BUILD-FLY-CODE
COMPETE

SEARCH & RESCUE

STUDENT WORKBOOK

NAME: _____

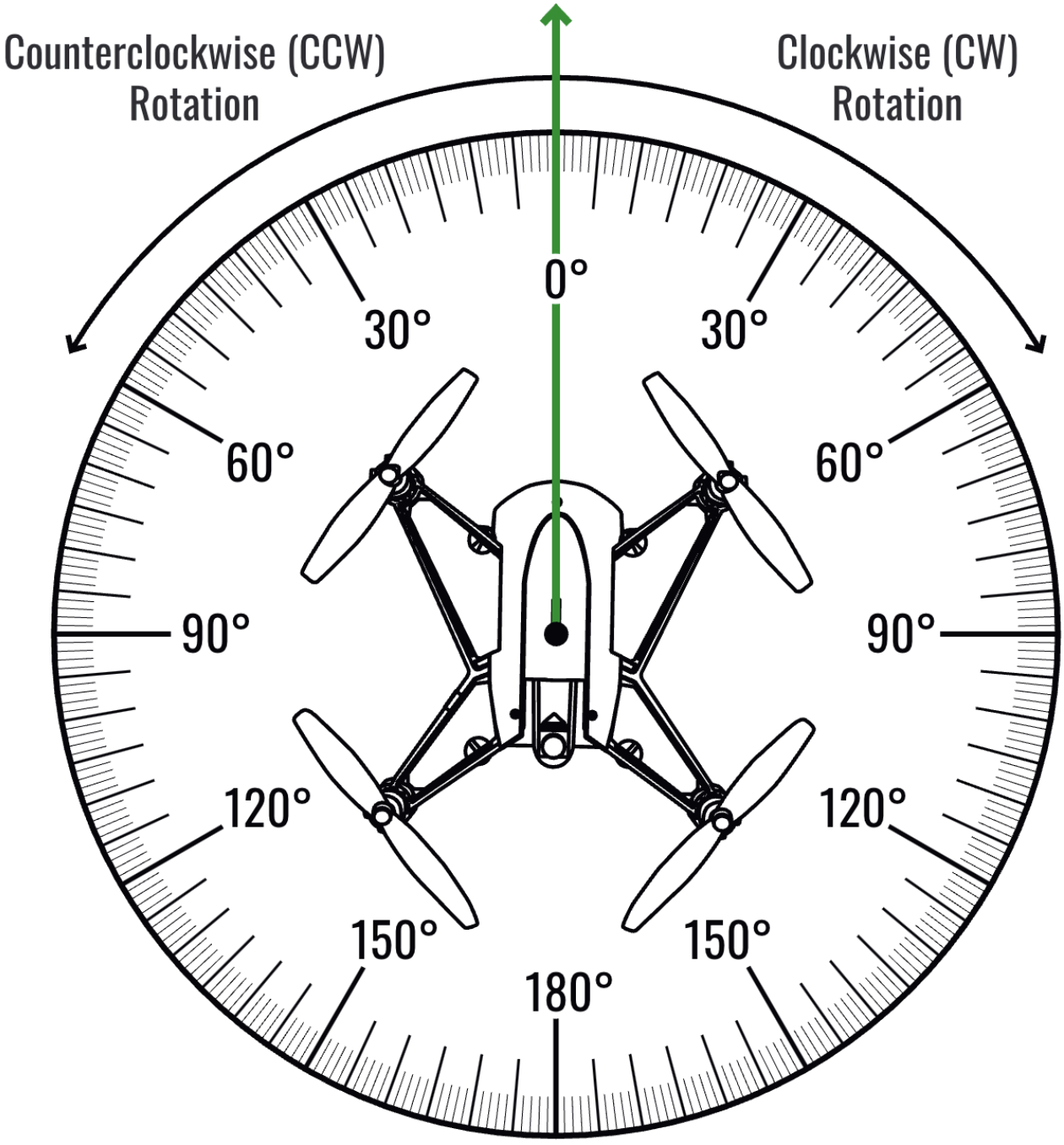
FOR THE WIN
ROBOTICS

2025 | VERSION 2

PILOT FLIGHT LOG

DATE	DRONE MODEL	LOCATION	FLIGHT TIME	NOTES

ANGLES REFERENCE



LESSON 1: PARALLEL TRACK SEARCH

Use this page for any drawings, notes, or calculations during the Parallel Track Search activity.

