

Base-Ten Blocks

Grade-Level Recommendation: 1 - 8

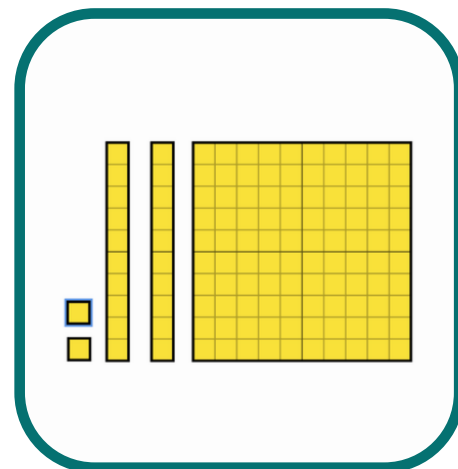
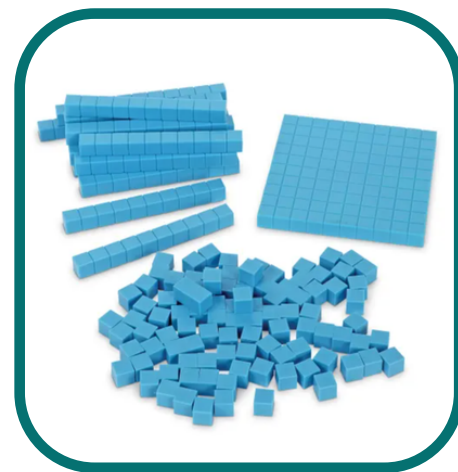
Cubes, flats, rods, and units can represent 1,000, 100, 10, and 1 or 10, 1, 0.1, and 0.01.

Mathematics Content

- Whole numbers and decimals
- Fraction-decimal-percent connections
- Exponents

In the Classroom

- Represent place value and model operations (e.g., addition, subtraction, multiplication, or division).
- Connect fractions, decimals and percents (e.g., $25/100$, 0.25 , 25%).
- Model exponents and powers of ten.




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Place Value Disks

Grade-Level Recommendation: 3 - 8

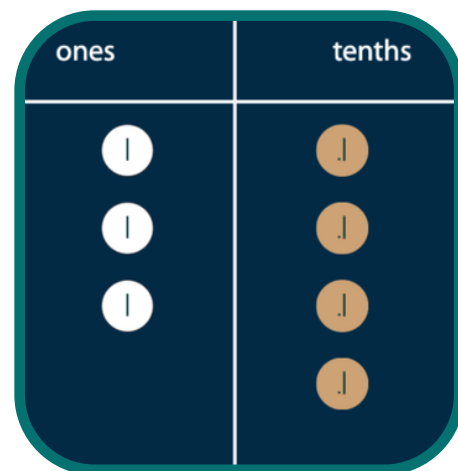
Each colored disk represents a different place value, from 1,000,000 to 0.001.

Mathematics Content

- Decimal place value
- Powers of ten
- Scientific notation

In the Classroom

- Represent and compare decimals (e.g., 3.40, 3.04, and 3.004).
- Model powers of ten and place value patterns (e.g., 10^3 , 10^6).
- Represent scientific notation and convert between standard and scientific forms (e.g., 4.7×10^5).




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Number Lines

Grade-Level Recommendation: 4 - 8

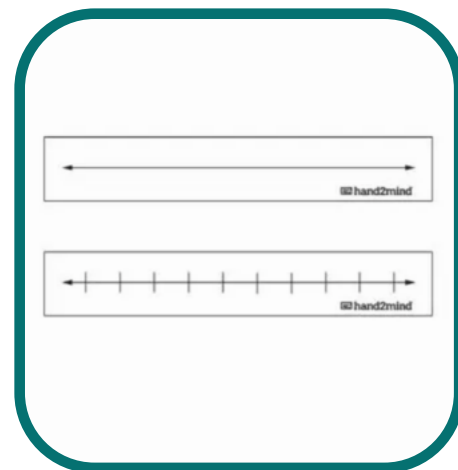
Number lines can be used to model integer operations, rational numbers, and proportional relationships.

