EUREKA MATH™ TIPS FOR PARENTS

KEY CONCEPT OVERVIEW

In Lessons 1 through 4, students identify and draw **points**, **lines**, line **segments**, **rays**, **angles**, **perpendicular** lines, and **parallel** lines.

You can expect to see homework that asks your child to do the following:

- Draw figures containing points, lines, line segments, rays, and angles.
- Determine whether an angle is **acute**, **right**, or **obtuse**.
- Construct acute, right, and obtuse angles.
- Identify and draw perpendicular and parallel lines.

SAMPLE PROBLEM *(From Lesson 1)*

Use the following directions to draw a figure in the box to the right.

a. Draw two points: A and B.

b. Use a straightedge to draw $\overline{AB}$.

c. Draw a new point, point C, that is not on $\overline{AB}$.

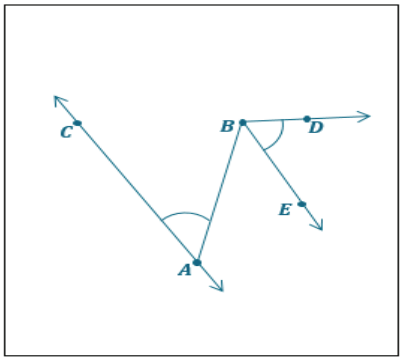
d. Use a straightedge to draw $\overleftrightarrow{AC}$.

e. Draw point D that is not on $\overline{AB}$ or $\overleftrightarrow{AC}$.

f. Use a straightedge to draw $\overline{BD}$.

g. Draw point E that is not on $\overline{AB}$, $\overleftrightarrow{AC}$, or $\overline{BD}$.

h. Use a straightedge to draw $\overline{BE}$.



i. Use the points you've already labeled to name two angles. $\angle BAC, \angle EBD$

j. Identify the angles you've labeled by drawing an arc to indicate the position of the angles.

Additional sample problems with detailed answer steps are found in the *Eureka Math Homework Helpers* books. Learn more at GreatMinds.org.

HOW YOU CAN HELP AT HOME

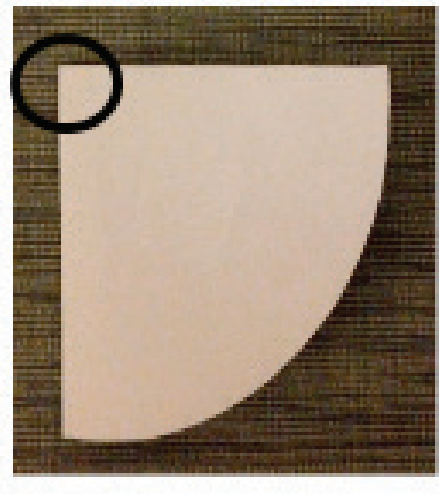
- With your child, look around your home for acute, right, and obtuse angles and for perpendicular and parallel lines. You'll likely discover that right angles, perpendicular lines, and parallel lines are the easiest to find! You might find acute and obtuse angles, among other places, on clocks, on the molding around windows and doors, on windows that crank open, and on hinged picture frames.

TERMS

Acute angle: An angle with a measure less than 90 degrees.
Angle: Two rays that share a common vertex (they meet at the same point). For example, $\overrightarrow{BA}$ and $\overrightarrow{BC}$ have the common vertex of point B and form $\angle ABC$.
Line: A straight path that extends in both directions without end. A line can be denoted, for example, as line AB or $\overleftrightarrow{AB}$.
Obtuse angle: An angle with a measure greater than 90 degrees but less than 180 degrees.
Parallel: Two lines that do not intersect. Parallel lines can be denoted, for example, as $\overleftrightarrow{AB} \parallel \overleftrightarrow{CD}$.
Perpendicular: Formed by two lines, line segments, or rays intersecting to form a 90 degree angle. Perpendicular lines are denoted by the symbol $\perp$, for example, $\overleftrightarrow{AB} \perp \overleftrightarrow{CD}$.
Point: A precise location in the plane designated by drawing a dot and labeling the dot with a letter. For example, a point can be denoted as point B.
Ray: A point and the set of all points extending in one direction along a line. A ray is designated by an endpoint and an arrow and denoted, for example, as ray AB or $\overrightarrow{AB}$.
Right angle: An angle (formed by perpendicular lines) with a measure of 90 degrees.
Segment: Two points, A and B, together with the set of points on line AB between A and B. A segment is designated by two endpoints and denoted, for example, as segment AB or $\overline{AB}$.

MODELS

Right Angle Template



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EUREKA MATH™ TIPS FOR PARENTS

KEY CONCEPT OVERVIEW

Lessons 5 through 8 focus on angle measurement. Students use **protractors** to measure and construct angles, and they record the measurements in degrees. Students also discover how 90° turns add up to 180°, 270°, and 360° turns.