LESSON 2: EXPANDING SQUARE SEARCH

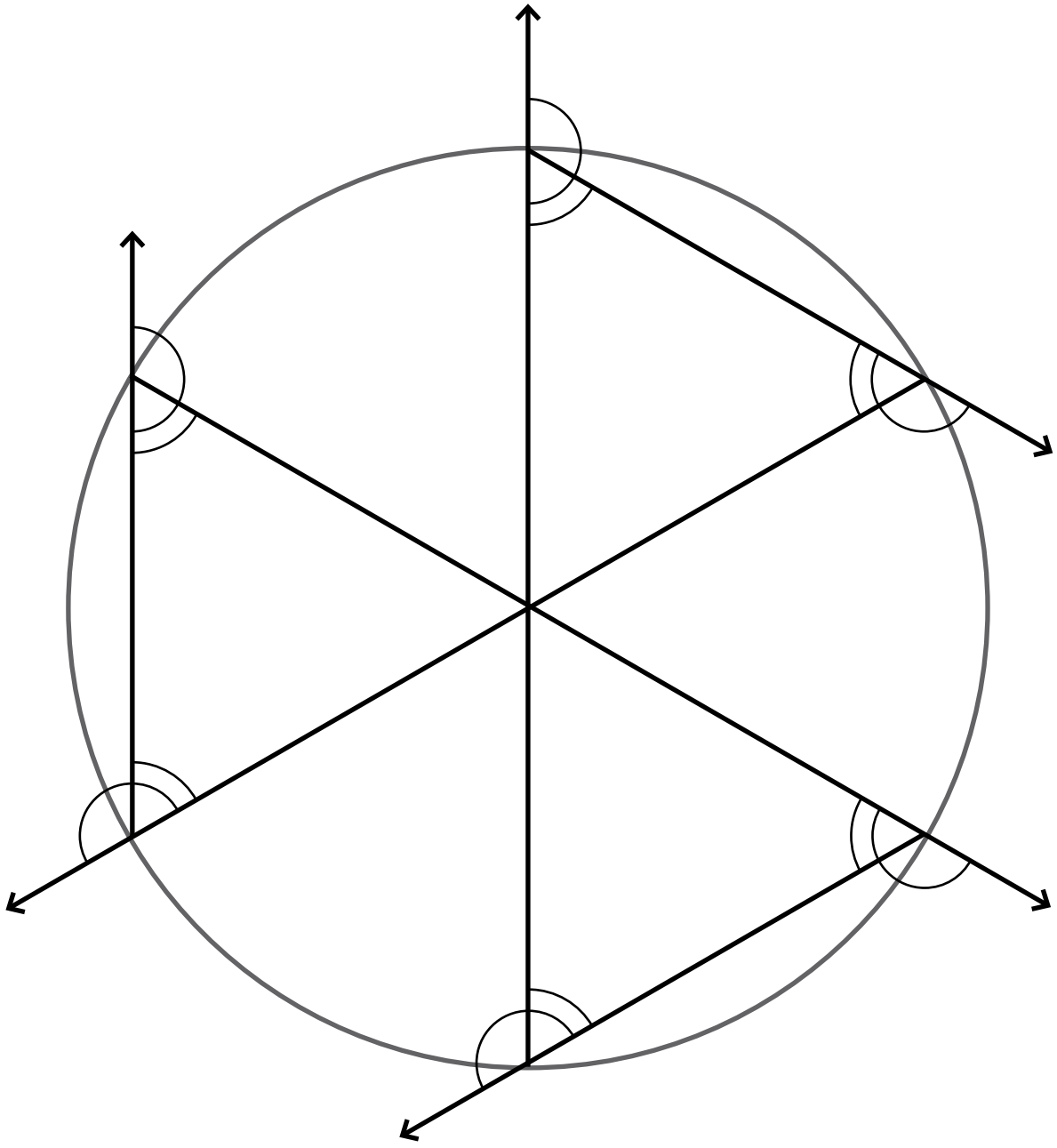
Use this page for any drawings, notes, or calculations during the Expanding Square Search activity.