Mathematics Content

- Integer operations
- Rational numbers
- Proportional relationships

In the Classroom

- Model integer operations on a number line (e.g., $-3 + 5$).
- Compare and order rational numbers (e.g., -1.5 , $3/4$, and 0.8).
- Model proportional relationships using equivalent distances and scale factors (e.g., $2:3 = 4:6$).




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Fraction Tiles

Grade-Level Recommendation: 3 - 8

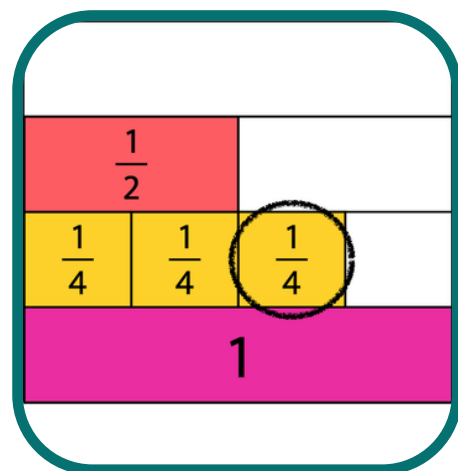
Fraction tiles can be used to represent fractions, decimals, percents, and proportional relationships.

Mathematics Content

- Fraction-decimal-percent connections
- Rational number operations
- Ratios and proportional relationships

In the Classroom

- Connect fractions, decimals, and percents (e.g., $\frac{3}{5}$, 0.6, and 60%).
- Model addition and subtraction of rational numbers (e.g., $\frac{3}{4} - \frac{1}{2}$).
- Model equivalent ratios and proportional relationships (e.g., $3:5 = 6:10$).




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Fraction Circles

Grade-Level Recommendation: 3 - 8

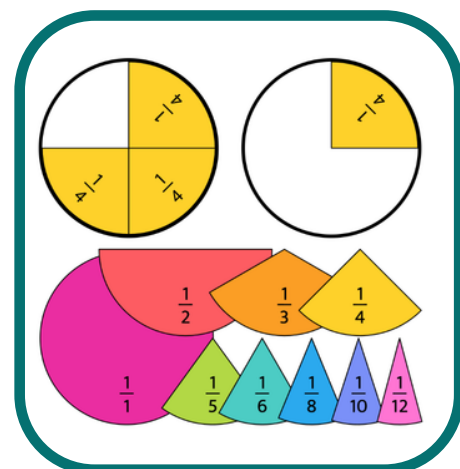
Fraction circles can be used to represent fractions, decimals, percents, and proportional relationships.

Mathematics Content

- Fraction magnitude and equivalence
- Fraction-decimal-percent connections
- Visual proportionality

In the Classroom

- Compare fraction magnitude and equivalence (e.g., $\frac{3}{4} > \frac{2}{3}$).
- Connect fractions, decimals, and percents (e.g., $\frac{3}{4} = 0.75 = 75\%$).
- Compare proportional relationships within a whole (e.g., $\frac{3}{4}$ occupies three times as much area as $\frac{1}{4}$).




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Percent Bar

Grade-Level Recommendation: 3 - 8

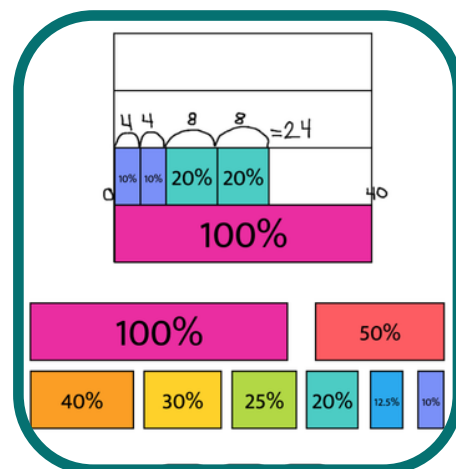
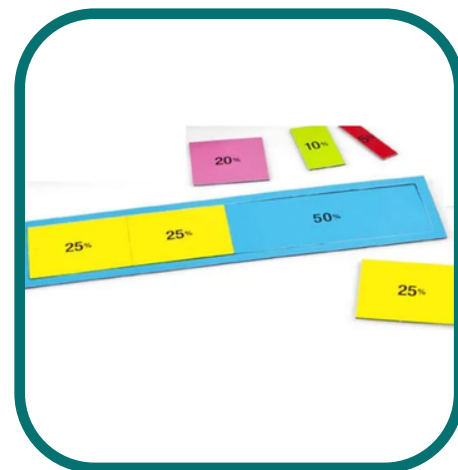
Percent bars can be used to represent percents, decimals, fractions, and proportional relationships.

