

# Reasoning and Problem Solving

## Step 2: Draw on a Grid

### National Curriculum Objectives:

Mathematics Year 4 : (4P3b) [Plot specified points and draw sides to complete a given polygon](#)

### Differentiation:

Questions 1, 4 and 7 (Reasoning)

**Developing** Explain a mistake in plotting coordinates. Using up to 4 points, all points plotted on a 5x5 grid, using 1:1 scale.

**Expected** Explain a mistake in plotting coordinates. Using up to 6 points, all points plotted on a 10x10 grid, using 1:1 scale.

**Greater Depth** Explain a mistake in plotting coordinates. Using up to 6 points, all points plotted on a 10x10 grid, using varying scales with some points plotted between increments.

Questions 2, 5 and 8 (Problem Solving)

**Developing** Find four possibilities of a pair of coordinates with given parameters. Using up to 4 points, all points plotted on a 5x5 grid, using 1:1 scale.

**Expected** Find six possibilities of a pair of coordinates with given parameters. Using up to 6 points, all points plotted on a 10x10 grid, using 1:1 scale.

**Greater Depth** Find six possibilities of a pair of coordinates with given parameters. Using up to 6 points, all points plotted on a 10x10 grid, using varying scales with some points plotted between increments.

Questions 3, 6 and 9 (Problem Solving)

**Developing** Plot one missing coordinate to make a simple letter made up of two straight lines. Using up to 4 points, all points plotted on a 5x5 grid, using 1:1 scale.

**Expected** Plot two missing coordinates to make letters made up of straight lines. Using up to 6 points, all points plotted on a 10x10 grid, using 1:1 scale.

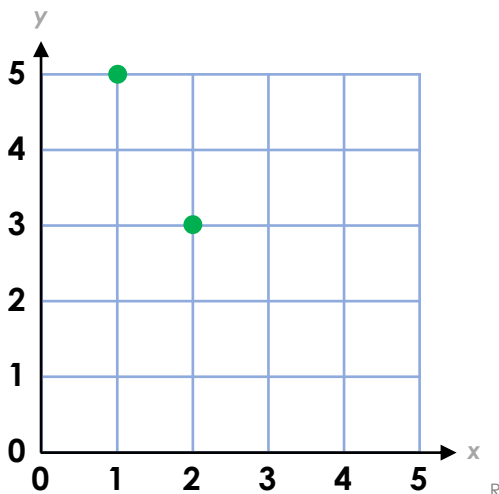
**Greater Depth** Plot two or three missing coordinates to make squared versions of curved letters. Using up to 6 points, all points plotted on a 10x10 grid, using varying scales with some points plotted between increments.

More [Year 4 Position and Direction](#) resources.

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

## Draw on a Grid

1a. Zac is plotting coordinates. Explain his mistake.



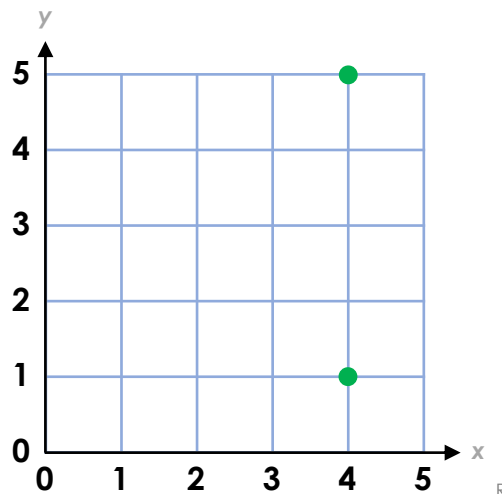
(3, 2)

(5, 1)



## Draw on a Grid

1b. Beth is plotting coordinates. Explain her mistake.

