INVESTIGATING THE PROPERTIES OF ANGLE PAIRS FORMED BY A TRANSVERSAL.

NAME: _____

GRADE: _____

SCHOOL: _____

COMPILED BY AMINA KHAN

1. Aim:

Investigating the properties of special pairs of angles formed when a transversal cuts through a pair of parallel 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
    - parallel lines cut by a transversal
- Solving problems - Solve geometric problems using the relationships between pairs of angles described above

3. Getting started:

How to install GeoGebra?

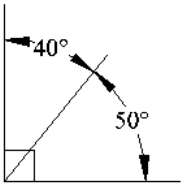
- GeoGebra can be installed by following this link: http://wiki.geogebra.org/en/Reference:GeoGebra_Installation
- Download and install the application. Here's a video to help: https://www.youtube.com/watch?v=RiMQTJcU8K0

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 **Investigating the Properties of Angle Pairs Formed by a Transversal.**

You can also work online via the website GeoGebra Tube : http://www.geogebra.org/m/NzTN5dFf

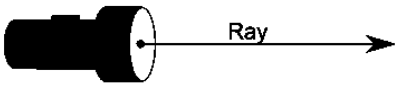
Terminology:

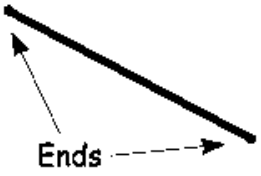
- Complementary angles- Two angles are Complementary when they **add up to 90 degrees** (a Right Angle ⌞).



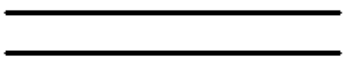
- Line is straight (no curves), has no thickness, and extends in both directions without end (infinitely).

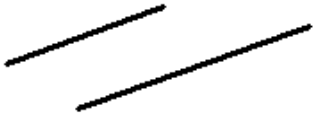
- Line Segment - If it **does** have ends it is called a "**Line Segment**". If it has just **one end** it is called a "**Ray**"



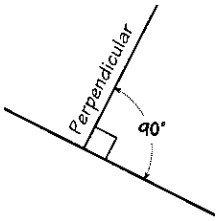


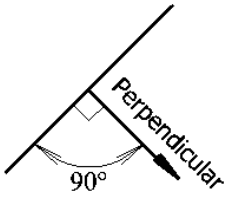
- Parallel - Two lines on a plane that never meet. They are always the same distance apart.



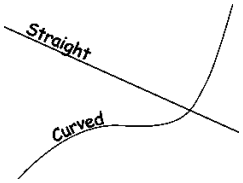


- Perpendicular - It just means **at right angles (90°) to**.

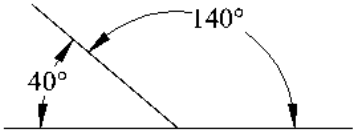




- Straight line - A line that does not curve.