Mathematics Content

- Fraction-decimal-percent connections
- Ratios and proportional relationships
- Percents and percent problems

In the Classroom

- Connect fractions, decimals, and percents (e.g., $\frac{1}{4} = 0.25 = 25\%$).
- Model ratios and proportional relationships using a 100% whole.
- Solve percent problems involving part, whole, and percent (e.g., 60% of 40 = 24).



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Pattern Blocks

Grade-Level Recommendation: 3 - 8

Pattern blocks can be used to represent fractions, area relationships, and tessellations.

Mathematics Content

- Fractions
- Area
- Tessellations

In the Classroom

- Model equivalent fractions and fraction relationships.
- Compare and determine area using nonstandard units (e.g., triangles and hexagons).
- Create tessellations using repeating geometric patterns.




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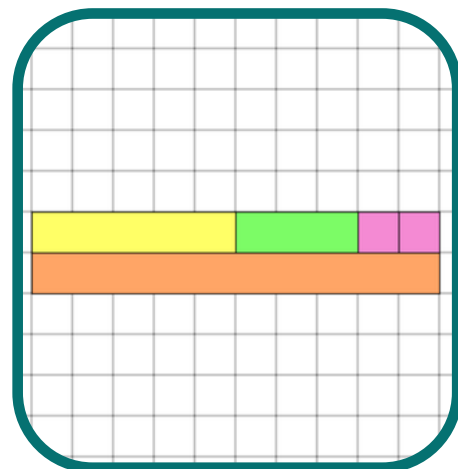
Rods can be used to represent fractions, ratios, proportional relationships, and algebraic reasoning.

Mathematics Content

- Fractions
- Ratios and proportional relationships
- Algebraic reasoning

In the Classroom

- Model equivalent fractions (e.g., $\frac{1}{2} = \frac{2}{4}$) and fraction relationships (e.g., $\frac{1}{2} + \frac{1}{3} + \frac{2}{12} = 1$).
- Model ratios and proportional relationships (e.g., $2:3 = 4:6$).
- Represent and solve algebraic equations (e.g., $x + 3 = 8$).




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Two-Color Counters

Grade-Level Recommendation: 3 - 8

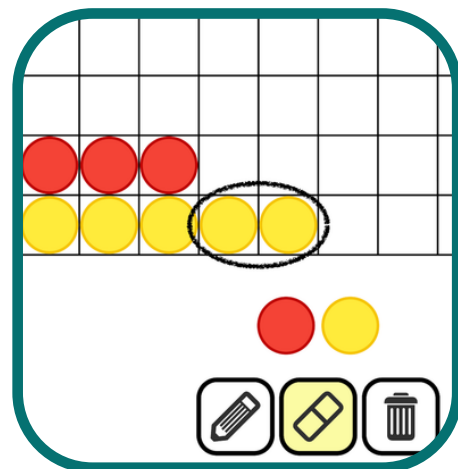
Two-color counters can be used to model fractions, integer operations, and algebraic equations.

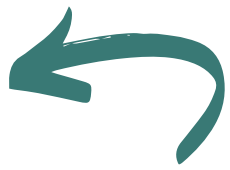
Mathematics Content

- Fraction multiplication and division
- Integer operations
- Algebraic equations

In the Classroom

- Multiply and divide fractions (e.g., $\frac{4}{5} \times \frac{1}{2}$; $\frac{2}{5} \div \frac{3}{4}$).
- Model integer operations and additive inverses (e.g., $-3 + 5$; $(-7) + 7 = 0$).
- Represent variables with cups/plates and solve equations using counters (e.g., $-2 = x + 3$).




