EUREKA MATH™ TIPS FOR PARENTS

KEY CONCEPT OVERVIEW

In Lessons 1 through 6, students use number lines to explore and develop the concept of a **coordinate plane**, focusing only on the **first quadrant**.

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

- Plot and label shapes and points on number lines.
- Identify the locations of shapes and plot shapes on coordinate planes.
- Construct x- and y-**axes** and label numbers along both axes to create coordinate planes.
- Plot and label **coordinate pairs** and points on coordinate planes.
- Construct and identify **perpendicular lines** and **parallel lines** to both axes of a coordinate plane.

SAMPLE PROBLEM *(From Lesson 2)*

Use the coordinate plane to answer the following.

a. Name the shape at each location.

x-coordinate	y-coordinate	Shape
1	2	*sun*
4	$2\frac{1}{2}$	*square*
$4\frac{1}{2}$	2	*heart*
$1\frac{1}{2}$	$\frac{1}{2}$	*arrow*
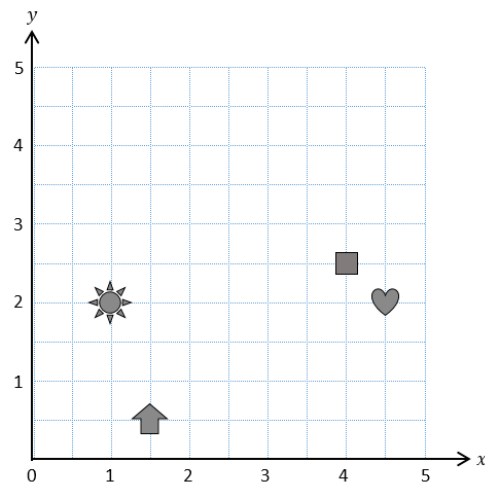
b. Which two shapes have the same y-coordinate?
   sun and heart

c. What shape is $2\frac{1}{2}$ units from the x-axis?
   square

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

For more resources, visit » *Eureka.support*

HOW YOU CAN HELP AT HOME

- Play the game Battleship with your child. The directions, rules, and template are in the Lesson 4 Problem Set.

- Practice plotting coordinate pairs with your child. You say the coordinate pairs, and your child plots them on a coordinate plane. You may use the coordinate plane template from either Lesson 2 or Lesson 6.

TERMS

**Axis:** A fixed reference line for the measurement of coordinates.

Coordinate pair: Two numbers that identify a point on a plane. Coordinate pairs are written (x, y), where x represents a distance from 0 on the horizontal x-axis and y represents a distance from 0 on the vertical y-axis. For example, (3, 10) is a coordinate pair.

Parallel lines: Two lines in a plane that do not intersect. Parallel lines can be denoted as $\overleftrightarrow{AB} \parallel \overleftrightarrow{CD}$.

Perpendicular lines: Formed by two lines, line segments, or rays intersecting to form a 90 degree angle and denoted by the symbol $\perp$. For example, $\overleftrightarrow{AB} \perp \overleftrightarrow{CD}$ represents the perpendicular lines AB and CD.

x-coordinate: The horizontal value in a coordinate pair. The x-coordinate is always written first in an ordered pair of coordinates (x, y). For example, in (9, 2), the value 9 is the x-coordinate.

y-coordinate: The vertical value in a coordinate pair. The y-coordinate is always written second in an ordered pair of coordinates (x, y). For example, in (9, 2), the value 2 is the y-coordinate.

MODELS

First Quadrant of the Coordinate Plane

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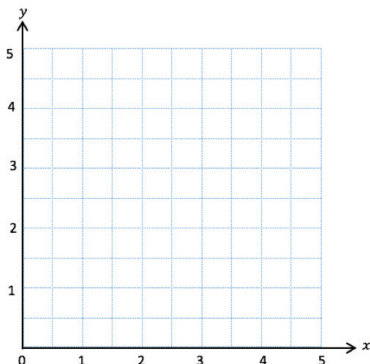
KEY CONCEPT OVERVIEW

In Lessons 7 through 12, students continue to learn about the coordinate plane by investigating patterns.

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

- Use given rules to generate coordinate pairs, plot points, and investigate relationships.
- Construct lines and analyze the relationships between them.
- Generate number patterns from given rules, plot the points, and analyze the relationships within the sequences of the **ordered pairs**.
- Create rules to generate number patterns and plot the points.

SAMPLE PROBLEM *(From Lesson 9)*

Complete the table for the given rule. Then, construct lines a and b on the coordinate plane.
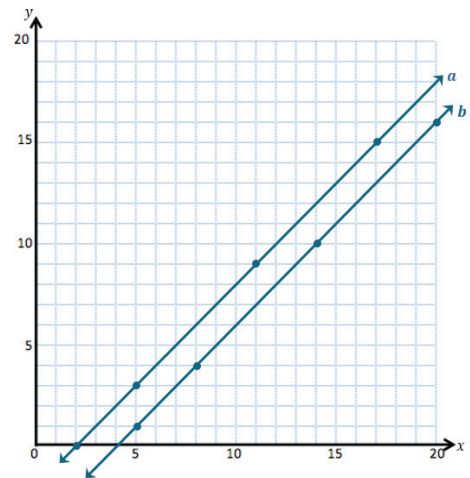
a. Construct each line on the coordinate plane.