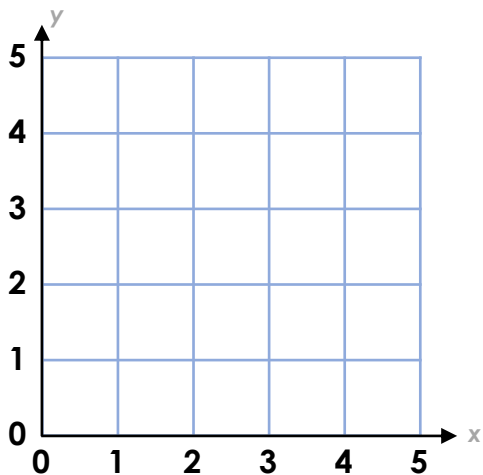


(4, 5)

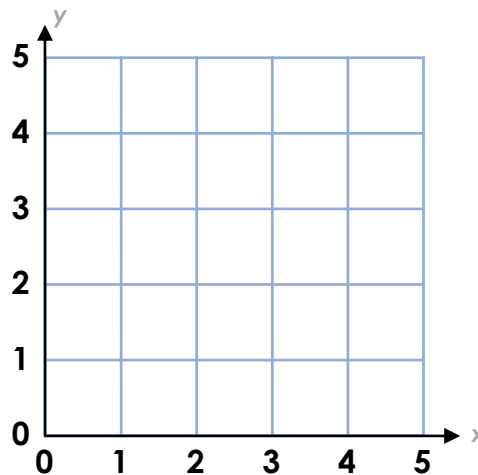
(1, 4)



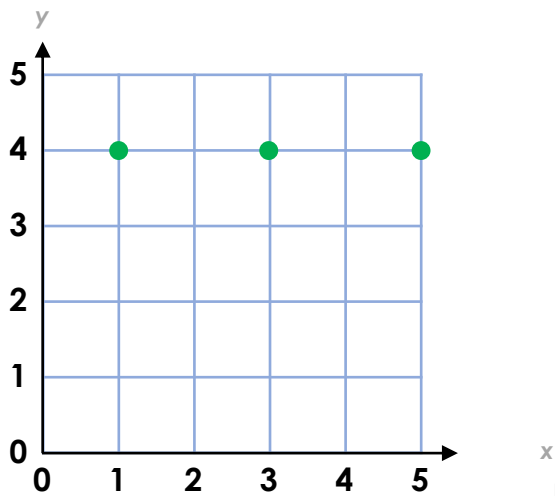
2a. Identify and plot four pairs of coordinates, each with a total of less than 5.



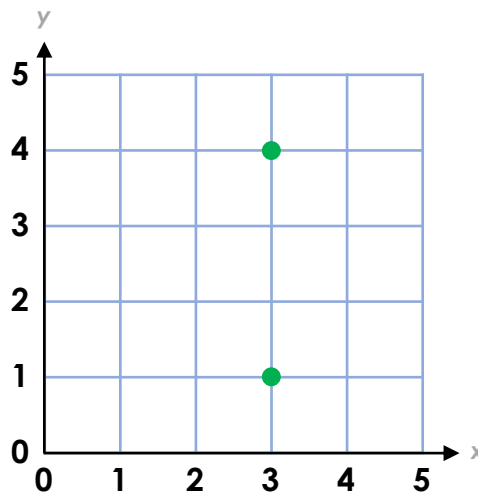
2b. Identify and plot four pairs of coordinates, each with a total that is an even number.



3a. Plot 1 missing coordinate to make a letter made up of straight lines.



3b. Plot 1 missing coordinate to make a letter made up of straight lines.

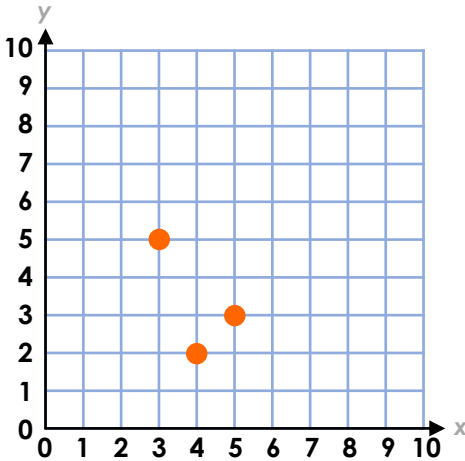


## Draw on a Grid

## Draw on a Grid

4a. Isobel is plotting coordinates. Explain her mistake.

