Sets & Steps
Math Practice & Worked Solutions

Algebra 1

Horizontal, Vertical & Perpendicular Lines | Algebra 1 | 2-Topic Bundle

2-topic bundle | 192 problems | Four activity formats

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01 **Horizontal and Vertical Lines**

View individual product and its full preview

02 **Perpendicular Lines**

View individual product and its full preview

In every topic

Answer Bank Challenge	24 tasks
Grid Rounds	24 tasks
Match & Move	24 cards
Error Analysis & Strategy	24 tasks
Quick Answer Key and Full Worked Solutions	included
Teacher / Parent Use Guide and Terms of Use	included

Product previews

The following preview pages show the cover, all four activity formats, and worked examples for each included resource, in the listed order.

16 PDFs and 2 READMEs; 142 buyer PDF pages across the 2 products.

Preview pages are not included in the buyer page count. Check the list against resources you already own.

This is a fixed collection of the listed products. Purchase includes the existing individual resource files. To open a product's online preview, follow its title link and select View Preview.

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Sets & Steps
Math Practice & Worked Solutions

Algebra 1

Horizontal and Vertical Lines

Horizontal and Vertical Lines | A1-U05-P12

96 problems · Four activity formats

01	Answer Bank Challenge	24 tasks
02	Grid Rounds	24 tasks
03	Match & Move	24 cards
04	Error Analysis & Strategy	24 tasks
05	Quick Answer Key	96 answers
06	Full Worked Solutions	96 solutions
07	Teacher / Parent Use Guide	included
08	Terms of Use & License	included

Topic focus

Across 96 tasks this topic asks for an exact equation, graph description, membership set, or justified function conclusion.

8 PDFs and a README; 71 buyer pages.

The following pages use the same questions, given data, and notation as the final files. Question/card serial numbers and internal IDs are omitted in this preview only. Table values and matching responses are retained. Full answer keys are not included.

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Algebra 1

Horizontal and Vertical Lines

Name: _____ **Date:** _____ **Class:** _____

Answer each question and record the matching bank letter. Give exact values. Give the whole requested response, including any reasoning the question asks for.

For $y = \frac{7}{4}$, complete $(?, \frac{7}{4})$ when the question mark is in the free-coordinate position. Describe all possible completions.

Bank label: _____

Algebra 1

Horizontal and Vertical Lines

Name: _____ **Date:** _____ **Class:** _____

Answer each question and show your reasoning in the workspace. Give exact values rather than decimals unless the question supplies a decimal. Give the whole requested response, including any reasoning the question asks for.

Test whether the complete point $(-\frac{7}{3}, \frac{8}{5})$ belongs to $x = -\frac{7}{3}$, stating which coordinate the equation actually checks.	Test whether the complete point $(0, -17)$ belongs to $y = -17$, stating which coordinate the equation actually checks.
Consider $y = \frac{19}{5}$, restricted to the nondegenerate segment with the free coordinate from -10 through -2. Is this relation a function of x? State its exact domain and range and justify using fixed versus free coordinates.	Test whether the complete point $(18, 0)$ belongs to $x = 18$, stating which coordinate the equation actually checks.
Every point in a line has y-coordinate 4, while the other coordinate is unrestricted. Write its equation and orientation.	The y-axis is a vertical line containing $(0, 2)$ and the origin. Write its constant-coordinate equation.

Algebra 1

Horizontal and Vertical Lines

Name: _____ **Date:** _____ **Class:** _____

Begin at START. Answer the card, then find the matching final answer at the top of another card. Use the recording sheet for your reasoning. Visit each card once and continue to FINISH.

Incoming: For x = −4: $(-4, 7)$ lies on $x = -4$ because $x = -4$; y is unrestricted by the line.

Write the equation of the horizontal line through $(7, -2)$. State which coordinate remains fixed.

Your response: _____

Incoming: Using the point information at $(7, -2)$, the horizontal line is $y = -2$; the y-coordinate is fixed at -2.

Every point in a line has x-coordinate -10, while the other coordinate is unrestricted. Write its equation and orientation.

Your response: _____

Incoming: Using the partial_table information at $(\frac{17}{12}, -14)$, the horizontal line is $y = -14$; the y-coordinate is fixed at -14.