Line a

Rule: y is 2 less than x.

x	y	(x, y)
2	**0**	**(2, 0)**
5	**3**	**(5, 3)**
11	**9**	**(11, 9)**
17	**15**	**(17, 15)**

Line b

Rule: y is 4 less than x.

x	y	(x, y)
5	**1**	**(5, 1)**
8	**4**	**(8, 4)**
14	**10**	**(14, 10)**
20	**16**	**(20, 16)**

b. Compare and contrast these lines.

   *The lines are parallel. Neither line passes through the **origin**. Line b has y-values 2 units less than in line a.*

c. Based on the patterns you see, predict what line c, whose rule is y is 6 less than x, would look like.
   Since the rule for line c is also a subtraction rule, I think line c will also be parallel to lines a and b. Line c will have y-values 2 units less than in line b and 4 units less than in line a.

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

- Practice naming coordinate pairs with your child. Plot a set of points on the coordinate plane and have your child name the coordinate pair for each point. To make it more interesting and fun, try to plot a set of points so that when all points are connected they form either a shape or an animal. You may use the coordinate grid template from Lesson 8.

- Ask your child to explain how she determines where to plot an ordered pair on the coordinate plane. What does the first number in the ordered pair mean? What does the second number in the ordered pair mean? (Answers: The first number in the ordered pair is the x-coordinate. This number represents the distance from 0 on the x-axis. The second number in the ordered pair is the y-coordinate. This number represents the distance from 0 on the y-axis.)

TERMS

Ordered pair: Two quantities written in a given fixed order, usually written as (x, y).

Origin: A fixed point from which coordinates are measured; the point at which the x-axis and y-axis intersect, labeled $(0, 0)$ on the coordinate plane.

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KEY CONCEPT OVERVIEW

In Lessons 13 through 17, students draw figures in the coordinate plane.

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

- Construct parallel and perpendicular lines, and analyze the relationships among lines, points, and coordinate pairs.

- Draw symmetric figures, using both distance and angle size from a given line of symmetry.

SAMPLE PROBLEM *(From Lesson 13)*

Use your straightedge to draw a segment parallel to each segment through the given point.
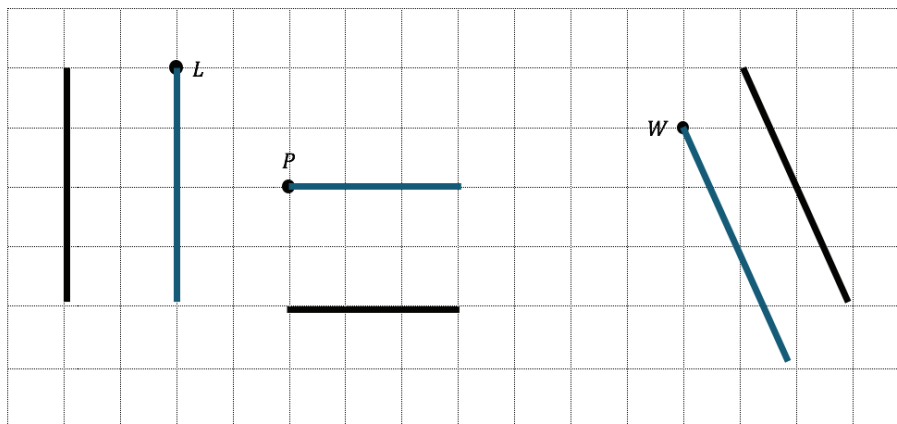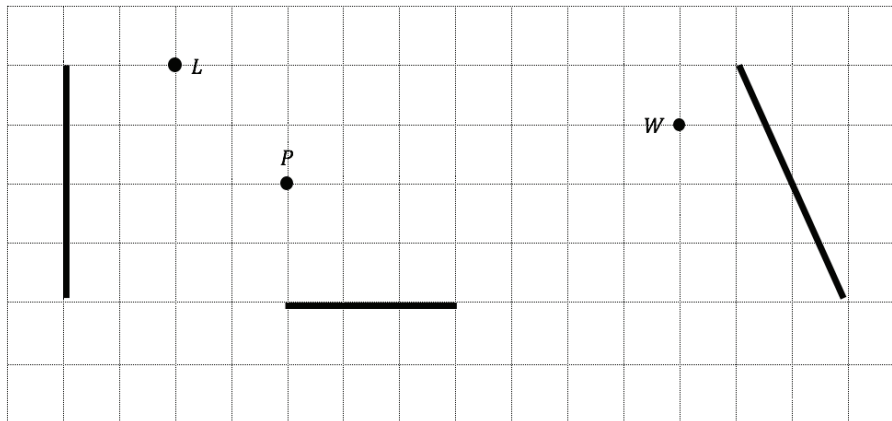
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HOW YOU CAN HELP AT HOME

- Have your child explain the difference between parallel lines and perpendicular lines. If necessary, use your hands or fingers to represent these lines. For example, place your two index fingers side-by-side to show they are parallel. Cross two index fingers to show they are perpendicular.

- Play a scavenger hunt game with your child. Go around your home looking for parallel and perpendicular line segments. Set a timer for one minute and see who finds the most pairs of parallel and perpendicular line segments in the allotted time.