



**THIRD SPACE
LEARNING**

Math Intervention Pack

Identifying, recording, and
graphing ordered pairs

Grade 5

How to use the resources

1. Title Slide

Use this slide to activate prior knowledge needed for lesson. Students should be encouraged to initially attempt the question presented independently.

2. Let's Learn

Use this slide to introduce the concept. Tutors should work with the student to explore the concept together, usually using diagrams to support understanding.

3. Follow Me + Your Turn

The tutor should work through the follow me slide, modeling the process and explaining their thinking out loud.

Students should use the your turn slide as an opportunity to work through a question similar to the follow me questions. They should apply the method modeled by the tutor in the follow me slide. Students should be encouraged to explain their thinking out loud.

4. You Do

Students should work through a range of questions that build in complexity.

Tutors can offer support but students should initially be encouraged to attempt these questions independently.

5. Go Further

Use this slide to allow students to apply their understanding to a more challenging question in an unfamiliar context.

6. Support for Slides

The support slide is used to support students during the lesson. In the tutor notes, there will be guidance as to when to use the support slide.

7. Check Your Understanding

Tutors should use this slide to assess the student's knowledge and whether or not they have mastered the concept within the lesson.

Standard

5.OA.3: Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane.

Key Mathematical Ideas

1. Interpret numerical patterns within a real-world context.
2. Form ordered pairs from the corresponding terms of two patterns.
3. Graph ordered pairs on a coordinate plane.

Overview

Terminology

- **Pattern:** Set of numbers or objects that can be described by a specific rule
- **Rule:** A set of guidelines for a series of numbers that tells how to get from one number in the series to the next; the relationship between two corresponding terms
- **Term:** Each number in a number pattern is called a term
- **Corresponding terms:** Numbers in two patterns that show up in the same place in each pattern
- **Ordered pair:** A pair of numbers used to locate a point on a coordinate plane; the first numbers tells how far to move horizontally and the second number tells how far to move vertically; also called coordinates
- **Coordinate plane:** A plane determined by a horizontal number line (x-axis) and a vertical number line (y-axis) intersecting at a point called the origin
- **Origin:** The starting point on a coordinate grid (0, 0)

Overview

Sentence Stems

- To graph this ordered pair, we need to count along the x-axis and then count up the y-axis.
- This point is located at (__, __).

Common Misconceptions

Common Misconceptions	Tutoring Strategies	Checks for Understanding
Students often switch the numbers in an ordered pair when they are graphing them on the coordinate plane. (they may move vertically first and then horizontally.)	Remind students that we move along the x-axis first; tell them that x comes before y alphabetically, which can help them remember. Have students label or point out the x and y axes on each graph.	Ask students to narrate as they are graphing an ordered pair. (i.e., first I move along the x-axis to the 5, then I move up the y-axis to the 3...) Have students practice or describe how to plot opposite ordered pairs such as (2, 4) and (4, 2).

Title Slide

If stuck

- Ask students to look at the pattern of numbers and see how they change from one number to the next. For the number of weeks, the number increases by 1 each time. For the number of miles, the number increases by 3 each time.
- Remind students that corresponding pairs are numbers in the same position in two different numerical patterns. Then, ask them to look at how the numbers are related. How are 1 and 3 related? How about 2 and 6? 3 and 9? (You can multiply the first number by 3 to get the second number.)

Answers

- Weeks: add 1
Miles: add 3
- The number of miles is 3 times the corresponding term in the number of weeks.

Let's Learn

If stuck

- Repeat the definition of “ordered pair” as necessary.
- Model how the first two ordered pairs were determined and written.
- Model how the first two points were plotted. Be sure to model going across first and then going up to find where to put the point.

Questions

- What does “horizontal” mean? What does “vertical” mean?
- Look at the coordinate plane: What is the x-axis? What is the y-axis? How do you know?
- How do we know which number to put first in the ordered pair? How can the coordinate plane to the right help us determine this? (the x-axis and y-axis are labeled Week and Miles)
- How many points does each ordered pair represent? (1) How do you know?
- Why aren't all the numbers shown on the x and y axes? How do we know where the missing numbers are on the coordinate plane?

Watch out for

- Students may reverse the ordered pair while graphing on the coordinate plane; many students tend to count up the y-axis first.

Answers

- (3, 9) (4, 12) (5, 15) (6, 18)

Follow Me

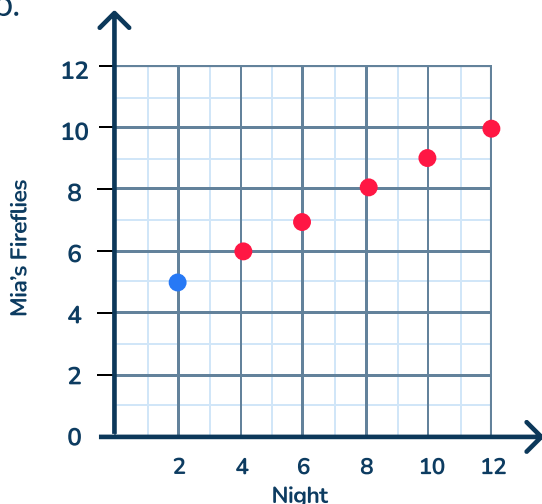
Modeling prompts

- Let's look at the table. I can see that the pattern for nights increases by 2 each time and the pattern for fireflies caught by Mia increases by 1 each time.
- To make the ordered pairs, I know I need to take each pair of corresponding terms from the patterns - all of the night numbers will be the first number in the ordered pair and the fireflies number will be the 2nd number in the ordered pair.
- My first ordered pair is (2, 5) which are the first numbers in each pattern.
- Let's fill in the remaining ordered pairs.
- Now, I need to plot each pair on the coordinate plane as a point. I see that (2, 5) has already been placed on the grid, but I want to double check its placement. To plot (2, 5) we go over (horizontal) 2 on the x-axis and then up 5 on the y-axis.
- Let's plot the remaining points.

Answers

a. (4, 6) (6, 7) (8, 8) (10, 9) (12, 10)

b.



Your Turn

If stuck

- Model one example of ordered pairs and one plotted point if needed.

Questions

- Does the order of the numbers in each ordered pair matter? Why or why not?
- When we plot our ordered pairs, do we start by going horizontally or vertically on our grid?
- Can you compare Mia and Oliver's patterns from looking at the coordinate plane from each question? What do you notice?

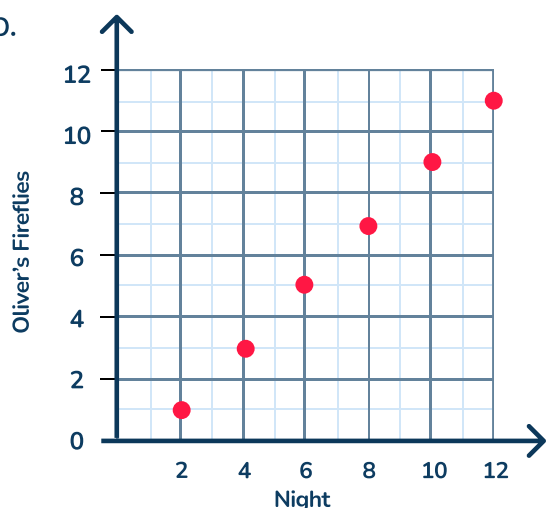
Watch out for

- Students may reverse the ordered pair while graphing on the coordinate plane; many students tend to count up the y-axis first.

Answers

a. (2, 1) (4, 3) (6, 5) (8, 7) (10, 9) (12, 11)

b.



You Do

If stuck

- If students are struggling to plot the points, refer to the “Let’s explore this more” slide for help

Questions

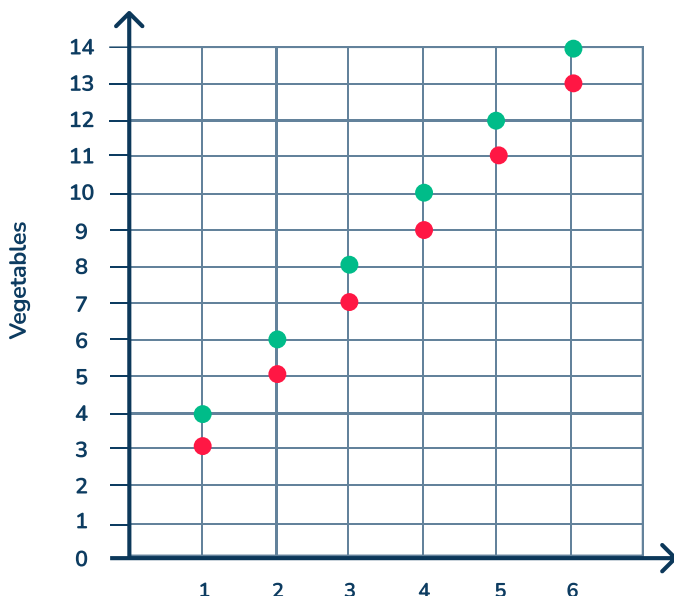
- How does graphing both sets of ordered pairs on the same coordinate plane help us see the relationship between the two patterns?

Watch out for

- Students switching the numbers in the ordered pair and/or moving vertically and then horizontally.

Answers

- (1, 3) (2, 5) (3, 7) (4, 9) (5, 11) (6, 13)
- (1, 4) (2, 6) (3, 8) (4, 10) (5, 12) (6, 14)



Go Further

If stuck

- Point out to students that we are simply working backward to solve this problem - so we are starting with the points already graphed and we need to find the ordered pairs, which will help us fill out the table.

Questions

- How did you determine the numbers needed to fill in the table? How did you know which number went where?
- How can you find ordered pairs using the graph? How can you find ordered pairs using the table?

Watch out for

- Students may think that putting one of Quentin's numbers and one of Rhys's numbers together will create one of the ordered pairs on the graph, but the day number is needed in each ordered pair for both Quentin and Rhys.

Answers

a. Answers will vary

b. (1, 4) (2, 8) (3, 12)

Each of these represents how many seashells Quentin collected on days 2, 3 and 3.

Support for Slide(s)

This slide supports the Let's Learn and You Do slides.

If stuck

- If students are struggling to graph points using ordered pairs, this slide will give them examples and it also has guide lines from the point to each number on the x and y axes.

Questions

- Looking at the example (2,5), when do we place the point? Do we place the point on the x-axis or the y-axis or neither?
- In the 3rd example, why is the point directly on the y-axis?

Check Your Understanding

Correct answers

- c. (2, 4) (4, 6) (6, 8) (8, 10) (10, 12) (12, 14)
- a. Students may choose this answer if they switch the x-axis and the y-axis, so the numbers are backwards within each pair.
- b. Students may choose this answer if they misinterpret the numbers on the coordinate plane as 1 number off for each pair.
- c. This is the correct answer. Students should be able to find the correct number by following each point to the number on x-axis and y-axis.
- d. Students may choose this answer if they notice there is a pattern in the way the points are arranged on the coordinate plane. Since they see the pattern increasing by 2s on both the x and y axes, they may misinterpret the pattern as pairs being doubles.

Today you will learn about

Identifying, recording, and graphing ordered pairs

Warm-up question

The table below represents the number of miles Kiara ran each week for the last 6 weeks.

Week	1	2	3	4	5	6
Miles	3	6	9	12	15	18

What is the rule to each pattern?

What is the relationship between the corresponding terms in each pattern?

Let's learn

We can create **ordered pairs** from the corresponding terms in each pattern and graph them on the **coordinate plane**.

An ordered pair is a pair of numbers used to locate a point on a coordinate plane.

The first number tells how far to move horizontally on the x-axis and the second number tells how far to move vertically on the y-axis.

Example: (2, 5)

a Let's create ordered pairs from the patterns in our warm-up question. We use each pair of corresponding terms to create one ordered pair.

The table represents the number of miles Kiara ran each week for the last 6 weeks.

Week	1	2	3	4	5	6
Miles	3	6	9	12	15	18

↓

↓

↓

↓

↓

↓

(1, 3)

(2, 6)

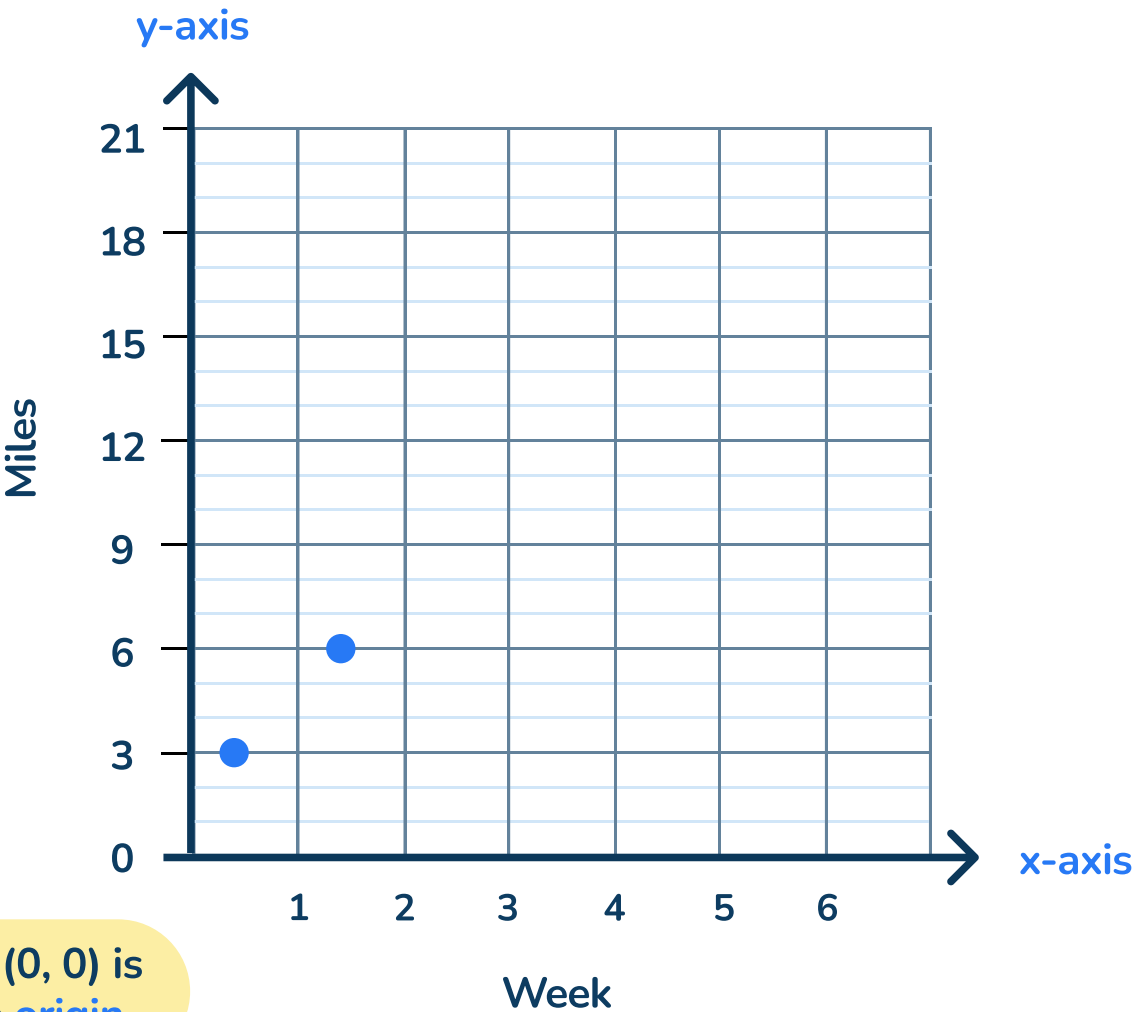
.....

.....

.....

.....

b Next, we can graph each set of ordered pairs on the coordinate plane as a point. We can draw a line from the origin to connect the points.



The point (0, 0) is called the **origin**.

Follow me

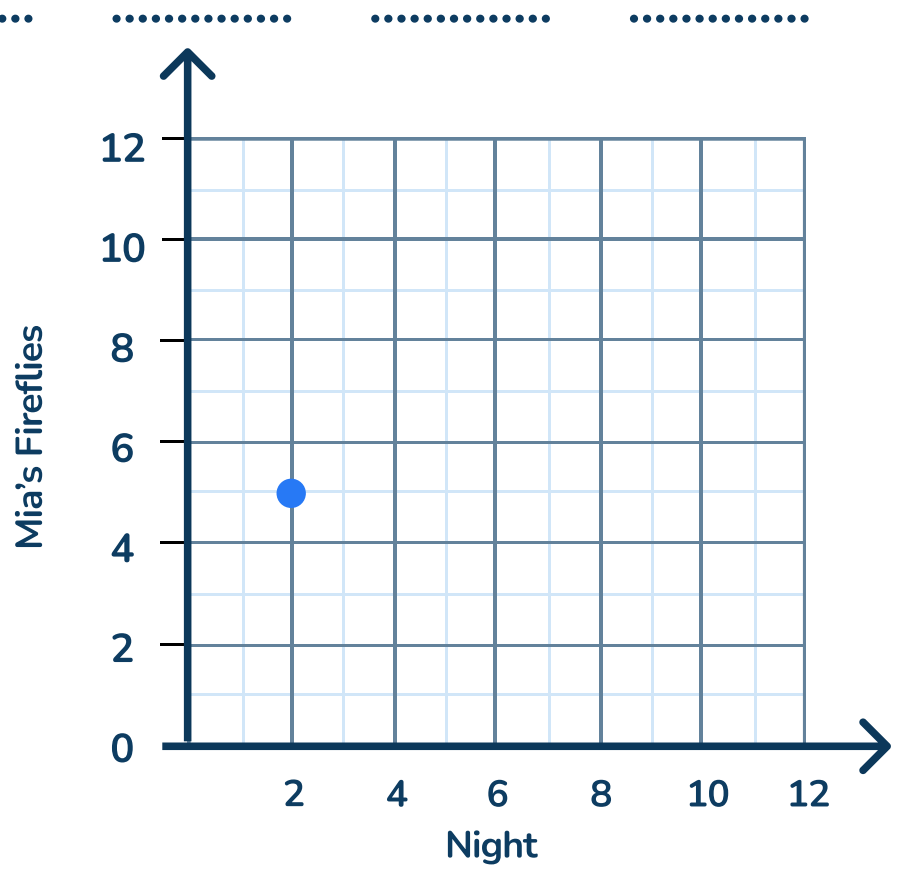


Mia and Oliver go outside every other night during the summer to catch fireflies. The table shows how many bugs Mia catches each night.

Night	2	4	6	8	10	12
Mia's Fireflies	5	6	7	8	9	10

a Write each pair of corresponding terms as an ordered pair.
(2, 5)

b Graph each ordered pair on the coordinate plane to the right.



Your turn

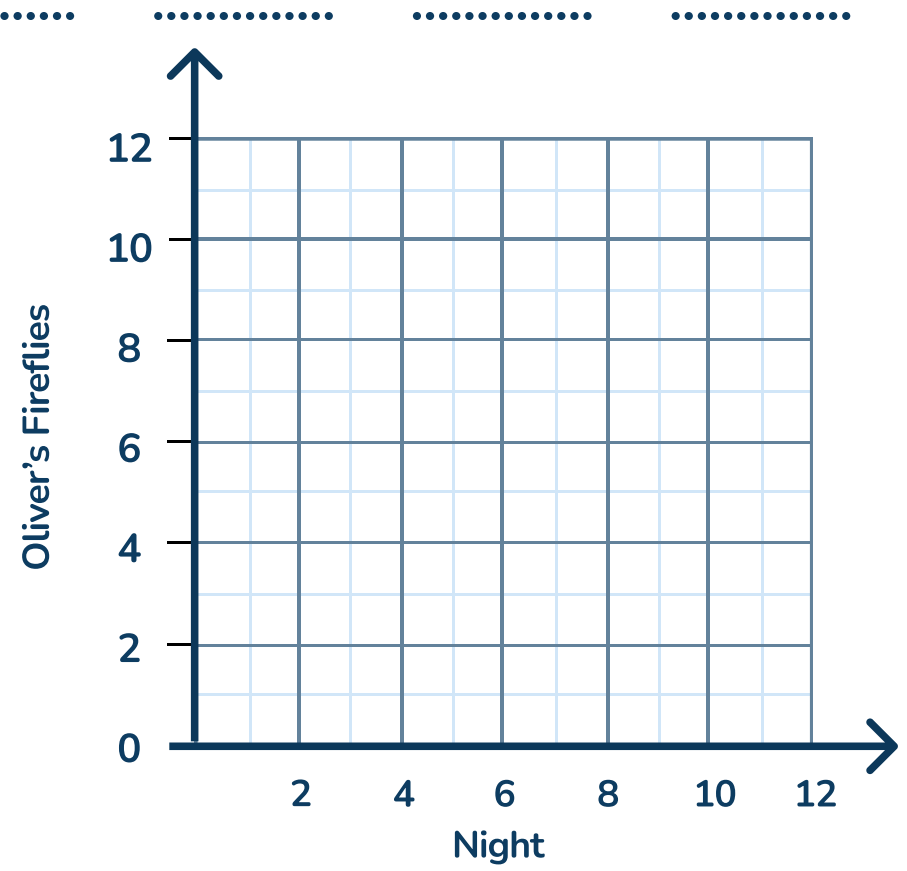


Mia and Oliver go outside every other night during the summer to catch fireflies. The table shows how many bugs Oliver catches each night.

Night	2	4	6	8	10	12
Oliver's Fireflies	1	3	5	7	9	11

a Write each pair of corresponding terms as an ordered pair.

b Graph each ordered pair on the coordinate plane to the right.



You do

Rita has a vegetable garden in her backyard. Her garden grows more vegetables each year. The tables below show how many tomatoes and cucumbers she has grown each year.

- a For each set of patterns, write each pair of corresponding terms as an ordered pair.

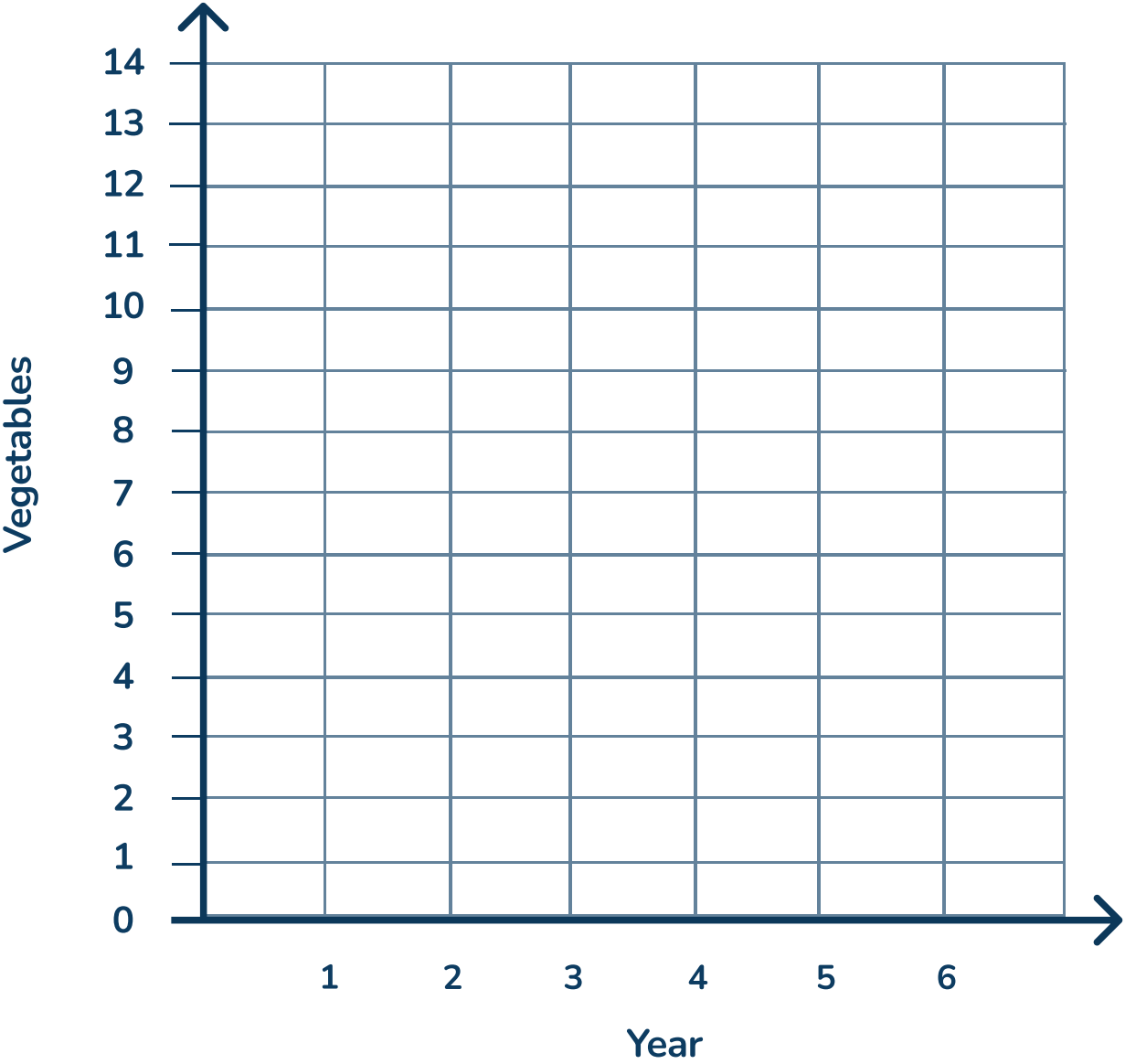
Year	1	2	3	4	5	6
Tomatoes	3	5	7	9	11	13

.....

Year	1	2	3	4	5	6
Cucumbers	2	4	8	10	12	14

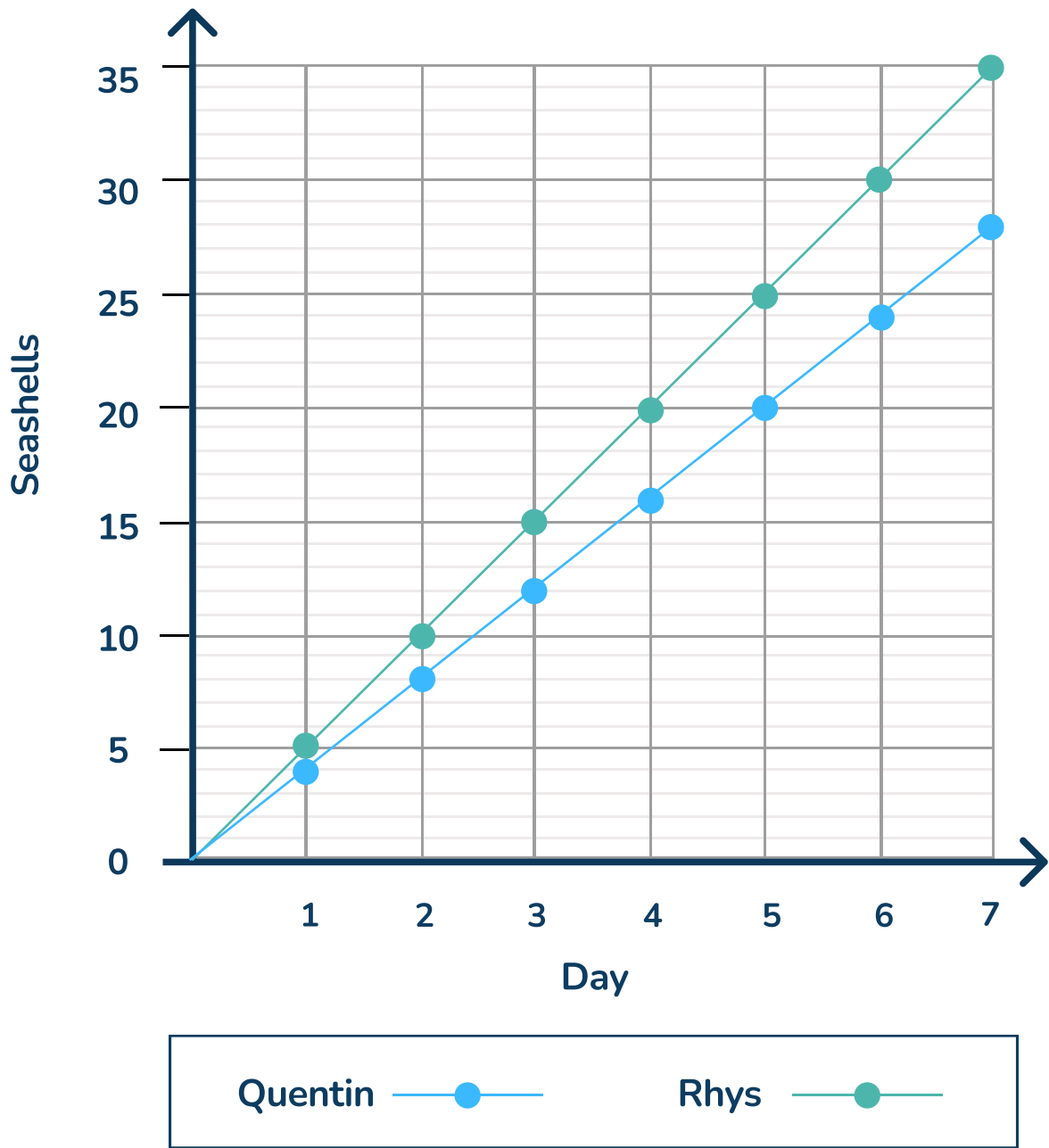
.....

- b Graph each ordered pair on the coordinate plane as a point. Use red for tomatoes and green for cucumbers.



Go further

Quentin and his brother Rhys went on vacation to the beach with their family. Each day of their vacation, they collected seashells. The graph shows how many seashells they collected each day.



a Use the points on the coordinate grid to fill in the table.

Day	Quentin	Rhys
1		
2		
3		
4		
5		
6		
7		

b Name three ordered pairs found on the graph. What do they represent? Explain.

Support



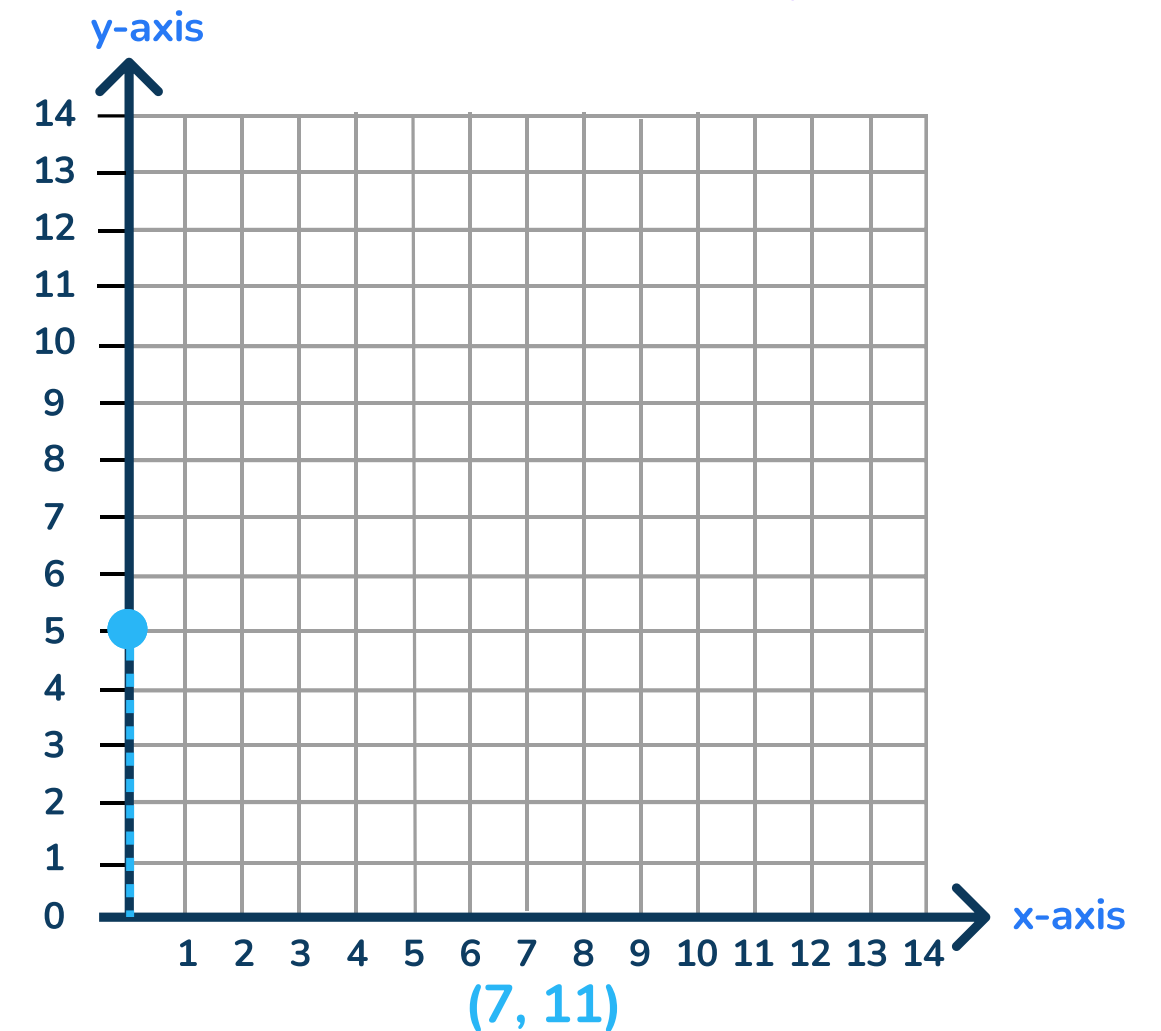
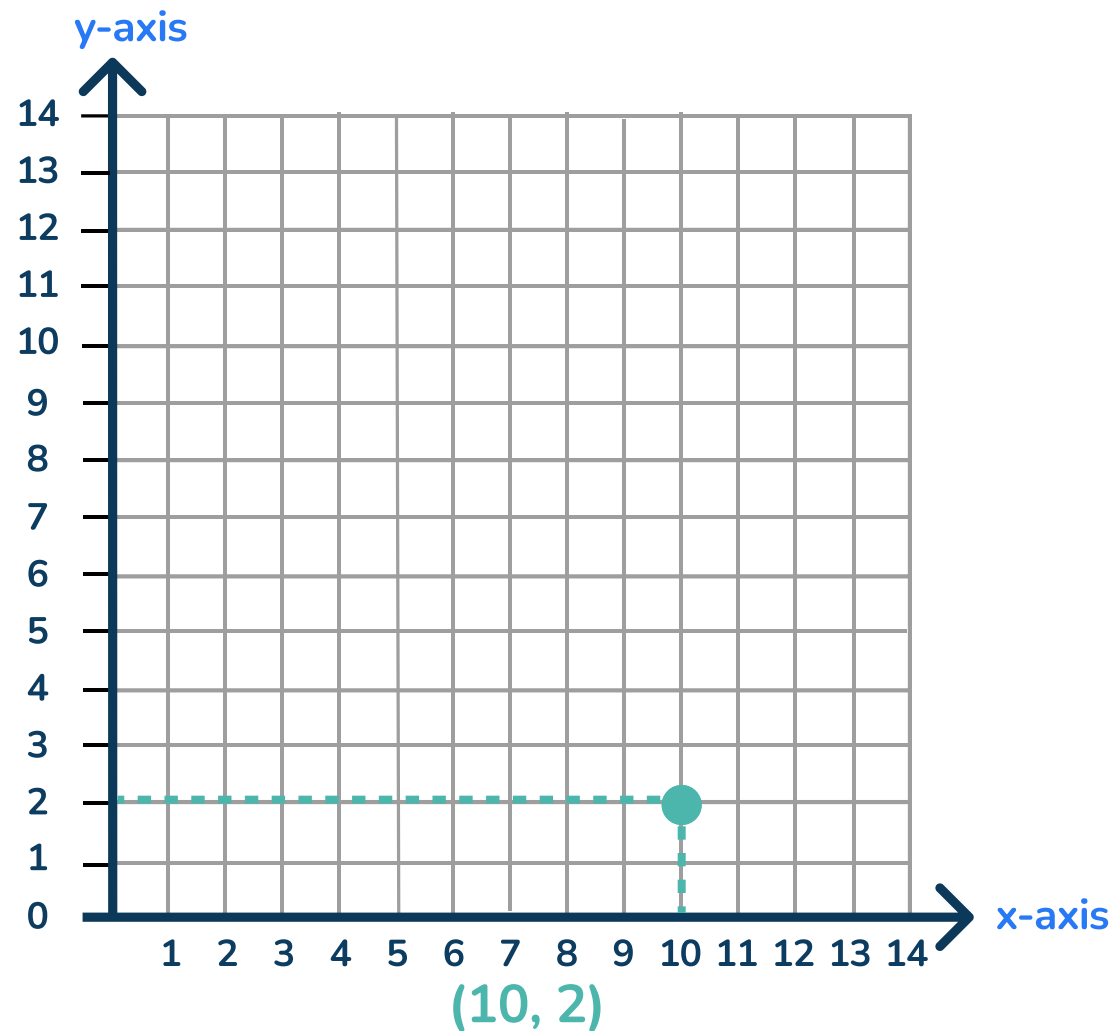
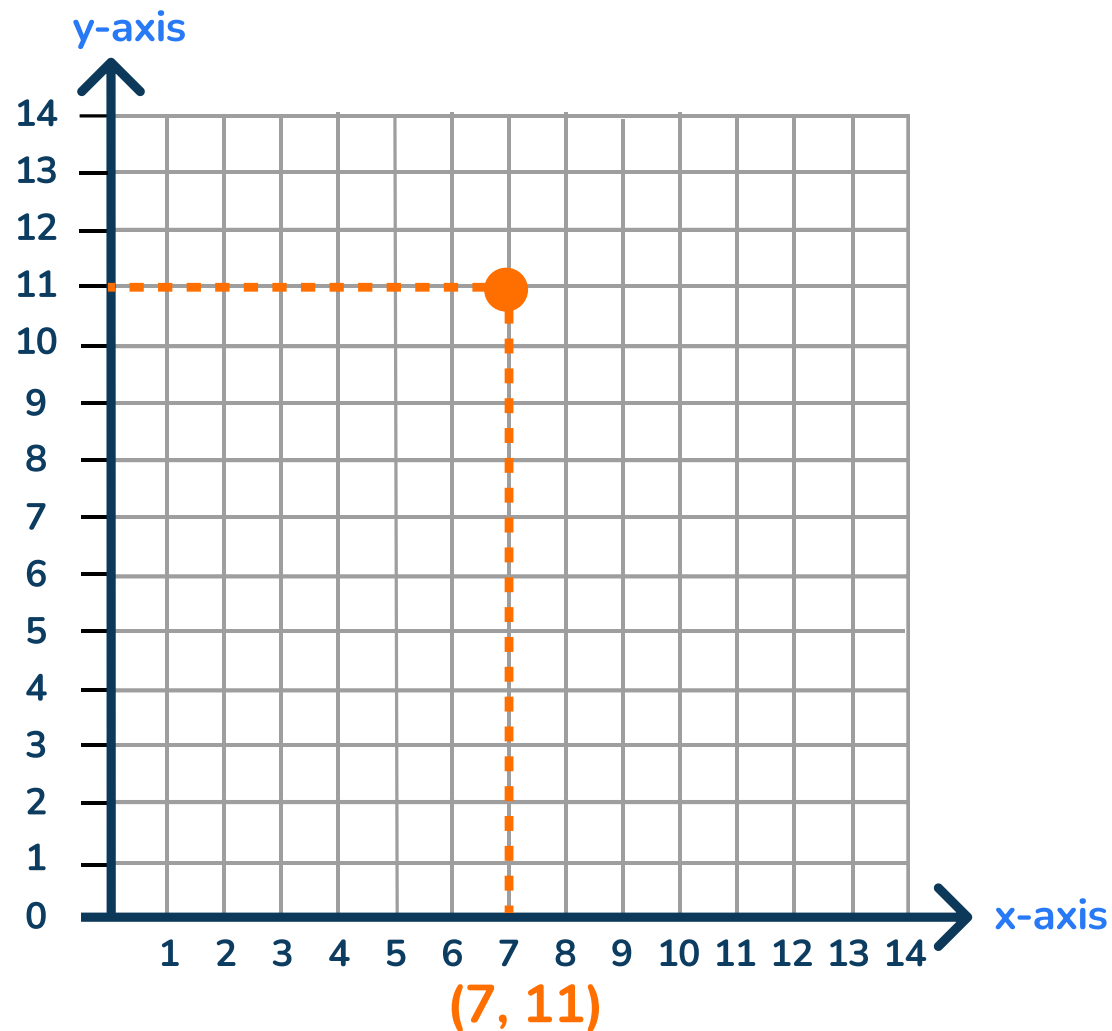
Let's take a closer look at how to use the x-axis and y-axis to graph ordered pairs on the coordinate plane.

Each ordered pair has two numbers.
The first number tells how far to move horizontally
on the x-axis and the second number tells how far
to move vertically on the y-axis.

$(2, 5)$

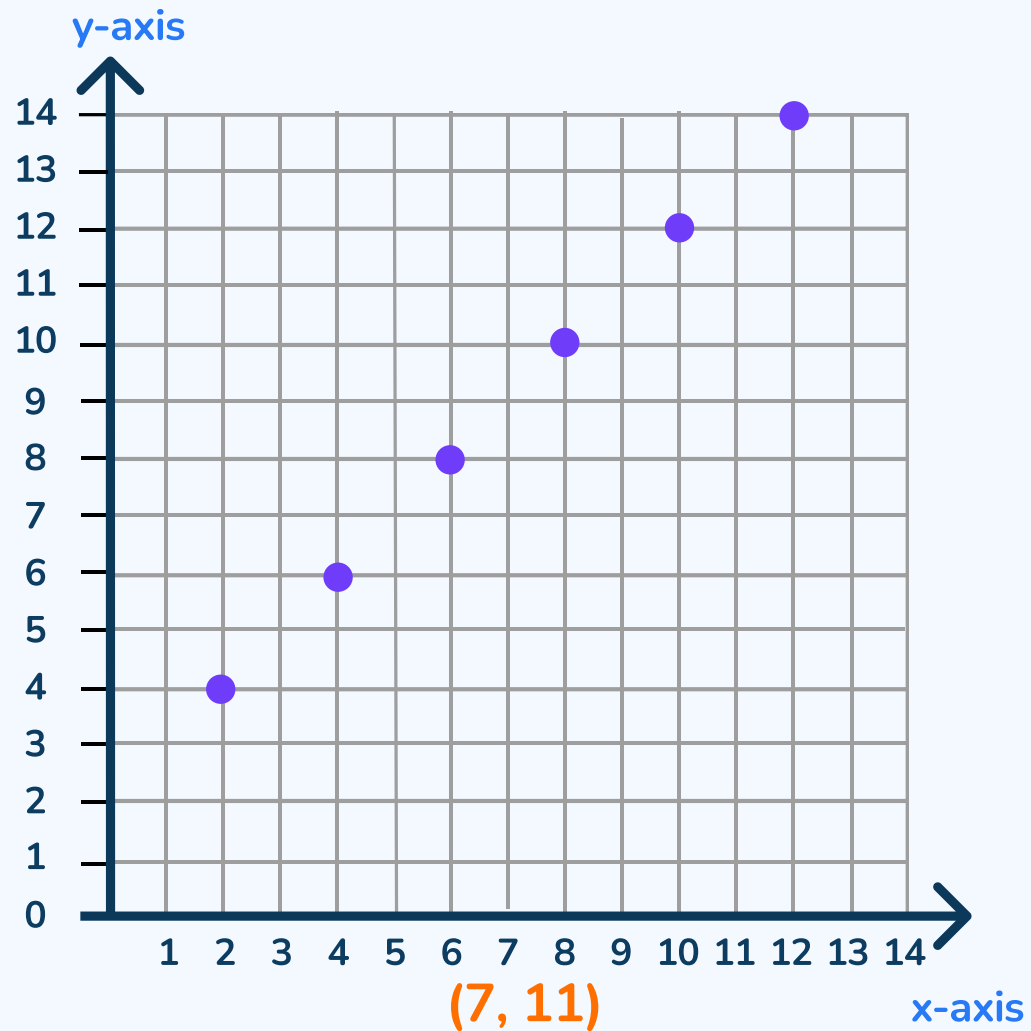
Starting at the origin, we
move horizontally to the 2.

Starting at the 2 on the x-axis, we
move vertically until we are in line
with the 5 on the y-axis.



Check your understanding

Which set of ordered pairs represents the points shown on the coordinate plane?



a (4, 2) (6, 4) (8, 6) (10, 8) (12, 10) (14, 12)

b (1, 3) (3, 5) (5, 7) (7, 9) (9, 11) (11, 13)

c (2, 4) (4, 6) (6, 8) (8, 10) (10, 12) (12, 14)

d (2, 4) (3, 6) (4, 8) (5, 10) (6, 12) (7, 14)

Why do I need to try this question on my own first?

- To show your tutor what you understand
- To give you more practice
- To show your teacher how you are doing



Do you have a group of students who need a boost in math?

Each student could receive personalized lessons every week from our specialist one-on-one math tutors.




- ✓ Differentiated instruction for each student
- ✓ Aligned to your state's standards
- ✓ Scaffolded learning to close gaps

“We just had our first session and it went great! The kids really liked it and felt like they were learning! One even said he finally felt like math was making sense.”



Michelle Craig, Instructional Coach,
Sherwood Forest Elementary, Washington

Speak to us

-  thirdspacelearning.com/us/
-  +1 929-298-4593
-  hello@thirdspacelearning.com



THIRD SPACE
LEARNING