LINES OF THE FORM y = x + c

BUILDING BLOCKS

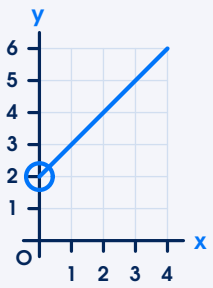
NAME _____ CLASS _____ DATE _____

KEY IDEA

y = x + 2 means "add 2 to x".

x → + 2 → y x = 3 → y = 5

The line crosses the y-axis at 2.



1 Complete the table of values for y = x + 1

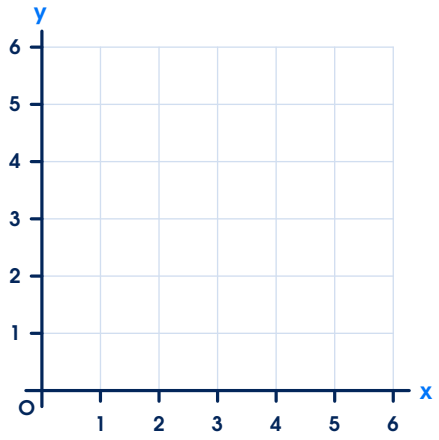
x	0	1	2	3	4
y	1				

x → + 1 → y

2 a) Draw the line y = x + 1

Plot the points from your table in question 1. Join them with a ruler and make the line longer.

b) Where does your line cross the y-axis? (0, ____)

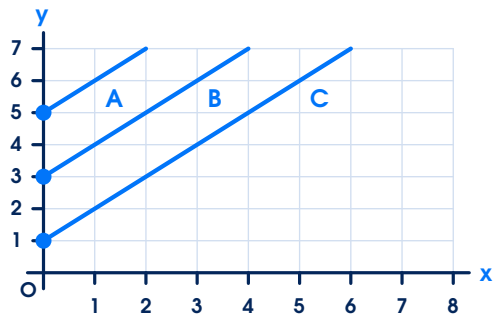


3 Where does each line cross the y-axis?

Line A crosses at (,)

Line B crosses at (,)

Line C crosses at (,)



4 Circle the points where y is 3 more than x.

(1, 4) (4, 1) (2, 5) (0, 3) (5, 7) (6, 9)

LINES OF THE FORM y = x + c

SUPPORT

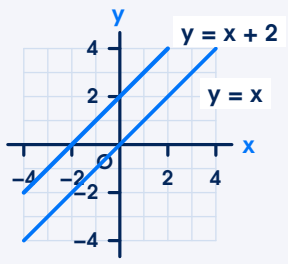
NAME _____ CLASS _____ DATE _____

KEY IDEA

y = x + 2 is the line y = x moved UP 2.

It has the same steepness: the lines are parallel.

It crosses the y-axis at (0, 2). This is the y-intercept.



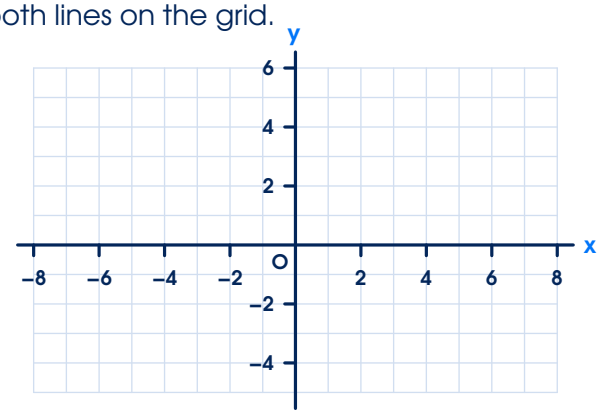
1 Complete each table of values. Then draw both lines on the grid.

a) **y = x + 3**

x	−2	−1	0	1	2
y					

b) **y = x − 2**

x	−2	−1	0	1	2
y					



2 Write the y-intercept of each line.

y = x + 5 (,)

y = 6 + x (,)

y = x − 4 (,)

y = x (,)

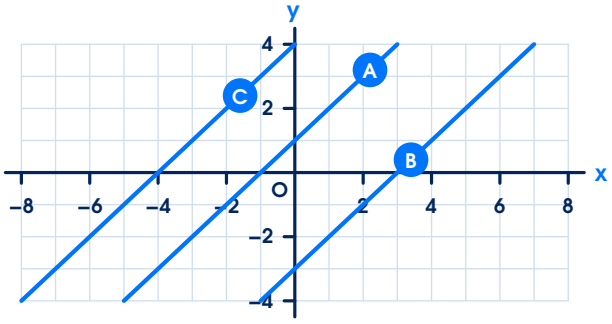
3 Match each line to its equation.

y = x + 1 **y = x − 3** **y = x + 4**

Line A is _____

Line B is _____

Line C is _____



4 Ravi says, "y = x − 7 crosses the y-axis at (0, 7)." Explain Ravi's mistake.

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LINES OF THE FORM y = x + c

CORE

NAME _____ CLASS _____ DATE _____

KEY IDEA

y = x + c has gradient 1 and y-intercept (0, c). Every line y = x + c is parallel to y = x.