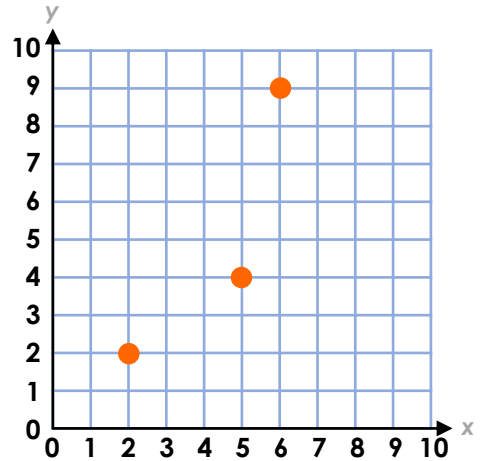
- (2, 4)
- (3, 5)
- (5, 3)



R

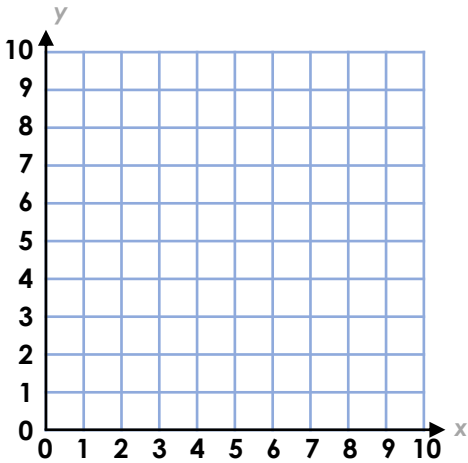
4b. Jack is plotting coordinates. Explain his mistake.

- (2, 2)
- (5, 4)
- (9, 6)



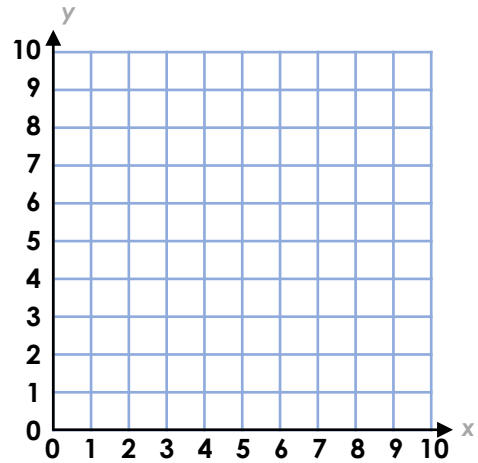
R

5a. Identify and plot six pairs of coordinates, each with a total of less than 10.



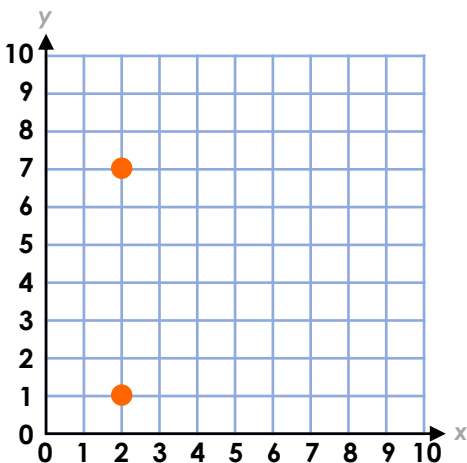
PS

5b. Identify and plot six pairs of coordinates, each with a total that is an odd number.



