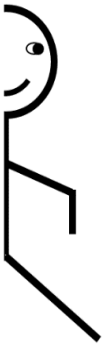
H

I

J

K

L

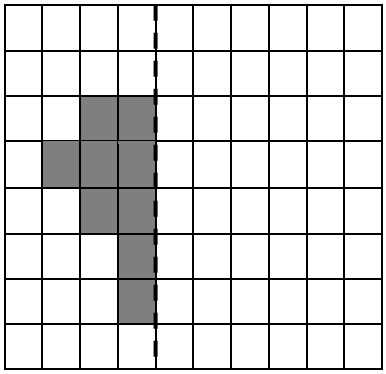


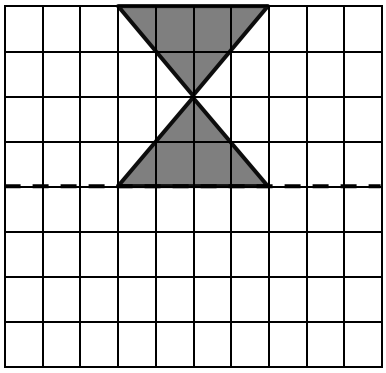
M

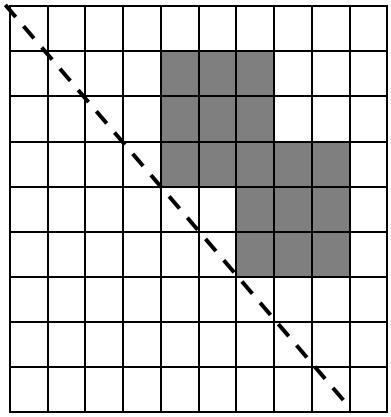
N

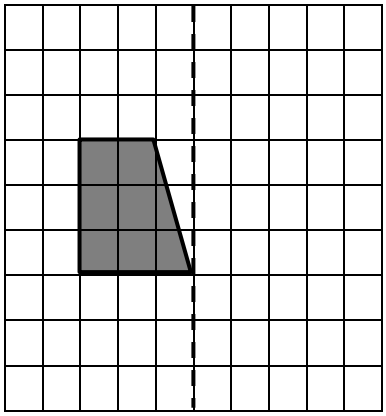
Completing Symmetric Figures

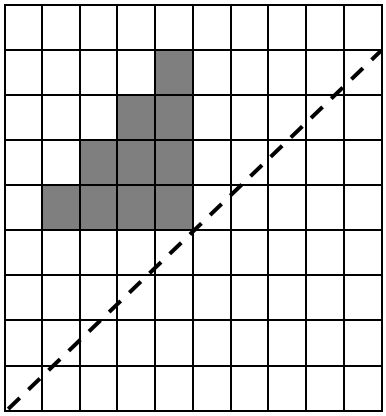
Each figure is half of a symmetric shape. Using the dotted line as a line of symmetry, complete each symmetric figure.

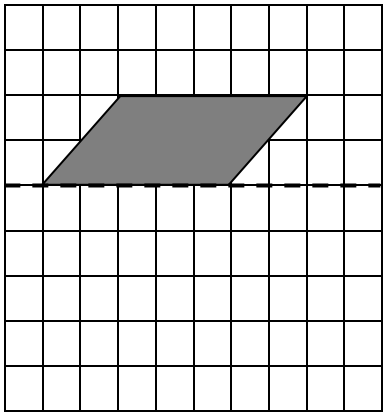












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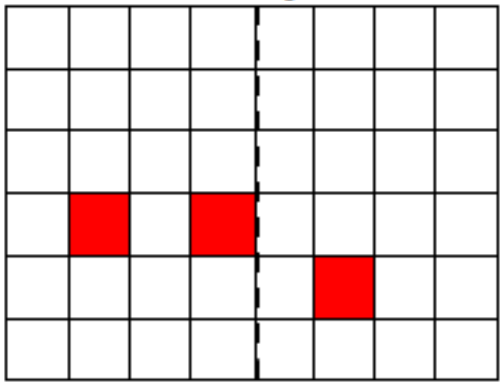
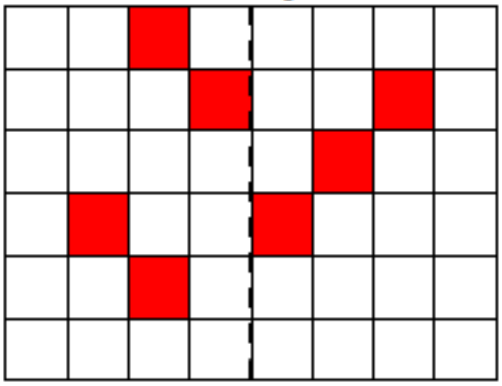
Problem Solving Activity

Create symmetrical patterns by colouring the indicated number of squares. Squares can be coloured on any side of the dotted line. The dotted line is the line of symmetry.

