LINES PARALLEL TO THE AXES

BUILDING BLOCKS

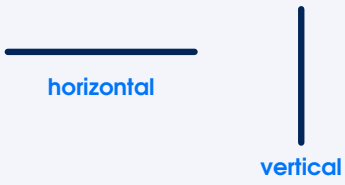
NAME _____ CLASS _____ DATE _____

KEY IDEA

A horizontal line goes across, like the horizon.

A vertical line goes straight up and down.

On a vertical line, every point has the same x-coordinate.
On a horizontal line, every point has the same y-coordinate.



1 Is each line horizontal or vertical? Circle your answer.



a) HORIZONTAL VERTICAL b) HORIZONTAL VERTICAL c) HORIZONTAL VERTICAL

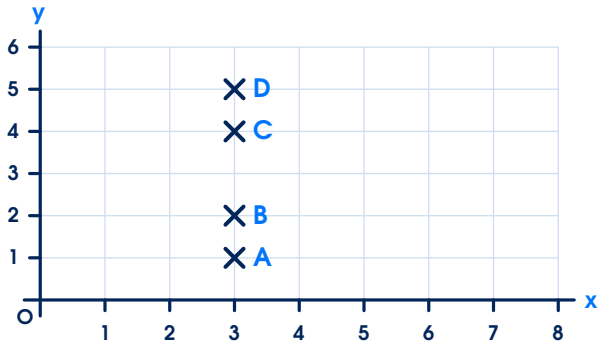
2 Four points are marked on the grid.

a) Write the coordinates of each point.

A (,) B (,)

C (,) D (,)

b) The x-coordinate is always ☐



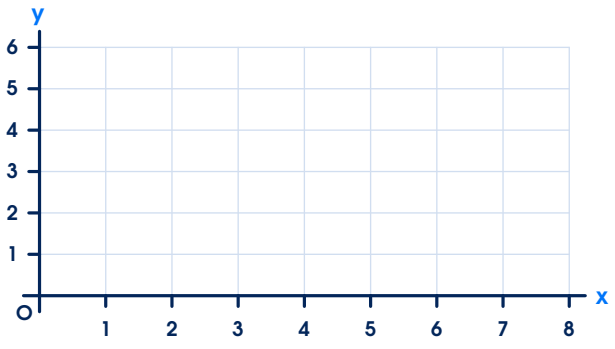
3 a) Plot these three points on the grid.

(1, 5) (3, 5) (7, 5)

b) Join them with a ruler. The line is

HORIZONTAL VERTICAL

c) The y-coordinate is always ☐

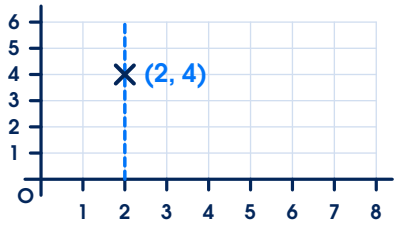


4 Which points are on the same vertical line as (2, 4)?

The dashed line is vertical. Tick the TWO points that are on it.

(4, 2) ☐ (2, 0) ☐

(5, 4) ☐ (2, 6) ☐



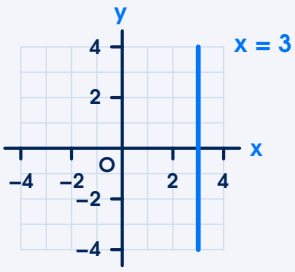
LINES PARALLEL TO THE AXES

SUPPORT

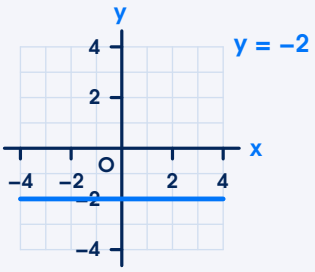
NAME _____ CLASS _____ DATE _____

KEY IDEA

Vertical line:
every point has the same x-coordinate.
e.g. x = 3



Horizontal line:
every point has the same y-coordinate.
e.g. y = –2

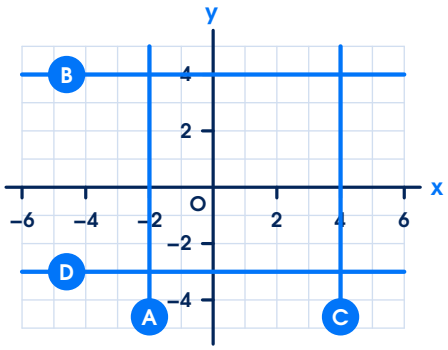


1 Write the equation of each line.

Vertical → x = ... Horizontal → y = ...

Line A _____ **Line B** _____

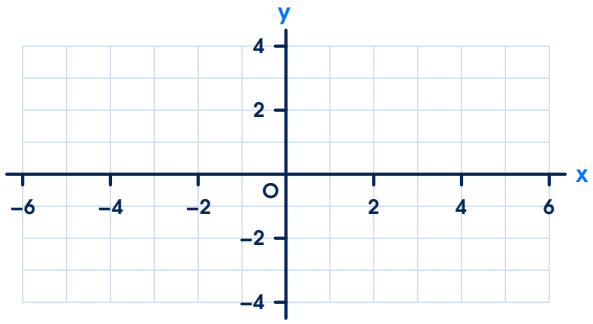
Line C _____ **Line D** _____



2 Draw and label these lines on the grid.

x = 1 **y = –2** **y = 3**

Tip: for x = 1, find 1 on the x-axis and draw a line straight up and down through it.