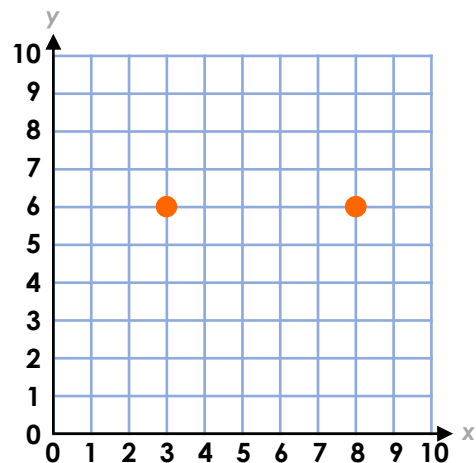
PS

6a. Plot 2 missing coordinates to make a letter made up of straight lines.



PS

6b. Plot 2 missing coordinates to make a letter made up of straight lines.



PS

## Draw on a Grid

## Draw on a Grid

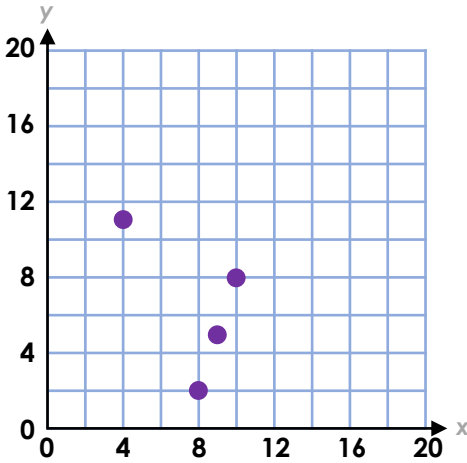
7a. Ahmed is plotting coordinates. Explain his mistake.

(4, 11)

(9, 5)

(2, 8)

(10, 8)



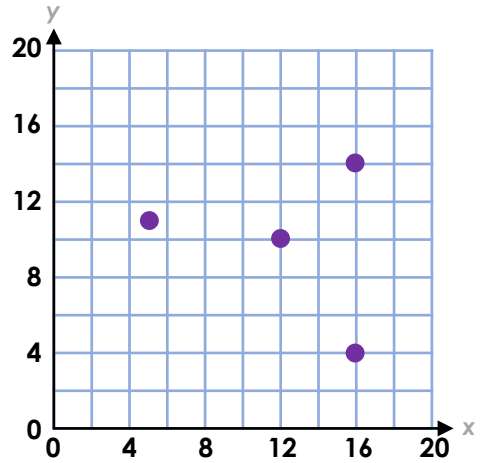
4b. Sinead is plotting coordinates. Explain her mistake.

(5, 11)

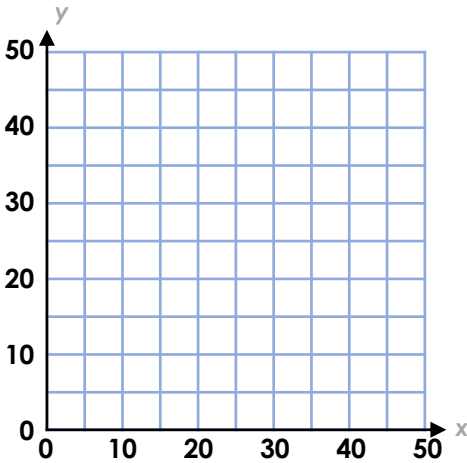
(10, 12)

(16, 2)

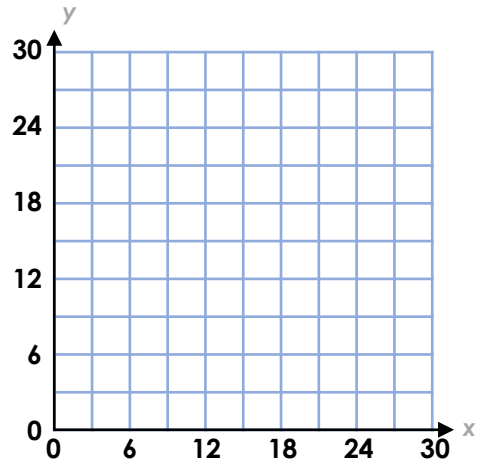
(16, 14)