Test whether the complete point $(-4, 7)$ belongs to $x = -4$, stating which coordinate the equation actually checks.

Your response: _____

Incoming: For y = $\frac{3}{2}$: $(-\frac{5}{4}, \frac{3}{2})$ lies on $y = \frac{3}{2}$ because $y = \frac{3}{2}$; x is unrestricted by the line.

Write the equation of the vertical line through $(-7, 2)$. State which coordinate remains fixed.

Your response: _____

Algebra 1

Horizontal and Vertical Lines

Name: _____ **Date:** _____ **Class:** _____

Evaluate the supplied statement or method. Say whether it is correct, repair it if it is not, and verify the result exactly. Not every prompt contains an error.

A student says the horizontal line through $(4, -3)$ is $x = 4$. Identify the swapped coordinate and repair the equation.

Consider $x = 18$, restricted to the nondegenerate segment with the free coordinate from 1 through 9. Is this relation a function of x? State its exact domain and range and justify using fixed versus free coordinates.

A student claims $(\frac{3}{2}, -4)$ cannot lie on $y = -4$ because its x-coordinate is fractional. Repair the membership reasoning.

Choose and justify a method before solving (identify the fixed coordinate, use point membership, or compare graph orientation). Then complete the task: Can any value replace the question mark in $(?, \frac{8}{3})$ to place the point on $y = -\frac{27}{11}$? Use the already displayed fixed-coordinate entry.

Horizontal and Vertical Lines

Full Worked Solutions - excerpt

Worked example

Problem. For $y = \frac{7}{4}$, complete $(?, \frac{7}{4})$ when the question mark is in the free-coordinate position. Describe all possible completions.

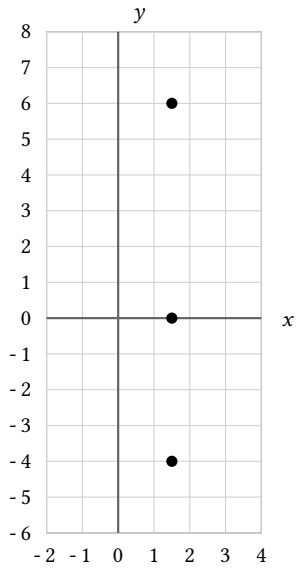
Answer. For y = $\frac{7}{4}$: Every point $(x, \frac{7}{4})$ lies on $y = \frac{7}{4}$; the missing x may be any real number.

Explanation and check.

The required coordinate already equals $\frac{7}{4}$. Every real value of the missing free coordinate therefore gives another member.

Worked example

Problem. Graph the exact fractional-coordinate line $x = \frac{3}{2}$ on $a1$-unit grid without rounding. Give three points that keep the required coordinate fixed.



Answer. For x = $\frac{3}{2}$, plot $(\frac{3}{2}, -4), (\frac{3}{2}, 0)$, and $(\frac{3}{2}, 6)$, then extend the vertical line up and down.

Explanation and check.

The fixed coordinate remains exactly $\frac{3}{2}$ even when it lies between integer grid labels; each listed pair satisfies $x = \frac{3}{2}$.

Sets & Steps
Math Practice & Worked Solutions

Algebra 1

Perpendicular Lines

Equations of Parallel and Perpendicular Lines | A1-U05-P14

96 problems · Four activity formats

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Algebra 1

Perpendicular Lines

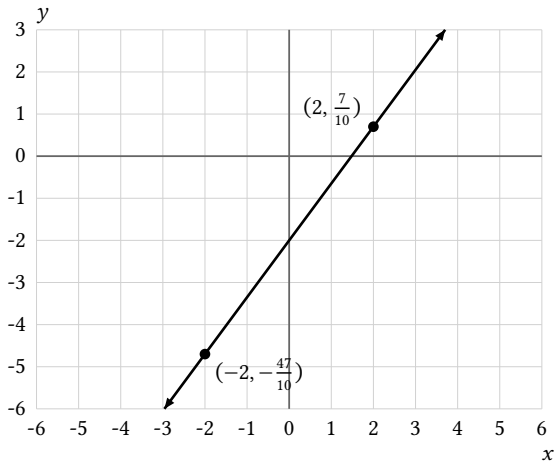
Name: _____ **Date:** _____ **Class:** _____

