

# Level 3C

## Middle School

38-Week Course | 1 Hour 45 Min Classes | Once A Week



**Level 3C** at Bhanzu prepares students for high school and early college-level math with deeper exploration of algebra, geometry, trigonometry, and data reasoning.

Students strengthen core algebra skills including rational numbers, linear equations, functions, and data reasoning, while extending into geometry, trigonometry, and probability. Each module strengthens logic, fluency, and confidence, ensuring students are ready for advanced math streams.



### MODULE 1

#### Mastering Rational Numbers and Proof

- ▶ Rational & Irrational Numbers
- ▶ Speed Math on Rational Numbers
- ▶ Coordinate Geometry & Distance Formula
- ▶ Pythagoras Theorem & Converse
- ▶ Rationalization & Operations on Irrationals
- ▶ Laws of Exponents & Simplifications
- ▶ Properties of Operations
- ▶ Scenario Based Questions
- ▶ Module Quiz



### MODULE 2

#### Inequalities and Angles

- ▶ Square & Cube Roots
- ▶ Solving Linear Equations in 2 Variables
- ▶ Slope of a Line & Slope-Intercept Form
- ▶ Framing & Graphing Linear Inequalities
- ▶ Linear Programming Problems
- ▶ Properties of Polygons
- ▶ Congruency & Similarity of Triangles
- ▶ Scenario Based Questions
- ▶ Module Quiz



### MODULE 3

#### Geometry & Functions

- ▶ Translations, Rotations, & Reflections
- ▶ Circle & Its Theorems
- ▶ Surface Area & Volume
- ▶ Set Theory
- ▶ Cross Product & Introduction to Functions
- ▶ Domain & Range of a Function
- ▶ Linear & Non-Linear Functions
- ▶ Scenario Based Questions
- ▶ Module Quiz



### MODULE 4

#### Trigonometry, Statistics & Probability

- ▶ Injective, Surjective & Bijective Functions
- ▶ Introduction to Trigonometry
- ▶ Trigonometric Ratios as Functions
- ▶ Trigonometric Identities
- ▶ Data Representation & Measures of Center
- ▶ Two-Way Tables & Associations in Statistics
- ▶ Compound Events & Simulations
- ▶ Scenario Based Questions
- ▶ Module Quiz

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## Sample Problems

Here are a few sample questions that students will be able to solve upon completing each module of Level 3C

### Mastering Rational Numbers And Proofs

Q1. Red bag weighs 34.89 pounds which is 20.2 pounds more than the blue bag's weight. The green bag weighs 34.7 pounds more than the blue bag. What is the weight of the blue bag?

Q2. Vertices of a triangle are: A(0, 0), B(3, 0), and C(0, 4). Find the lengths of the sides and determine if this is a right triangle.

### Inequalities & Angles

Q3. Given the points  
**P (-3, 7) and Q (5, -1),**  
find the equation of the line passing through these two points in slope-intercept form.

Q4. Prove that triangles ABC and DEF are congruent, given the following coordinates:

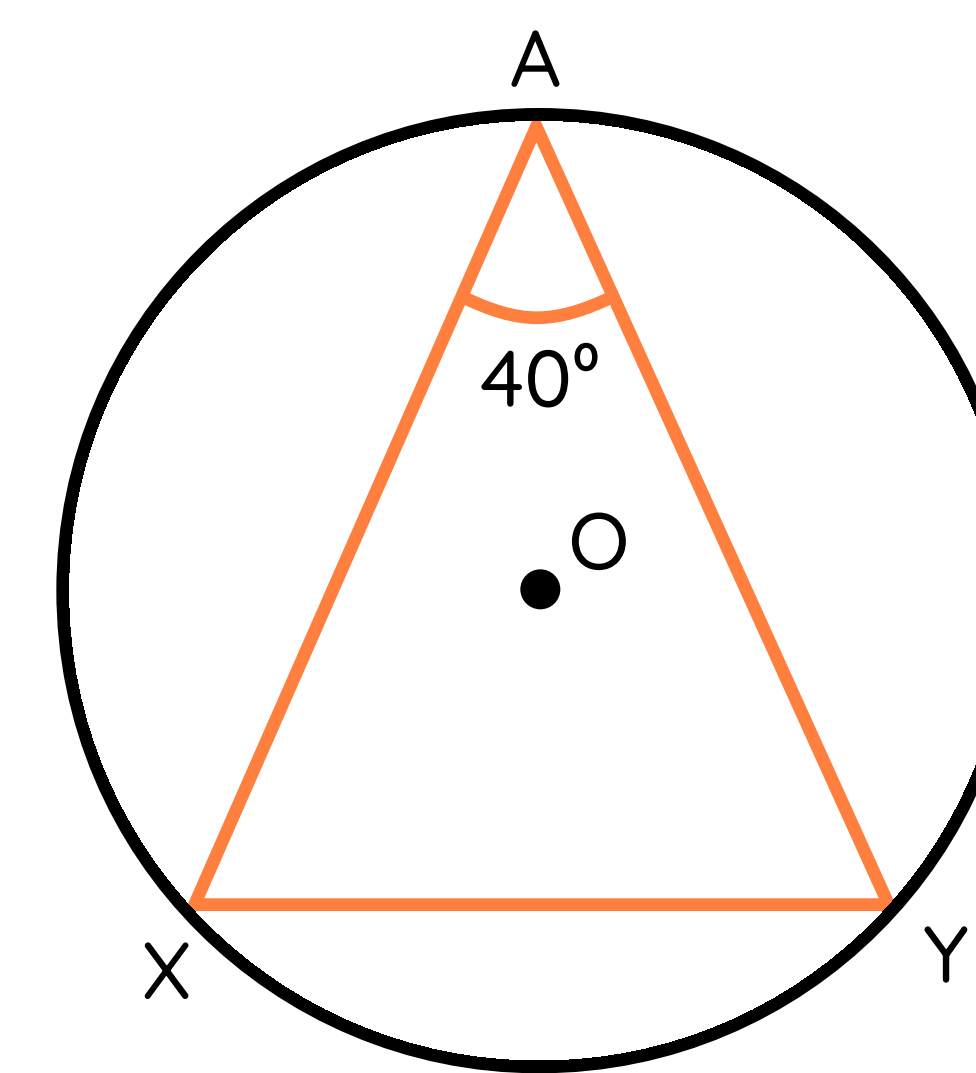
1. **A(1, 2), B(5, 6),  
C(7, 2)**

2. **D(2, -1), E(6, 3),  
F(8, -1)**

### Geometry & Functions

Q5. Given  **$f(x) = 2x + 3$**   
find the domain and range,  
if  **$x \in \{1, 2, 3\}$**

Q6. In a circle with center O, a chord XY subtends an angle of  $40^\circ$  at point A on the circle. Find the angle subtended by chord XY at the center O.



### Trigonometry, Statistics & Probability

Q7. Simplify:  
 **$\frac{\sin^4 x - \cos^4 x}{\sin^2 x - \cos^2 x}$**

Q8. A bag contains 3 red coins and 2 blue coins. One coin is drawn at random and flipped twice.  
Red coins have heads on both sides  
Blue coins are normal (one head, one tail)

What is the probability that both flips show heads?