LESSON 3: SECTOR SEARCH

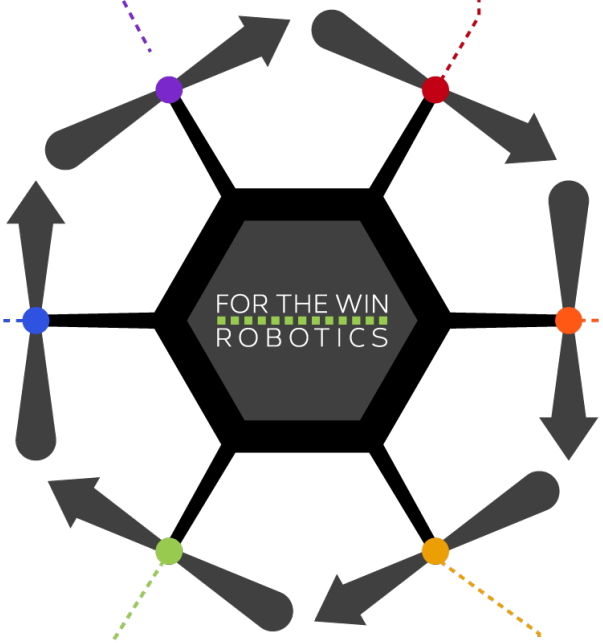
1. In an equilateral triangle, each angle is equal to _____°.

2. The sum of supplementary angles is equal to _____°.

3. Write the measurement of each marked angle on the diagram below of the sector search pattern.



ENGINEERING DESIGN PROCESS



MODIFICATION
Refine & enhance your thinking. Scrap ideas, prototypes, & research that is not helpful. **Start process again.**

CHALLENGE
Understand the need or challenge & define what needs to be solved.

TEST/ANALYZE
Check prototype's performance with real users and go for broke. Identify all concerns.

RESEARCH
Gather information from all angles. Explore existing solutions & learn all you can about the challenge.

PROTOTYPE
Communicate your best idea with simulations & models (digital or physical) to show how it works.

IMAGINE
Capture all ideas quickly. Brainstorm, sketch, discuss, & get feedback before prototyping.

ENGINEERING DESIGN PROCESS NOTES

Challenge:

Research:

Imagine:

Prototype:

Test/Analyze:

Modification:

GLOSSARY

Equilateral Triangle – a triangle with equivalent sides and angles

Expanding Square Search Pattern − an aerial search pattern that starts where the suspected location of an individual is and expands in a square pattern from there, useful when the general location of a lost individual is known

Loop − a command that directs the code it covers to repeat until certain conditions are met

Search and Rescue (SAR) − the process of locating and assisting individuals who are lost or are in danger

Sector Search Pattern − an aerial search pattern that forms a series of equilateral triangles, useful when the search area is small and the location of a lost individual is accurately known

Supplementary Angles − angles whose sum is equal to 180°

Parallel Lines − lines that have the same distance apart at all times

Parallel Track Search Pattern − an aerial search pattern consisting of parallel lines, useful when searching a large area of land and when the location of an individual is uncertain

MATH FORMULAS:

Distance Formula − distance = rate × time

Supplementary Angles Formula − If angles a and b are supplementary angles, then $a° = 180° - b°$.