

## Worksheet 3

### Theme: Geometry Detective

Name:

Class:



#### Section 1: Logical Deduction – Prove the Clue

Given:

- $m\angle 1 + m\angle 2 = 180^\circ$
- $\angle 1 \cong \angle 3$

**Prove:**  $\angle 2 \cong \angle 3$

Write a **formal two-column proof**.



#### Section 2: Circle Geometry – Security Camera Sweep

A camera rotates in a  **$60^\circ$  sector** of a circle with radius 12 ft.

- Find **arc length** and **area of the sector**



#### Section 3: Triangle Shadows – Similar Figures

Lamppost casts 12-ft shadow. A 5-ft person casts a 2-ft shadow.

- Use **similar triangles** to find lamppost height
- Set up and solve a proportion



#### Section 4: Crime Scene – Coordinate Geometry

The escape path was along:

A(2,2), B(6,2), C(6,6), D(2,6)

- Find **perimeter**, **area**, and prove it's a square
- Calculate diagonal length using **Pythagorean Theorem**

## ★ Bonus Section: 3D Footprint Analysis

A thief left a **triangular prism-shaped footprint**:

- Triangular base: sides 3 cm, 4 cm, 5 cm
- Height: 2 cm  
Find the **volume** using:
- Area of triangle  $\times$  prism height