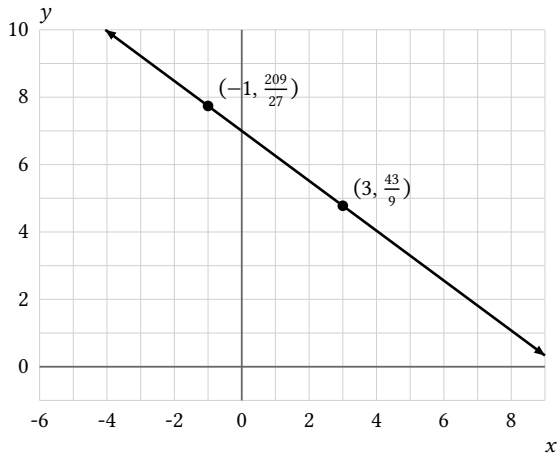
Answer each question and record the matching bank letter. Give exact values. A value without its unit is not a complete answer.

Construct the exact line through $(-1, 5)$ perpendicular to the reference $y - 7 = -3(x + 2)$. Show how the direction exception or negative reciprocal is used.

Bank label: _____

Determine whether line A through $(-2, -\frac{47}{10})$ and $(2, \frac{7}{10})$ and line B through $(-1, \frac{209}{27})$ and $(3, \frac{43}{9})$ are perpendicular. Recover both exact directions and account for axis-parallel exceptions.





Bank label: _____

Algebra 1

Perpendicular Lines

Name: _____ **Date:** _____ **Class:** _____

Answer each question and show your reasoning in the workspace. Give exact values rather than decimals unless the question supplies a decimal. A value without its unit is not a complete answer.

Complete the second point $(u, 10)$ so its line with $(0, -3)$ is perpendicular to the reference direction. Determine u. The reference is parallel to $y = -\frac{5}{6}x$. Reject a repeated-point result.	Reference: $y = \frac{9}{7}x - 1$. Candidate: $y = (\frac{4}{7}t + \frac{1}{7})x + 7$. Find t so the lines are perpendicular.
A line perpendicular to the reference direction must pass through $(-\frac{7}{3}, 5)$ and $(\frac{13}{6}, u)$. Recover u. The reference is parallel to vertical line $x = \frac{11}{4}$. Reject a repeated-point result.	Construct the exact line through $(-6, \frac{5}{2})$ perpendicular to the reference $2y = 5$. Show how the direction exception or negative reciprocal is used.
Construct the exact line through $(1, 4)$ perpendicular to the reference $x = -5$. Show how the direction exception or negative reciprocal is used.	Complete the second point $(u, 6)$ so its line with $(7, -4)$ is perpendicular to the reference direction. Determine u. The reference is parallel to $y = 0x$. Reject a repeated-point result.

Algebra 1

Perpendicular Lines

Name: _____ **Date:** _____ **Class:** _____

Begin at START. Answer the card, then find the matching final answer at the top of another card. Use the recording sheet for your reasoning. Visit each card once and continue to FINISH.

Incoming: u = -7; the completed second point is $(5, -7)$.

Construct the exact line through $(8, -8)$ perpendicular to the reference $y - \frac{33}{4} = -\frac{13}{8}(x + 2)$. Show how the direction exception or negative reciprocal is used.

Your response: _____

Incoming: The perpendicular line through $(8, -8)$ is $y = \frac{8}{13}x - \frac{168}{13}$.

The displacement $\langle 4, -1 \rangle$ descends as it moves right. Make a clockwise quarter-turn and explain why the resulting direction is perpendicular.

Your response: _____

Incoming: u = 1; the completed second point is $(1, 7)$.

A line perpendicular to the reference direction must pass through $(0, 3)$ and $(5, u)$. Recover u. The reference is parallel to $y = \frac{1}{2}x$. Reject a repeated-point result.

Your response: _____

Incoming: u = $\frac{6733}{2205}$; the completed second point is $(-\frac{17}{7}, \frac{6733}{2205})$.

Reference: $y = \frac{1}{2}x - 2$. Candidate: $y = (\frac{3}{2}t - \frac{1}{2})x + 6$. Find t so the lines are perpendicular.