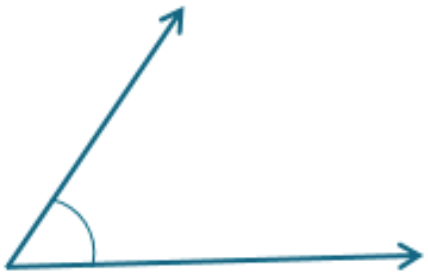
You can expect to see homework that asks your child to do the following:

- Use a **360° protractor** to identify measures of angles.
- Use different protractors to measure angles.
- Construct angles given the number of degrees.
- Interpret and explore quarter (90°) turns.

SAMPLE PROBLEM *(From Lesson 7)*

Construct an angle that measures the given number of degrees. Draw an arc to indicate the angle that was measured.

54°



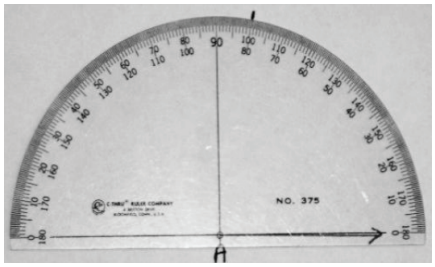
Additional sample problems with detailed answer steps are found in the *Eureka Math Homework Helpers* books. Learn more at GreatMinds.org.

HOW YOU CAN HELP AT HOME

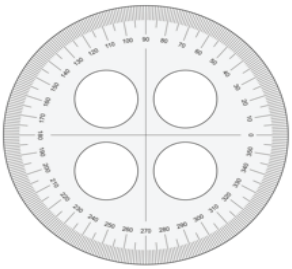
- Using a straightedge, take turns with your child drawing angles on a piece of paper. Make a game of it. After drawing an angle, you and your child both guess how many degrees the angle measures. Measure the angle with a protractor to see whose guess was closest.
- Direct your child to use a protractor to draw an angle that measures a given number of degrees. Ask her to explain how she used the protractor.
- Practice, with your child, making quarter-turns with your bodies. Stand and face the same wall. Next, close your eyes. Take turns giving a directive to spin 90°, 180°, 270°, or 360° to the right or left. After each spin, open your eyes to see whether you are both facing the same wall. If you are not, discuss who is facing the correct direction.

MODELS

180° Protractor



360° Protractor



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EUREKA MATH™ TIPS FOR PARENTS

KEY CONCEPT OVERVIEW

Lessons 9 through 11 focus on **angle** measurement. Students problem solve as they compose angles by using **pattern blocks**. Students also use what they know about the measure of **right angles**, **straight angles**, and angles around a point (360°) to solve for unknown angle measurements. (See Sample Problem.)

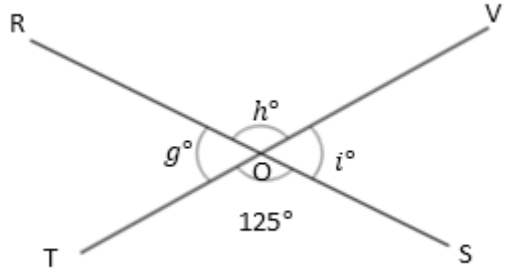
You can expect to see homework that asks your child to do the following:

- Compose angles of different measures by using pattern blocks.
- Determine unknown angle measurements mathematically and then use a **protractor** to verify the measurements.

SAMPLE PROBLEM *(From Lesson 11)*

Write an equation and solve for the unknown angles numerically.
O is the intersection of $\overline{RS}$ and $\overline{TV}$.
$\angle TOS$ is 125°.

$g°$ = 55° $h°$ = 125° $i°$ = 55°



$$180° - 125° = i°$$
$$i° = 55°$$

$$55° + h° = 180°$$
$$h° = 125°$$

$$125° + g° = 180°$$
$$g° = 55°$$

Additional sample problems with detailed answer steps are found in the *Eureka Math Homework Helpers* books. Learn more at GreatMinds.org.

HOW YOU CAN HELP AT HOME

- Prompt your child to lay two pieces of uncooked spaghetti on a piece of paper so they intersect at their midpoints. (She might want to tape the pieces down so they don't move.) Next, direct her to use a protractor to measure any one of the angles. Finally, ask her to determine the measure of the other three angles mathematically (similar to what was done in the Sample Problem).

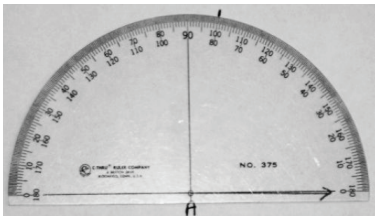
HOW YOU CAN HELP AT HOME
(*continued*)

- Draw a right angle. Ask your child to split the right angle into two smaller angles by drawing a ray that extends from the right angle. Prompt your child to measure one of the angles by using a protractor, and then ask him to mathematically determine the measure of the other angle (i.e., subtract the measured angle from 90° or add up to 90°). As a final step, he can use the protractor to prove that his calculation of the angle measure is correct. (Extend the activity by drawing and using a straight angle instead.)