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Balance Scales

Grade-Level Recommendation: 3 - 8

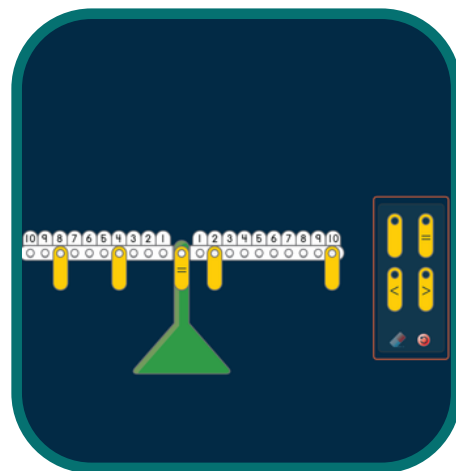
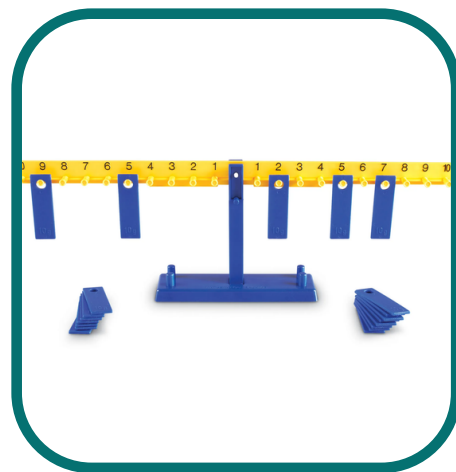
Balance scales can be used to represent equations and maintain equality.

Mathematics Content

- Meaning of equal sign
- Meaning of variables
- Algebraic equations

In the Classroom

- Develop relational understanding of the equal sign (e.g., $9 + 5 = 2 + 5 + 7$).
- Model that variables represent unknown quantities (e.g., $x - 3 = 6$).
- Perform the same operation on both sides to maintain equality (e.g., $x + 4 = 12$).




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Algebra Tiles

Grade-Level Recommendation: 6 - 8

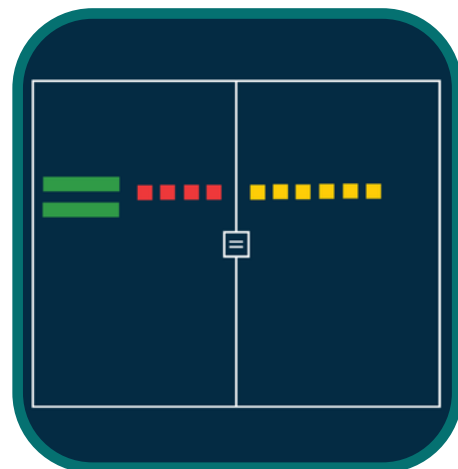
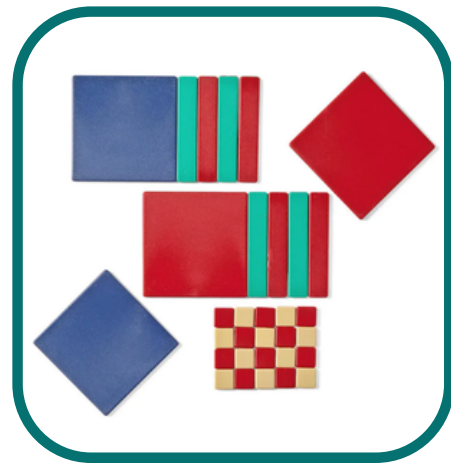
Algebra tiles can be used to represent algebraic reasoning, expressions, and equations.

Mathematics Content

- Algebraic reasoning
- Modeling equivalent expressions
- Simplifying expressions
- Solving equations

In the Classroom

- Represent variables as unknown quantities in algebraic expressions and equations.
- Generate and compare equivalent expressions using concrete models.
- Model and solve equations.