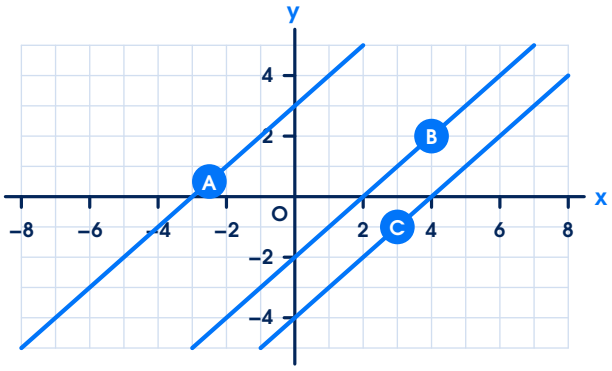
FLUENCY

1 Write the equation of each line.

Line A ☐

Line B ☐

Line C ☐



2 Complete the table.

EQUATION	GRADIENT	Y-INTERCEPT
y = x + 8		
y = x – 1.5		
5 + x = y		
y – 3 = x		

REASONING

3 Think about the coordinates of points on each line.

a) The point (k, 9) lies on the line y = x + 4. Find k. ☐

b) Circle the points that lie on the line y = x – 2

(5, 3) (–1, –3) (0, 2) (–4, –6) (2.5, 0.5)

4 Ben says, "y = x – 3 has a negative gradient because of the minus sign." Is Ben right? Explain.

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LINES OF THE FORM y = x + c

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 y = x + c and y = x are parallel. ALWAYS SOMETIMES NEVER

b) The line y = x + c passes through the origin. ALWAYS SOMETIMES NEVER

c) If c is negative, the line y = x + c has a negative gradient. ALWAYS SOMETIMES NEVER

d) The line y = x + c crosses the x-axis at (–c, 0). ALWAYS SOMETIMES NEVER

PROBLEM SOLVING

2 The line y = x + c passes through the point (–3, 5).

a) Find c. ☐ **b)** Where does it cross the x-axis? (,)

c) Does (10, 18) lie on the line? Show how you know. ☐

3 The lines y = x + 2, y = x – 4, x = 0 and x = 5 make a parallelogram.

a) How far apart are the lines, measured vertically? ☐

b) Find the area of the parallelogram. ☐

★ CHALLENGE FOR ALL

4 The lines y = x + 3, y = –x + 3 and the x-axis make a triangle.

a) Find the coordinates of the three corners.

(,) (,) (,) **b)** Area ☐

LINES OF THE FORM y = x + c

ANSWERS

BUILDING BLOCKS

1 1, 2, 3, 4, 5
2 a) straight line through (0, 1), (1, 2) ... (4, 5), extended · b) (0, 1)
3 A (0, 5) · B (0, 3) · C (0, 1)
4 (1, 4), (2, 5), (0, 3), (6, 9)

SUPPORT

1 a) 1, 2, 3, 4, 5 · b) –4, –3, –2, –1, 0 · two parallel lines crossing the y-axis at 3 and –2
2 (0, 5) · (0, –4) · (0, 6) · (0, 0)
3 A y = x + 1 · B y = x – 3 · C y = x + 4
4 When x = 0, y = 0 – 7 = –7, so it crosses at (0, –7).

CORE

1 A y = x + 3 · B y = x – 2 · C y = x – 4
2 All gradients are 1. Intercepts: (0, 8) · (0, –1.5) · (0, 5) · (0, –3)
3 a) k = 5 · b) (5, 3), (–1, –3), (–4, –6), (2.5, 0.5)
4 No. The gradient is the number in front of x, which is 1 (positive). The –3 only moves the line down: the y-intercept is (0, –3).

GREATER DEPTH

1 a) Always · b) Sometimes: only when c = 0 · c) Never: the gradient is always 1 · d) Always
2 a) c = 8 · b) (–8, 0) · c) Yes: 10 + 8 = 18
3 a) 6 · b) 6 × 5 = 30 square units
4 a) (–3, 0), (3, 0), (0, 3) · b) ½ × 6 × 3 = 9 square units