3 Complete the sentences.

a) (–4, 2), (0, 2) and (5, 2) all lie on the line _____

b) (6, –1), (6, 6) and (6, 0) all lie on the line _____

c) Write two points that lie on the line y = 4. (,) (,)

4 Does each point lie on the line x = –3? Tick the ones that do.

(–3, 5) ☐ **(5, –3)** ☐ **(–3, 0)** ☐ **(0, –3)** ☐

LINES PARALLEL TO THE AXES

CORE

NAME _____ CLASS _____ DATE _____

KEY IDEA

Lines parallel to the y-axis are x = a. Lines parallel to the x-axis are y = b.

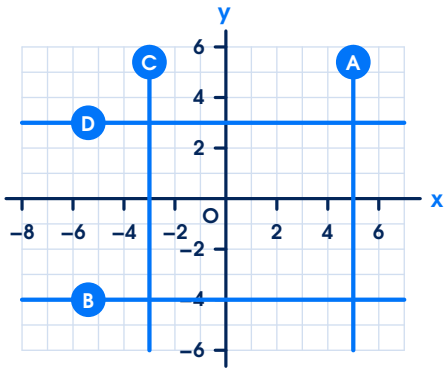
FLUENCY

1 Write the equation of each line.

Line A ☐ **Line B** ☐

Line C ☐ **Line D** ☐

Write the equation of the x-axis. ☐



2 Here are six points.

(6, −4) (−4, 6) (6, 2) (0, −4) (−4, −4) (6, 0)

a) Which points lie on the line y = −4? ☐

b) Which points lie on the line x = 6? ☐

REASONING

3 Where do these lines meet? Write the coordinates.

a) **x = −4 and y = 2** (,)

b) **y = 7 and x = 0** (,)

c) **x = 3 and the x-axis** (,)

d) Will the lines x = 5 and x = 2 ever meet?

.....

4 Tom says, "The x-axis is the line x = 0." Explain Tom's mistake.

.....

.....

LINES PARALLEL TO THE AXES

GREATER DEPTH

NAME _____ CLASS _____ DATE _____

REASONING

1 Is each statement always, sometimes or never true? Circle your answer.

If it is sometimes true, give an example of when it is true and when it is not.

a) The lines x = a and y = b meet at exactly one point. ALWAYS SOMETIMES NEVER

b) The lines x = a and x = b meet. ALWAYS SOMETIMES NEVER

c) The line y = c passes through the point (c, c). ALWAYS SOMETIMES NEVER

d) The line 2x + 6 = 0 is parallel to the y-axis. ALWAYS SOMETIMES NEVER

PROBLEM SOLVING

2 The lines x = –2, x = 4, y = –1 and y = k make a square.

a) Find both possible values of k. ☐ **b)** Find the area. ☐

3 Write each equation in its simplest form. Is the line parallel to the x-axis or the y-axis?

EQUATION	SIMPLEST FORM	PARALLEL TO THE...
2x + 6 = 0		
y – 5 = 0		
3y = –12		
10 = 2x		

★ CHALLENGE FOR ALL

4 The lines x = –2, x = 3, y = –1 and y = 4 make a square. Do not count points on the sides as inside.

a) How many points with whole-number coordinates lie inside the square? ☐

b) How many lie on the sides of the square? ☐

LINES PARALLEL TO THE AXES

ANSWERS

BUILDING BLOCKS

1 a) horizontal · b) vertical · c) horizontal
2 a) a vertical line · b) A (3, 1), B (3, 2), C (3, 4), D (3, 5) · c) 3
3 a) Plotted · b) horizontal · c) 5
4 (2, 0) and (2, 6)

SUPPORT

1 A $x = -2$ · B $y = 4$ · C $x = 4$ · D $y = -3$
2 $x = 1$ vertical through 1 on the x-axis · $y = -2$ horizontal through -2 on the y-axis · $y = 3$ horizontal through 3 on the y-axis
3 a) $y = 2$ · b) $x = 6$ · c) any two points $(k, 4)$, e.g. (1, 4), (−7, 4)
4 Tick (−3, 5) and (−3, 0) only

CORE

1 A $x = 5$ · B $y = -4$ · C $x = -3$ · D $y = 3$ · the x-axis is $y = 0$
2 a) (6, −4), (0, −4), (−4, −4) · b) (6, −4), (6, 2), (6, 0)
3 a) (−4, 2) · b) (0, 7) · c) (3, 0) · d) No: both are vertical (parallel to the y-axis), always 3 units apart.
4 Every point on the x-axis has y-coordinate 0, so the x-axis is $y = 0$. The line $x = 0$ is the y-axis.

GREATER DEPTH

1 a) Always: they meet at (a, b). b) Sometimes: only when $a = b$ (then they are the same line); $x = 1$ and $x = 4$ never meet. c) Always: (c, c) has y-coordinate c. d) Always: it simplifies to $x = -3$.
2 a) The width is 6, so $k = 5$ or $k = -7$ · b) 36 square units
3 $x = -3$, y-axis · $y = 5$, x-axis · $y = -4$, x-axis · $x = 5$, y-axis
4 a) $x = -1, 0, 1, 2$ and $y = 0, 1, 2, 3$: $4 \times 4 = 16$ · b) 20 (a 5 by 5 square has 4×5 points on its sides)