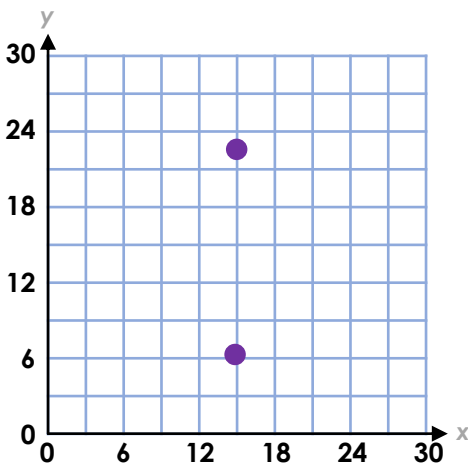
8a. Identify and plot six pairs of coordinates, each with a total of less than 25.



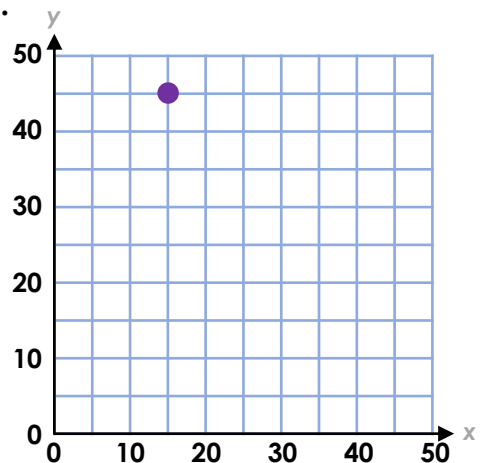
8b. Identify and plot six pairs of coordinates, each with a total that is between 10 and 20.



9a. Plot 2 or 3 missing coordinates to make a straight lined version of a curved letter.



9b. Plot 2 or 3 missing coordinates to make a straight lined version of a curved letter.



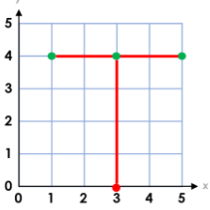
## Reasoning and Problem Solving Draw on a Grid

### Developing

1a. Zac is using the y axis first to plot coordinates when he should be using the x axis first.

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

3a. Various answers, for example:

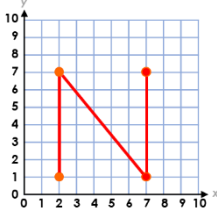


### Expected

4a. Isobel is using the y axis first to plot the coordinate (2, 4) when she should use the x axis first.

5a. Various answers, for example:  
(1, 8), (5, 2), (6, 3), (8, 1), (4, 4), (3, 2)

6a. Any letter plotted correctly, for example:

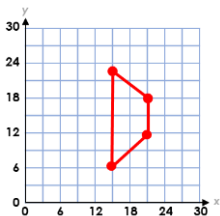


### Greater Depth

7a. Ahmed is using the y axis first to plot the coordinate (2, 8) when he should use the x axis first.

8a. Various answers, for example:  
(0, 0), (5, 5), (5, 10), (15, 5), (10, 10), (10, 5)

9a. Various answers, for example:



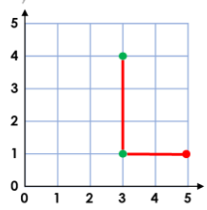
## Reasoning and Problem Solving Draw on a Grid

### Developing

1b. Beth is using the y axis first to plot the coordinate (1, 4) when she should use the x axis first.

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

3b. Various answers, for example:



### Expected

4b. Jack is using the y axis first to plot the coordinate (9, 6) when he should use the x axis first.

5b. Various answers, for example:  
(1, 4), (2, 7), (3, 6), (5, 4), (4, 5), (7, 1)

6b. Any letter plotted correctly, for example:



### Greater Depth

7b. Sinead is using the y axis first to plot the coordinate (10, 12) when she should use the x axis first and (16, 2) has been plotted at (16, 4).

8b. Various answers, for example:  
(6, 6), (12, 3), (12, 6), (18, 3), (0, 12), (0, 18)

9b. Various answers, for example:

