MATHEMATICS · GRADES 7-9

The Y-Intercept

Difficulty level: Intermediate

Mathematics: Grades 7-9

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Overview of the concept

This is how you spot the starting value in a rule or a graph, like the flat fee on a bill before any items are added, or the height of a candle before it starts burning. The intercept is the value when nothing has been added yet, the point where the graph meets the vertical axis. It tells you where you start, before any change has happened. That is how you read a bill, a graph, or a measurement, and know what was there at the very beginning.



Rule

The y-intercept: the y-intercept is the value of y when x is 0, the point where the graph crosses the y-axis.

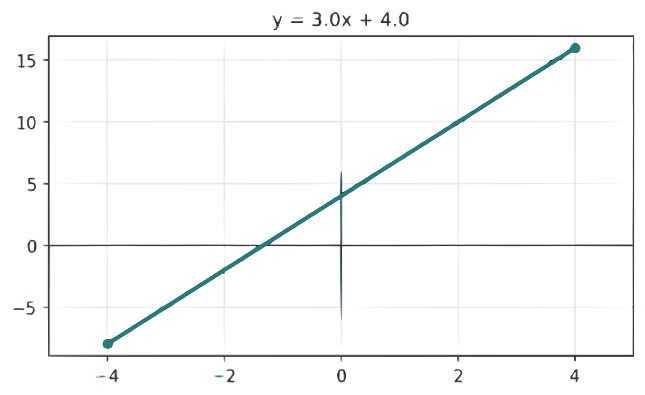
Put x = 0 into the equation to find it.

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Worked examples

EXAMPLE 1

Q Find the y-intercept of $y = 3x + 4$



SOLUTION

The y-intercept is where $x = 0$, so read off the y value there.

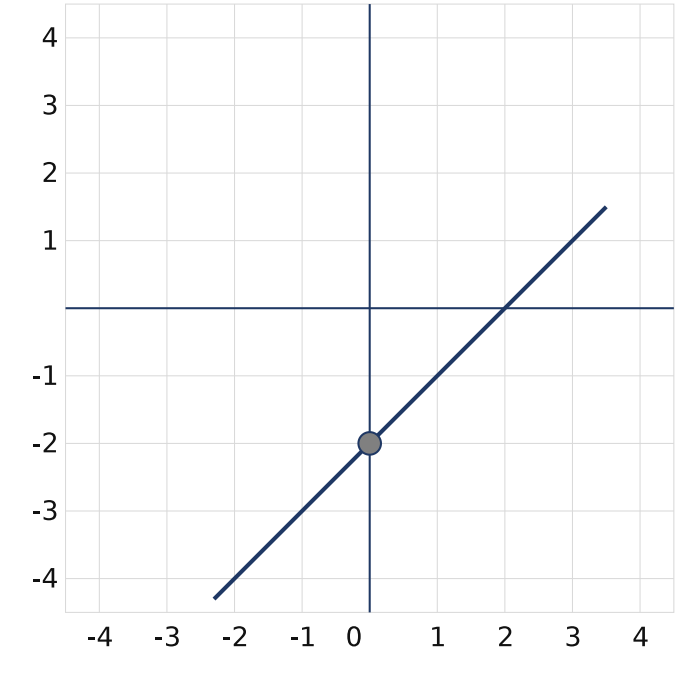
Put $x = 0$ in: $y = 3 \times 0 + 4 = 4$

The y-intercept is 4, at the point $(0, 4)$.

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EXAMPLE 2

Q Find the y-intercept of a line crossing the y-axis at - 2



SOLUTION

Crossing the y-axis means $x = 0$ there.

The crossing point is $(0, -2)$.

The y-intercept is -2.

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Practice questions

1. A phone plan costs $5 per GB plus a $6 fee, so $y = 5x + 6$. What is the y-intercept?

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2. What is the y-intercept of the line $y = -3x + 1$?

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3. A delivery costs $2 per km plus a $7 fee, so $y = 2x + 7$. What is the y-intercept?

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4 A temperature starts at -3 degrees and rises 1 degree each hour, so y = x - 3. What is the y-intercept?

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5 What is the y-intercept of the line y = 2x - 4?

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6 A bank balance starts at -1 dollar. What is the y-intercept?

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7 A candle is 2 cm tall and burns 1 cm each hour, so $y = -x + 2$. What is the y-intercept?

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8 A score starts at -5 and rises 4 points each round, so $y = 4x - 5$. What is the y-intercept?

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9 A line goes through the point (0, 9). What is the y-intercept?

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10 The line $y = 3$ is horizontal. What is the y-intercept?

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ANSWER KEY

1. 6

2. 1

3. 7

4. -3

5. -4

6. -1

7. 2

8. -5

9. 9

10. 3

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