Your response: _____

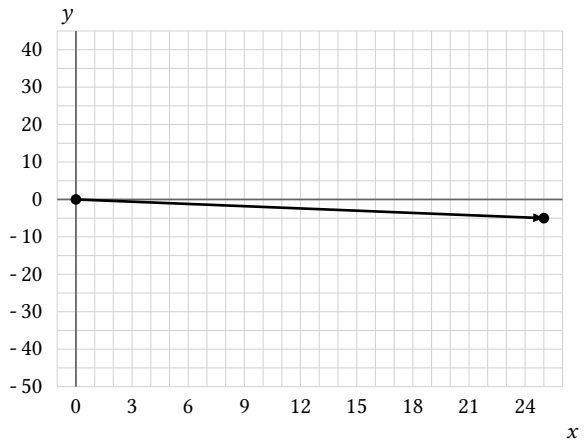
Algebra 1

Perpendicular Lines

Name: _____ **Date:** _____ **Class:** _____

Evaluate the supplied statement or method. Say whether it is correct, repair it if it is not, and verify the result exactly. Not every prompt contains an error.

Evidence: A graph uses x-scale 1 per tick and y-scale 5 per tick. A moves 1 tick right and 1 up; B moves 25 ticks right and 1 down. Judge the perpendicularity claim from coordinate evidence, and explain any effect of plotting scale.



Perpendicular Lines

Full Worked Solutions - excerpt

Worked example

Problem. Construct the exact line through $(-1, 5)$ perpendicular to the reference $y - 7 = -3(x + 2)$. Show how the direction exception or negative reciprocal is used.

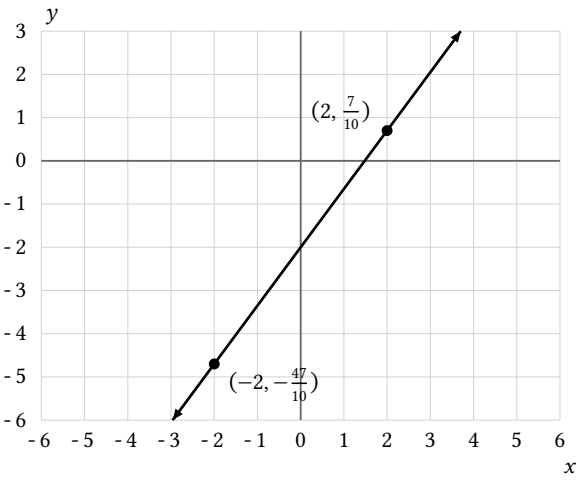
Answer. The perpendicular line through $(-1, 5)$ is $y = \frac{1}{3}x + \frac{16}{3}$.

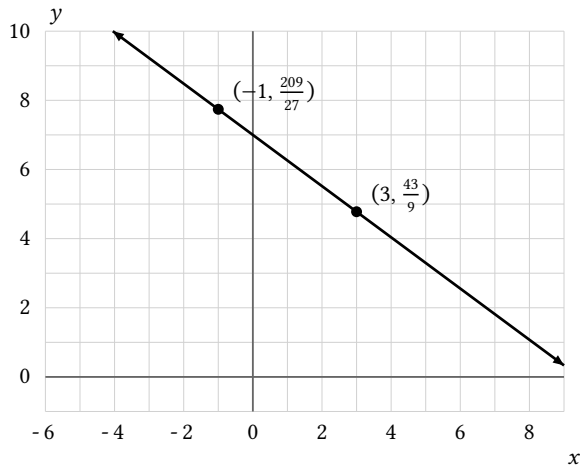
Explanation and check.

Use the coefficient in point-slope form as the reference direction and take its negative reciprocal. The perpendicular slope is $\frac{1}{3}$; imposing the point gives intercept $\frac{16}{3}$.

Worked example

Problem. Determine whether line A through $(-2, -\frac{47}{10})$ and $(2, \frac{7}{10})$ and line B through $(-1, \frac{209}{27})$ and $(3, \frac{43}{9})$ are perpendicular. Recover both exact directions and account for axis-parallel exceptions.





Answer. For y = $\frac{27}{20}x - 2$ and $y = -\frac{20}{27}x + 7$, the verdict is perpendicular. The exact slope product is -1, equal to -1.

Explanation and check.

The exact slope product is -1, equal to -1.