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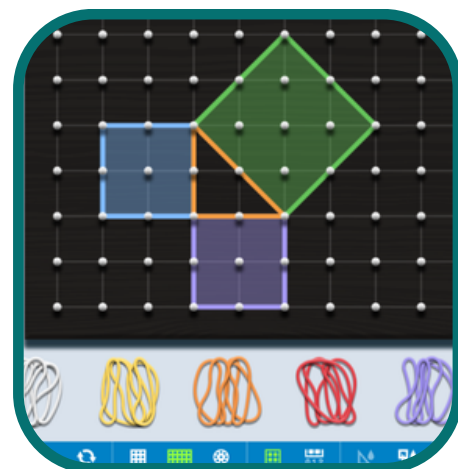
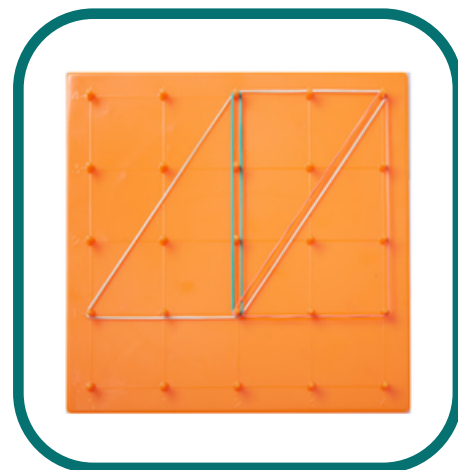
Geoboards can be used to model area, similar figures, and the Pythagorean Theorem.

Mathematics Content

- Area of polygons
- Similar figures and dilations
- Pythagorean Theorem

In the Classroom

- Explore area formulas by composing and decomposing polygons.
- Model dilations using scale factors and compare similar figures.
- Explore the Pythagorean Theorem using right triangles and square areas (e.g., $3^2 + 4^2 = 5^2$).




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Coordinate Pegboard

Grade-Level Recommendation: 6 - 8

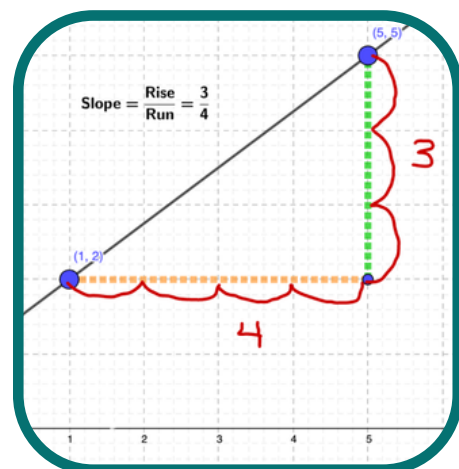
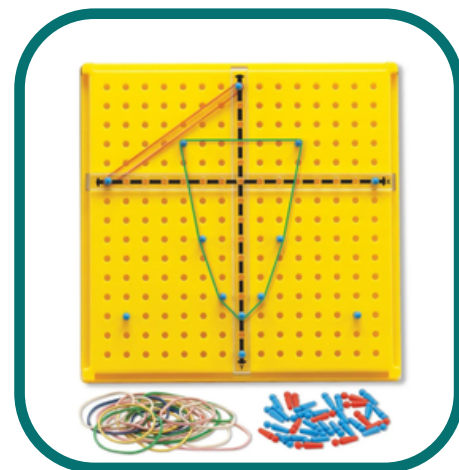
Coordinate pegboards can be used to represent graphing, linear relationships, and transformations.

Mathematics Content

- Graphing on the coordinate plane
- Linear relationships
- Quadratic relationships
- Transformations and symmetry

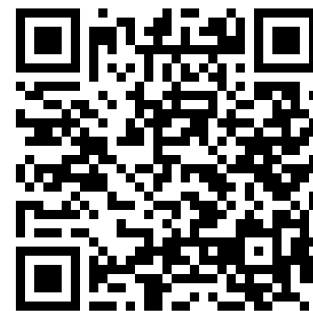
In the Classroom

- Plot and analyze points, lines, parabolas, and geometric figures.
- Model the slope of a line.
- Perform translations, reflections, rotations, and dilations.




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Square Tiles

Grade-Level Recommendation: 3 - 8

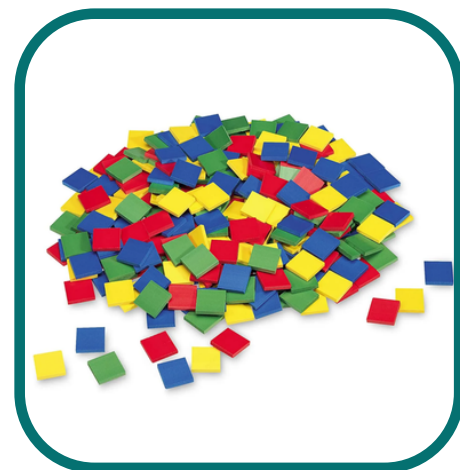
Square tiles can be used to represent ratios, data, probability, and algebraic reasoning.