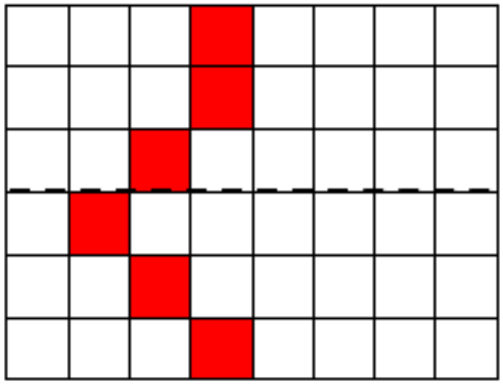
Colour 3 squares



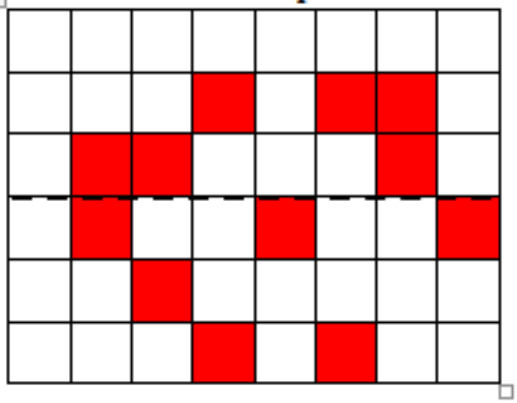
Colour 7 squares



Colour 4 squares



Colour 10 squares



Understand the problem
Where is the line of symmetry? What is a symmetric pattern? How many squares do I have to colour?

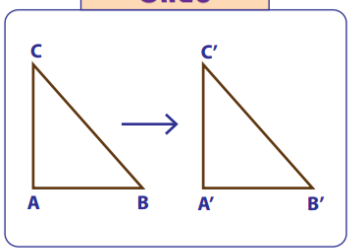
Plan what to do
How can I use the existing shadings to help me to determine which other squares to shade?

Carry out the plan
Am I making progress? Do I need to re-visit the plan?

Check
Is my end-product a symmetrical pattern?

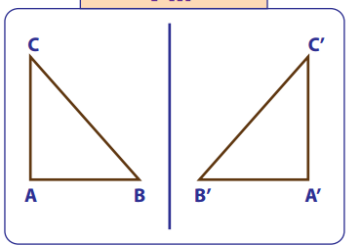
Worksheet 4 – Slide, Flip or Turn

Slide



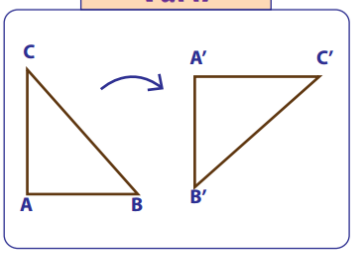
A slide occurs when all the points of a figure move the same distance in the same direction.

Flip



A flip occurs when a figure moves across a straight line in such a way that the new position is the mirror image of the first position.

Turn



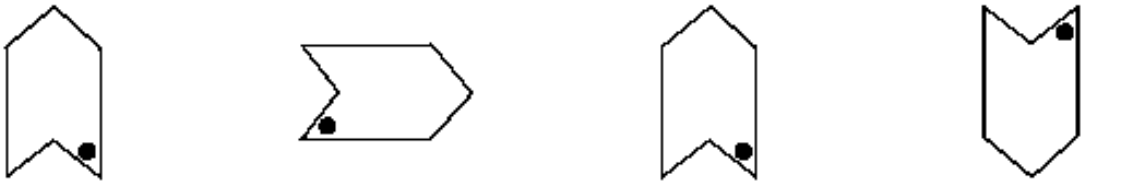
A turn occurs when a figure moves from its original location to a new location on a fixed point.

Recognize how each figure has moved. Write slide, flip or turn below the respective images.

1)

2)

3)



4)

Identifying Congruent Shapes

There are 9 pairs of congruent shapes. Use the numbers 1 to 9 to indicate the pairs of congruent shapes. The first one is done for you.