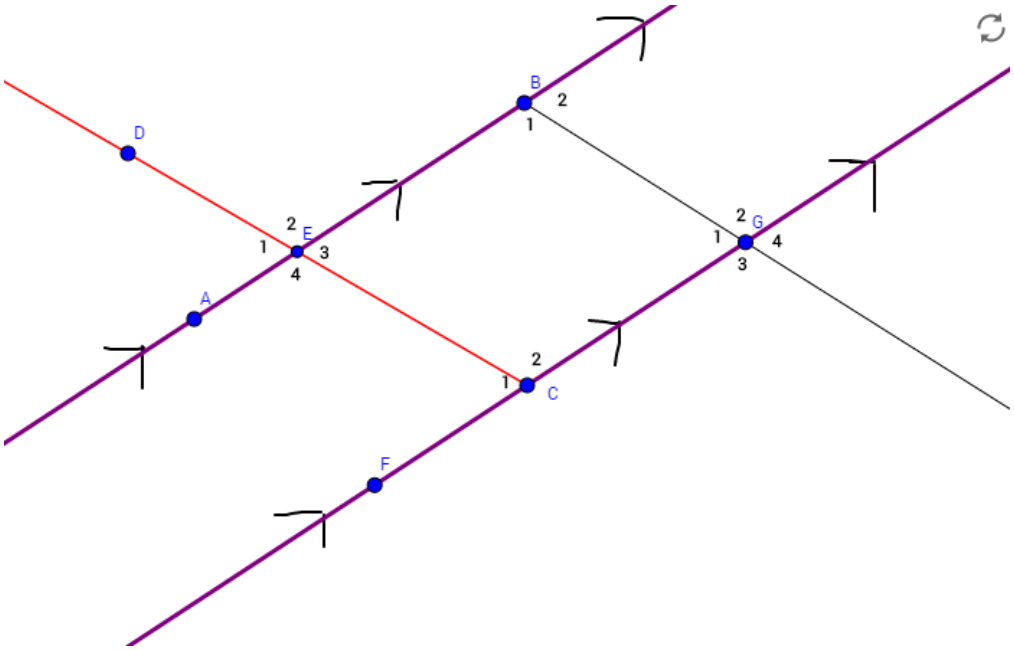


- Supplementary angles- Two Angles are Supplementary when they **add up to 180 degrees**.



Investigation:

Look at the workbook on GeoGebra titled *Investigating the Properties of Angle Pairs Formed by a Transversal*. The lines AB //FG. Answer the questions that follow:



1) Use the angle button and measure these angles:

- $\widehat{E_1}$ = _____ and $\widehat{C_1}$ = _____
- $\widehat{B_2}$ = _____ and $\widehat{G_4}$ = _____

What do you notice about these angles?

_____

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

2) Use the angle button and measure these angles:

- $\widehat{E_4}$ = _____ and $\widehat{C_2}$ = _____
- $\widehat{B_1}$ = _____ and $\widehat{G_2}$ = _____

What do you notice about these angles?

_____

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

3) Use the angle button and measure these angles:

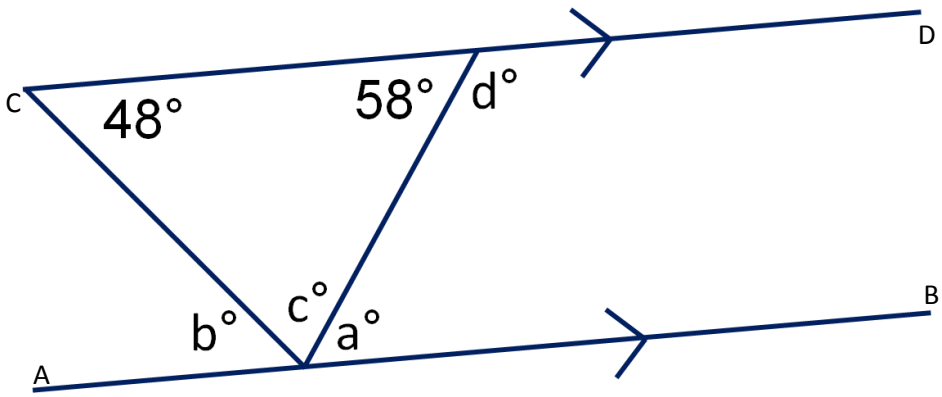
- $\widehat{E_3} =$ _____ and $\widehat{C_2} =$ _____ $\widehat{E_3} + \widehat{C_2} =$ _____
- $\widehat{B_1} =$ _____ and $\widehat{G_1} =$ _____ $\widehat{B_1} + \widehat{G_1} =$ _____

What do you notice about these angles?

_____

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

4) **Exam Type Question:** Look at the diagram below and work out the value of the variables, with reasons.



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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°
☐	I know that if lines are perpendicular, then adjacent supplementary angles are each equal to 90°.
	I know that if lines intersect, then vertically opposite angles are equal.
☐	I know that if parallel lines are cut by a transversal, then corresponding angles are equal
	I Know that if parallel lines cut by a transversal, then alternate angles are equal
☐	I know that if parallel lines cut by a transversal, then co-interior angles are supplementary
	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.!

NOTES: