

Reasoning and Problem Solving

Step 1: The First Quadrant

National Curriculum Objectives:

Mathematics Year 6: (6P2) [Draw and translate simple shapes on the coordinate plane, and reflect them in the axes](#)

Mathematics Year 6: (6P3) [Describe positions on the full coordinate grid \(all four quadrants\)](#)

Differentiation:

Questions 1, 4 and 7 (Reasoning)

Developing Plot the coordinates provided to create a triangle or square on a 5 x 5 grid to prove which coordinate is the odd one out.

Expected Plot the coordinates provided to create a pentagon or hexagon on a 10 x 10 grid to prove which coordinate is the odd one out. Includes irregular pentagons.

Greater Depth Plot the coordinates provided to create a heptagon or octagon on a 10 x 10 grid to prove which coordinates are the odd one out. Includes irregular shapes with some points plotted between increments.

Questions 2, 5 and 8 (Problem Solving)

Developing Identify missing coordinates that could create a triangle or square on a 5 x 5 grid.

Expected Identify missing coordinates could create a pentagon or hexagon on a 10 x 10 grid. Includes irregular pentagons.

Greater Depth Identify missing coordinates that could create a heptagon or an octagon on a 10 x 10 grid. Includes irregular shapes with some points plotted between increments.

Questions 3, 6 and 9 (Problem Solving)

Developing Identify coordinates that make a triangle or square plotted on a 5 x 5 grid.

Expected Identify coordinates that make a pentagon or hexagon plotted on a 10 x 10 grid. Includes irregular pentagons.

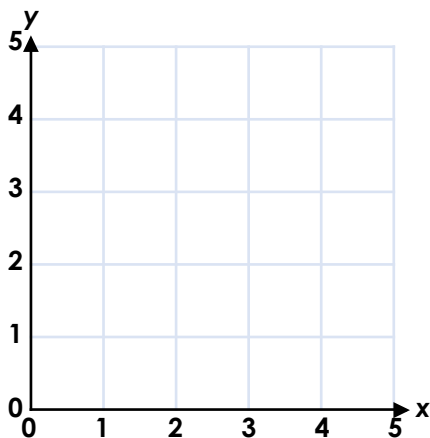
Greater Depth Identify coordinates that make a heptagon or octagon plotted on a 10 x 10 grid. Includes irregular shapes with some points plotted between increments.

More [Year 6 Position and Direction](#) resources.

Did you like this resource? Don't forget to [review](#) it on our website.

The First Quadrant

1a. Plot the following coordinates to make an isosceles triangle:
Which is the odd one out? Prove it.



(2, 1)

(4, 1)

(1, 5)

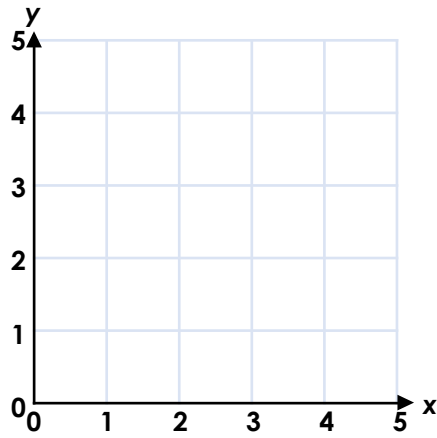
(3, 2)



R

The First Quadrant

1b. Plot the following coordinates to make a square:
Which is the odd one out? Prove it.



(1, 1)

(1, 4)

(5, 5)

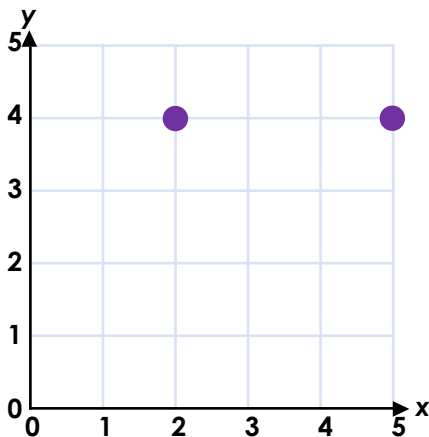
(4, 1)

(4, 4)



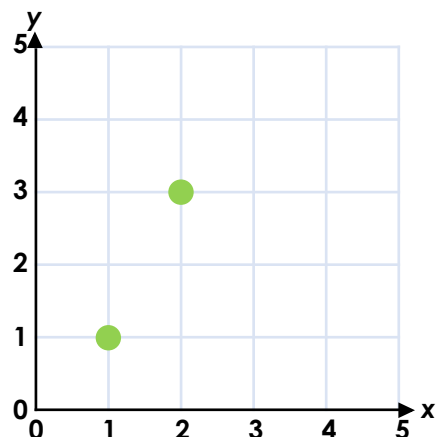
R

2a. Mia is drawing a square. She has plotted the first two points. What coordinates could complete the shape?



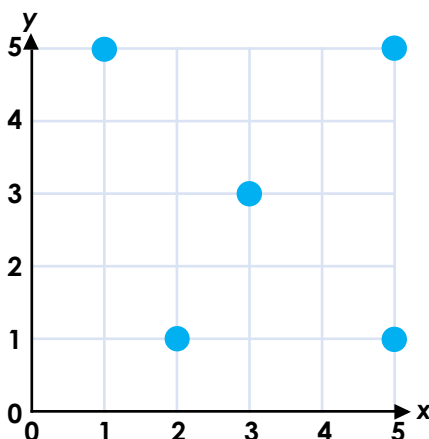
PS

2b. Ali is drawing a triangle. He has plotted the first two points. What coordinates could complete the shape?



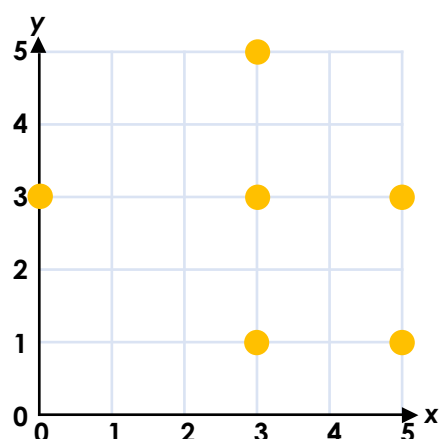
PS

3a. Which coordinates could be joined to create a triangle?



PS

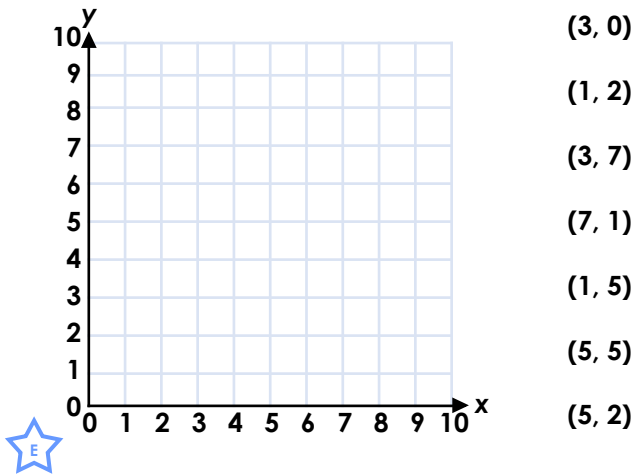
3b. Which coordinates could be joined to create a square?



PS

The First Quadrant

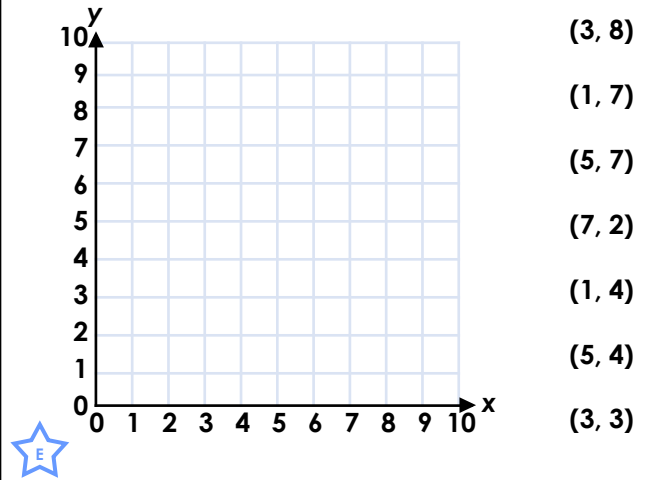
4a. Plot the following coordinates to make a hexagon:
Which is the odd one out? Prove it.



R

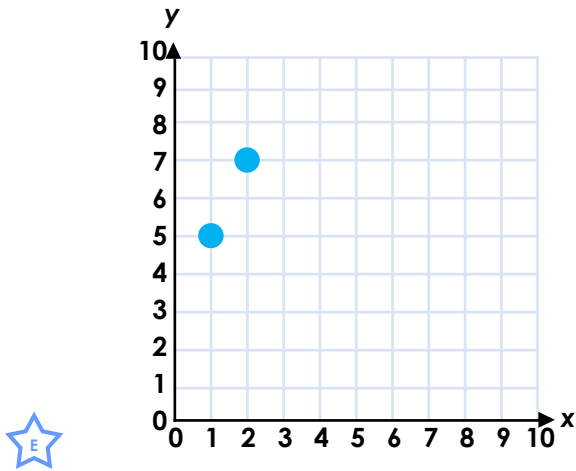
The First Quadrant

4b. Plot the following coordinates to make a hexagon:
Which is the odd one out? Prove it.



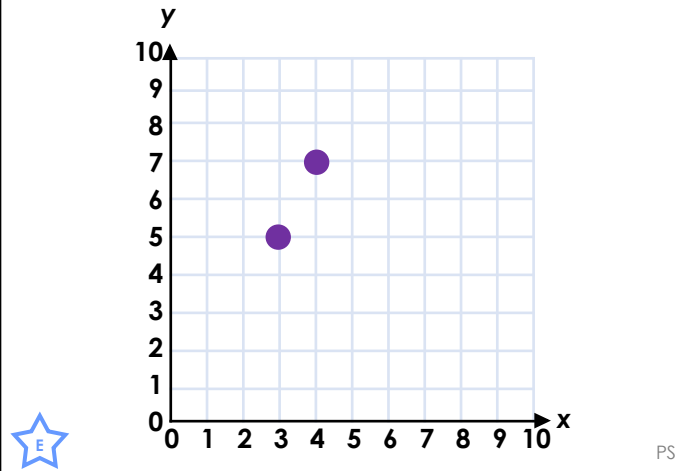
R

5a. Ava is drawing a hexagon. She has plotted the first two points. What coordinates could complete the shape?



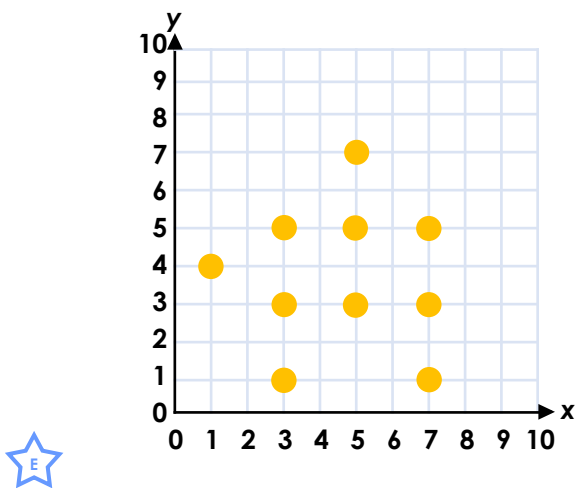
PS

5b. Dan is drawing a pentagon. He has plotted the first two points. What coordinates could complete the shape?



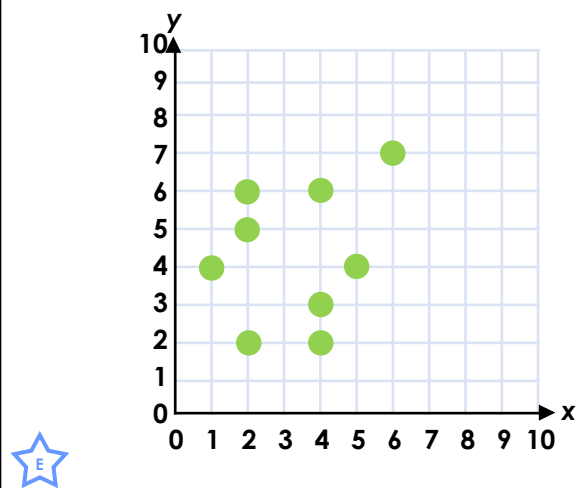
PS

6a. Which coordinates could be joined to create a pentagon?



PS

6b. Which coordinates could be joined to create a hexagon?

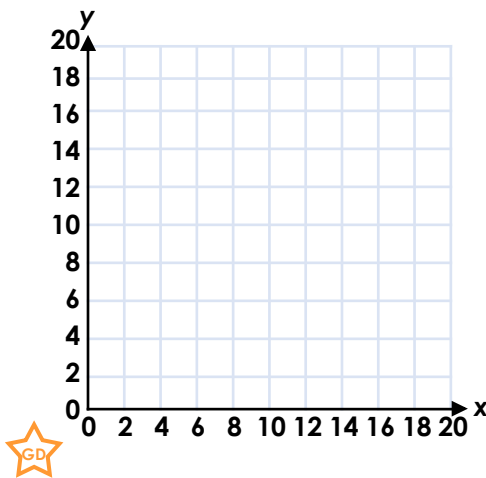


PS

The First Quadrant

7a. Plot the following coordinates to make an octagon.

Which two are the odd ones out? Prove it.



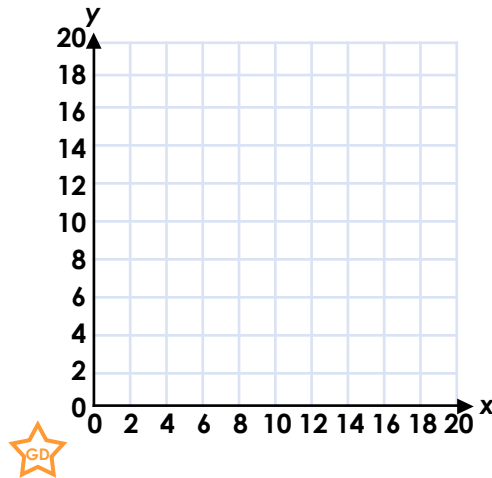
(6, 7)
(10, 19)
(6, 19)
(10, 7)
(14, 20)
(15, 7)
(4, 15)
(12, 11)
(4, 11)
(12, 15)

R

The First Quadrant

7b. Plot the following coordinates to make an octagon.

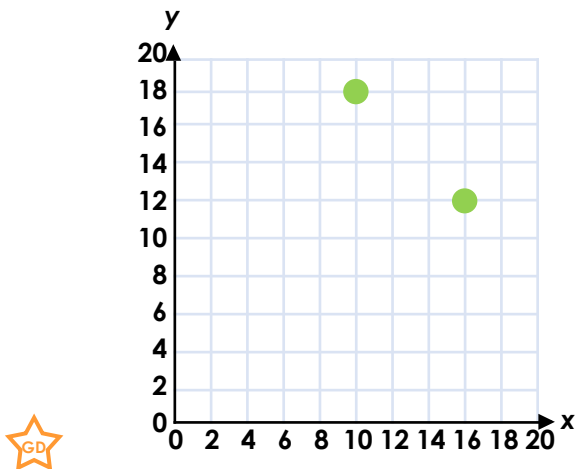
Which two are the odd ones out? Prove it.



(3, 2)
(7, 2)
(1, 6)
(1, 10)
(12, 2)
(3, 14)
(9, 10)
(7, 14)
(9, 6)
(11, 15)

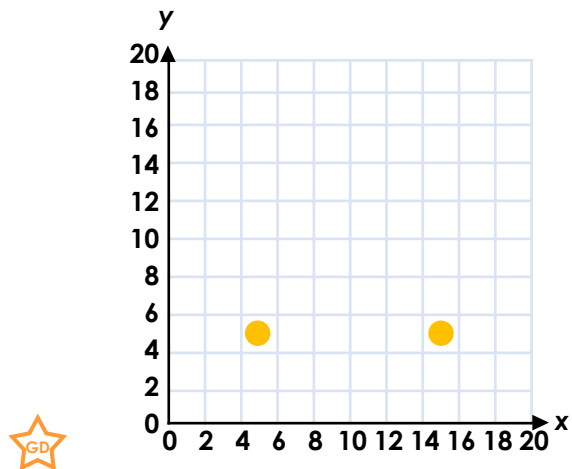
R

8a. Sadia is drawing a heptagon. She has plotted the first two points. What coordinates could complete the shape?



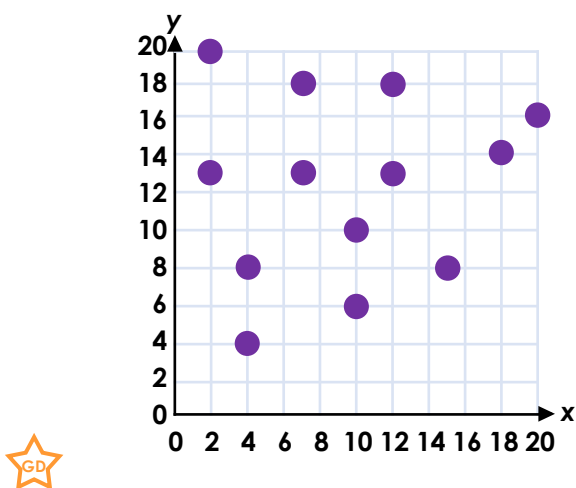
PS

8b. Logan is drawing an octagon. He has plotted the first two points. What coordinates could complete the shape?



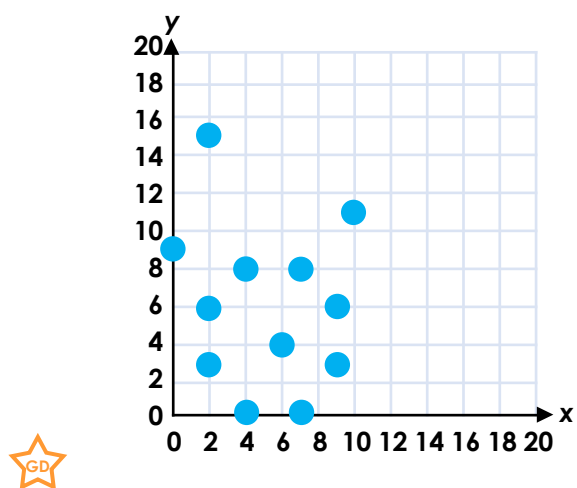
PS

9a. Which coordinates could be joined to create a heptagon?



PS

9b. Which coordinates could be joined to create an octagon?



PS

Reasoning and Problem Solving The First Quadrant

Developing

1a. (1, 5) is the odd one out because the other coordinates make an isosceles triangle.

2a. (2, 1), (5, 1)

3a. Various answers, for example: (1, 5), (3, 3), (5, 5)

Expected

4a. (7, 1) is the odd one out because the other coordinates make a hexagon.

5a. Various answers, for example: (4, 7), (5, 5), (4, 3), (2, 3)

6a. Various answers, for example: (3, 3), (3, 5), (5, 7), (7, 5), (7, 3)

Greater Depth

7a. (14, 20) and (15, 7) are the odd ones out because the other coordinates make an octagon.

8a. Various answers, for example: (4, 8), (4, 14), (8, 4), (12, 6), (16, 8)

9a. Various answers for example: (2, 20), (2, 13), (4, 8), (7, 13), (12, 13), (12, 18), (7, 18)

Reasoning and Problem Solving The First Quadrant

Developing

1b. (5, 5) is the odd one out because the other coordinates make a square.

2b. Various answers, for example: (3, 1)

3b. (3, 1), (3, 3), (5, 3), (5, 1)

Expected

4b. (7, 2) is the odd one out because the other coordinates make a hexagon.

5b. Various answers, for example: (7, 5), (7, 2), (3, 2)

6b. Various answers, for example: (2, 2), (1, 4), (2, 6), (4, 6), (5, 4), (4, 2)

Greater Depth

7b. (12, 2) and (11, 15) are the odd ones out because the other coordinates make an octagon.

8b. Various answers, for example: (8, 2), (12, 2), (5, 9), (8, 11), (12, 11), (15, 9)

9b. Various answers for example: (4, 0), (2, 3), (2, 6), (4, 8), (7, 8), (9, 6), (9, 3), (7, 0)