Mathematics Content

- Ratios and proportional relationships
- Data analysis and probability
- Patterns and algebraic reasoning

In the Classroom

- Model ratios, proportions, and scaling.
- Organize data and create graphs (e.g., bar graphs, histograms).
- Create sample spaces and analyze experimental probabilities.
- Build and extend growing patterns to identify algebraic relationships.




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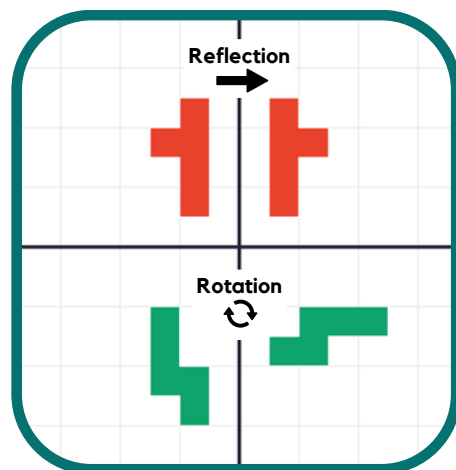
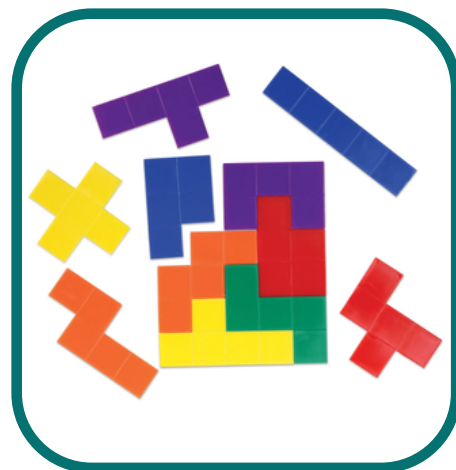
Pentominoes can be used to represent perimeter, area, transformations, and spatial reasoning.

Mathematics Content

- Perimeter and area comparisons
- Transformations and symmetry
- Spatial reasoning and problem solving

In the Classroom

- Compare the area and perimeter of composite figures built from pentominoes.
- Perform rotations, reflections, and translations to explore congruence.
- Solve spatial puzzles by composing and decomposing geometric figures.




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Foam Cubes

Grade-Level Recommendation: 3 - 8

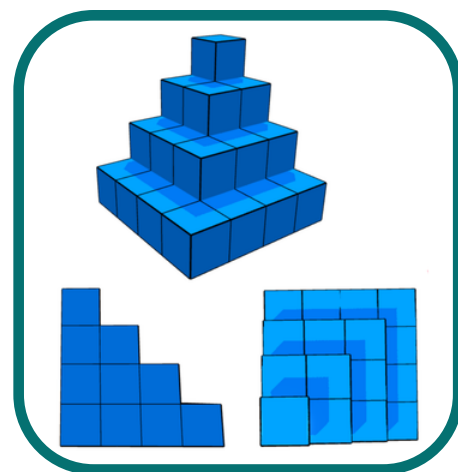
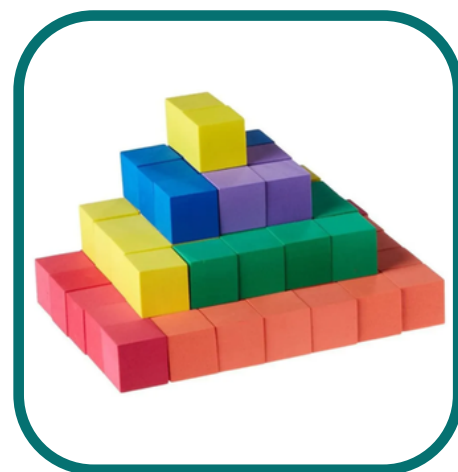
Foam cubes can be used to represent three-dimensional figures, surface area, and volume.

