

INVESTIGATING THE ANGLE RELATIONSHIPS

NAME: _____

GRADE: _____

SCHOOL: _____

COMPILED BY AMINA KHAN

1. Aim:

Investigating the special angle relationships formed by perpendicular and intersecting lines.

2. Objective:

At the end of the lesson, a learner must be able to

- Recognize and describe pairs of angles formed by:
 - perpendicular lines
 - intersecting lines
- Solving problems - Solve geometric problems using the relationships between pairs of angles described above.

3. Getting started:

How to install GeoGebra?

- GeoGebra can be installed by following this link:
http://wiki.geogebra.org/en/Reference:GeoGebra_Installation
- Download and install the application. Here's a video to help:
<https://www.youtube.com/watch?v=RiMQTJcU8K0>

However if you would like to use it once online you can use this link:

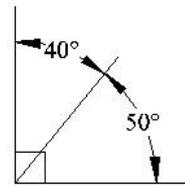
<https://web.geogebra.org/app/#> and then open up the file found on the called **Angle Relationships**.

You can also work online via the website GeoGebra Tube :

<http://www.geogebra.org/m/NzTN5dFf>

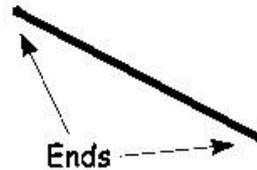
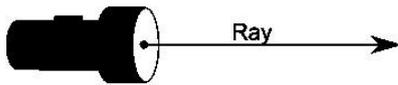
Terminology:

- Adjacent-
- Complementary angles- Two angles are Complementary when they **add up to 90 degrees** (a Right Angle \perp).

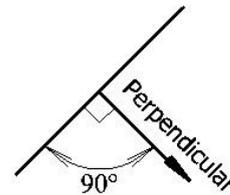
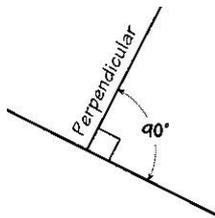


- Line is straight (no curves), has no thickness, and extends in both directions without end (infinitely).
- Line Segment - If it **does** have ends it is called a "Line Segment". If it has

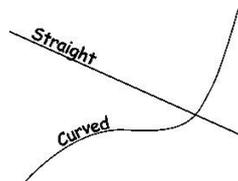
just **one end** it is called a "Ray"



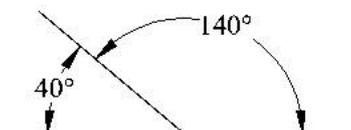
- Perpendicular - It just means **at right angles (90 degrees)** to.



- Straight line - A line that does not curve.

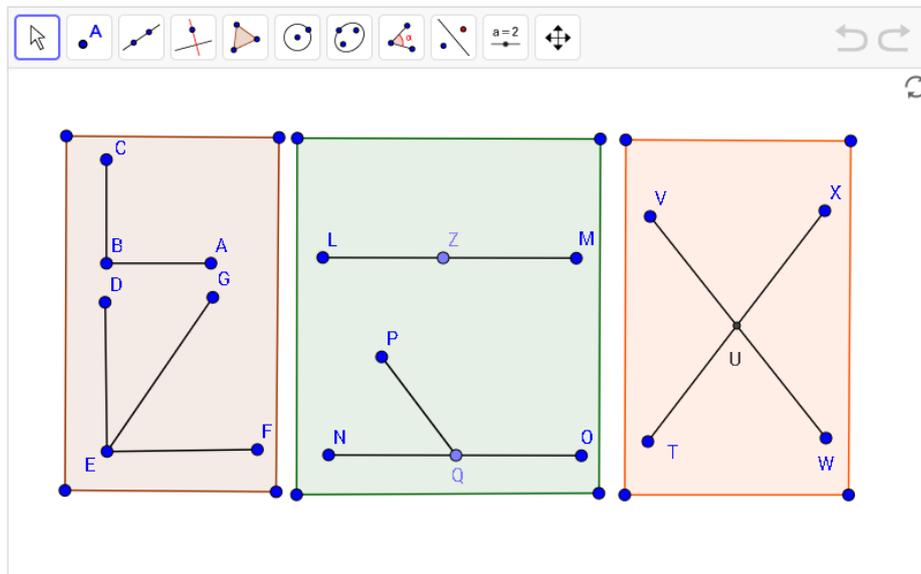


- Supplementary angles- Two Angles are Supplementary when they **add up to 180 degrees**.



Investigation:

Look at the workbook on *GeoGebra* titled **Angle Relationships**.



1) Use the angle button and measure these angles:

▪ $\hat{A}BC = \underline{\hspace{2cm}}$

▪ $\hat{D}EF = \underline{\hspace{1cm}}$, $\hat{D}EG = \underline{\hspace{1cm}}$ and $\hat{G}EF = \underline{\hspace{2cm}}$

What do you notice about these angles?

We call these angle pairs _____ and they are _____ to _____.

2) Use the angle button and measure these angles:

▪ $\hat{L}ZM = \underline{\hspace{2cm}}$

▪ $\hat{O}QN = \underline{\hspace{1cm}}$, $\hat{P}QO = \underline{\hspace{1cm}}$ and $\hat{P}QN = \underline{\hspace{2cm}}$

What do you notice about these angles?

We call these angle pairs _____ and they are _____ to _____.

3) Use the angle button and measure these angles:

▪ $\widehat{VUX} = \underline{\hspace{2cm}}$ and $\widehat{TUW} = \underline{\hspace{2cm}}$

▪ $\widehat{VUT} = \underline{\hspace{2cm}}$ and $\widehat{XUW} = \underline{\hspace{2cm}}$

What do you notice about these angles?

We call these angle pairs _____ and they are _____ to each other.

Reflection

Tick off (✓) the statements that you agree with:

	I know the definition of a line segment, ray, straight line, parallel lines and perpendicular lines
	I know that the sum of the angles on a straight line is 180° . Adjacent supplementary angles add up to 180°
	I know that if lines are perpendicular, then adjacent complementary angles add up to 90° .
	I know that if lines intersect, then vertically opposite angles are equal.
	I can solve geometric problems to find unknown angles using the angle relationships above, as well as other known properties of triangles and quadrilaterals.
	I can give reasons and justify their solutions for every written statement.

These statements help you to see what you learnt from this lesson.

Please note that if you have left out a statement, then you need to go ask for help and together we can try to grasp that particular concept.

Good luck and all the best for the exams!