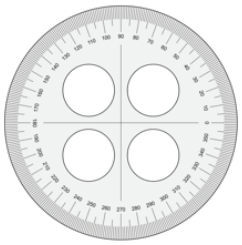
TERMS

Angle: Two rays that share a common vertex (i.e., they meet at the same point). For example, $\overrightarrow{BA}$ and $\overrightarrow{BC}$ have the common vertex of point B and form $\angle ABC$.
Right angle: An angle (formed by perpendicular lines) with a measure of 90 degrees.
Straight angle: An angle that measures 180 degrees.

MODELS



180° Protractor



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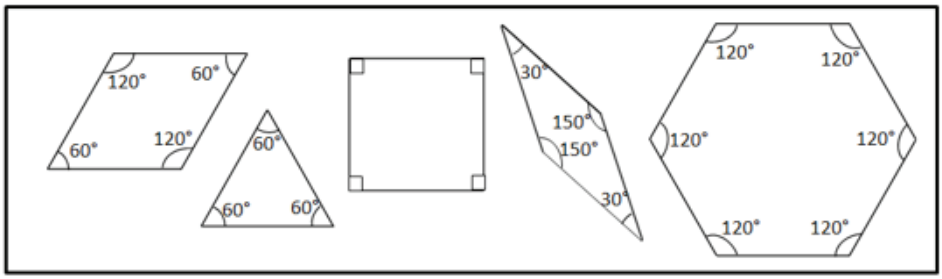
360° Protractor



Pattern Blocks

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EUREKA MATH™ TIPS FOR PARENTS

KEY CONCEPT OVERVIEW

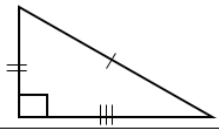
In Lessons 12 through 16, students explore **lines of symmetry** and characteristics of triangles and **quadrilaterals**.

You can expect to see homework that asks your child to do the following:

- Find and draw lines of symmetry.
- Given half of a figure and the line of symmetry, draw the other half of the figure.
- Classify triangles by side lengths (e.g., **equilateral**, **isosceles**, **scalene**) and by angle measurements (e.g., **acute**, **right**, **obtuse**).
- Draw triangles that fit different classifications (e.g., acute and scalene).
- Name quadrilaterals, identify attributes (i.e., characteristics) that define them, and construct them based on given attributes.

SAMPLE PROBLEM *(From Lesson 13)*

Classify each triangle by its side lengths and angle measurements. Circle the correct names.

	Classify Using Side Lengths	Classify Using Angle Measurements
a. 	(Equilateral) Isosceles Scalene	(Acute) Right Obtuse
b. 	Equilateral Isosceles (Scalene)	Acute (Right) Obtuse

Additional sample problems with detailed answer steps are found in the *Eureka Math Homework Helpers* books. Learn more at GreatMinds.org.

HOW YOU CAN HELP AT HOME

- Ask your child to look around the house for objects that have lines of symmetry. Examples include the headboard of a bed, dressers, chairs, couches, and place mats. Ask him to show where the line of symmetry would be and what makes it a line of symmetry. Be careful of objects such as doors and windows. They could have a line of symmetry, but if there's a knob or crank on just one side, then they are not symmetrical.
- Ask your child to name and draw all the quadrilaterals she can think of (e.g., **square**, **rectangle**, **parallelogram**, **trapezoid**, and **rhombus**). Alternatively, prompt her to draw a quadrilateral and then ask someone else to name it.

TERMS

Acute angle: An angle with a measure less than 90 degrees.
Equilateral triangle: A triangle with three sides of equal length.
Isosceles triangle: A triangle with at least two sides of equal length.
Line of symmetry: A line through a figure that creates two halves that match exactly.
Obtuse angle: An angle with a measure greater than 90 degrees but less than 180 degrees.
Parallelogram: A quadrilateral with two pairs of parallel sides. For example, squares, rectangles, and rhombuses are parallelograms.
Quadrilateral: Any polygon with four sides. For example, squares, rectangles, trapezoids, rhombuses, and parallelograms are all quadrilaterals.
Rectangle: A parallelogram with four 90 degree angles.
Rhombus: A parallelogram with all sides of equal length. A square is an example of a rhombus.
Right angle: An angle (formed by perpendicular lines) with a measure of 90 degrees.
Scalene triangle: A triangle with no sides of equal length and no angles of equal measure.
Square: A rectangle with all sides of equal length.
Trapezoid: A quadrilateral with at least one pair of parallel sides. Squares, rectangles, rhombuses, and parallelograms are examples of trapezoids as is any quadrilateral with one or two pairs of parallel sides.

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