Mathematics Content

- Three-dimensional geometry
- Volume and surface area
- Spatial reasoning and visualization

In the Classroom

- Create and analyze three-dimensional structures from multiple perspectives.
- Determine volume using unit cubes.
- Compare the volume and surface area of three-dimensional figures.
- Investigate how surface area changes as three-dimensional figures are composed and decomposed.




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Folding Geometric Shapes

Grade-Level Recommendation: 3 - 8

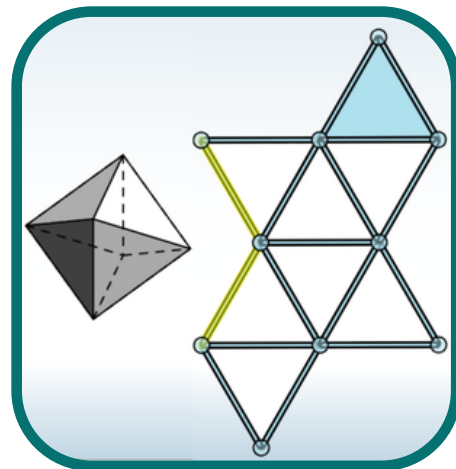
Shapes can be used to represent nets, three-dimensional figures, and surface area.

Mathematics Content

- Geometric solids and nets
- Spatial reasoning and visualization
- Surface area

In the Classroom

- Decompose geometric solids into nets.
- Compose nets into geometric solids.
- Use nets to analyze how faces connect, how solids are oriented, and how edges and vertices are related.
- Use nets and face areas to investigate surface area formulas.




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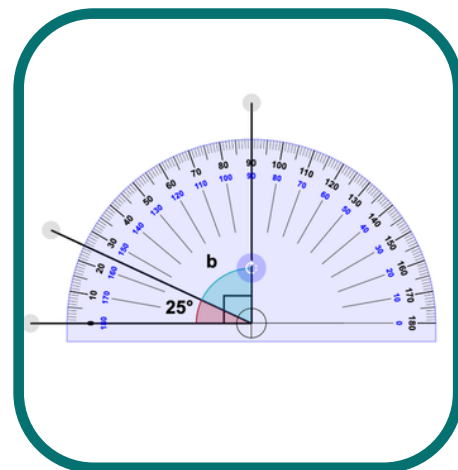
AngLegs are plastic sticks that can be pinned together to create angles and shapes.

Mathematics Content

- Angle relationships
- Triangle and polygon relationships
- Geometric constructions

In the Classroom

- Explore complementary and supplementary angles.
- Construct and classify triangles and polygons using side lengths and angle measures.
- Create geometric figures from given angle measures using a protractor.




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Angle Circles

Grade-Level Recommendation: 3 - 8

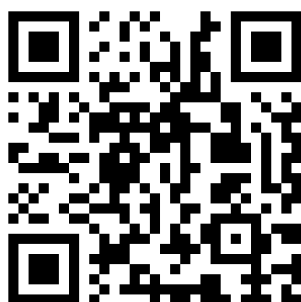
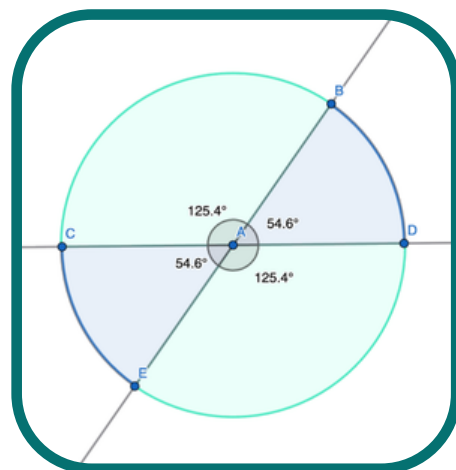
Angle circles are parts of a circle that are used to represent angle relationships.

Mathematics Content

- Angle relationships
- Compose and decompose angles
- Circle geometry

In the Classroom

- Explore adjacent and vertical angle relationships.
- Compose and decompose angles to determine unknown angle measures.
- Connect rotations to angle measure (e.g., full turn = 360° , half turn = 180° , quarter turn = 90°).




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