

Algebra 1 Concepts Student Must Know for the Diagnostic T

Lesson 102 | Algebra I | Linear equations • Systems of equations and inequalities • Quadratic equations and graphs

<https://www.youtube.com/watch?v=MfGmUW4RSs4>

Related review: exact coverage needs teacher confirmation.

Name: _____ Date: _____ Show your reasoning.

01

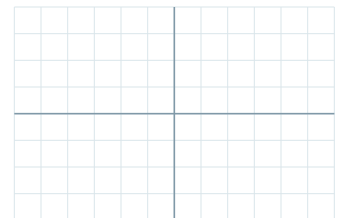
Solve $3x + 10 = 34$.

02

Solve the system $x + y = 16$, $2x - y = -7$.

03

For $y = 7 \cdot x^2 - 11$, find the vertex, axis, range, and both x-intercepts; sketch the graph.



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04

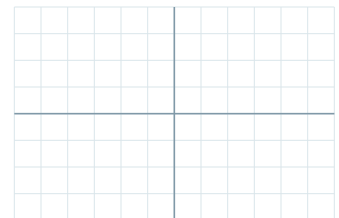
Solve $14x + 8 = 106$.

05

Solve the system $x + y = 15$, $7x - y = 17$.

06

For $y = 2 \cdot x^2 + 8 \cdot x - 2$, find the vertex, axis, range, and both x-intercepts; sketch the graph.



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01

Solve $3x + 10 = 34$.

Subtract 10: $3x = 24$. Divide by 3: $x = 8$.

02

Solve the system $x + y = 16$, $2x - y = -7$.

Add the equations: $3x = 9$, so $x = 3$. Substitute into $x + y = 16$: $y = 13$.

03

For $y = 7x^2 - 11$, find the vertex, axis, range, and both x-intercepts; sketch the graph.

Complete the square: $y = 7(x - (0))^2 - 11$. Vertex $(0, -11)$; axis $x = 0$; range $y \geq -11$. Solve $(x - (0))^2 = 11/7$: $x = 0 \pm \sqrt{(11/7)}$.

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04

Solve $14x + 8 = 106$.

Subtract 8: $14x = 98$. Divide by 14: $x = 7$.

05

Solve the system $x + y = 15$, $7x - y = 17$.

Add the equations: $8x = 32$, so $x = 4$. Substitute into $x + y = 15$: $y = 11$.

06

For $y = 2x^2 + 8x - 2$, find the vertex, axis, range, and both x-intercepts; sketch the graph.

Complete the square: $y = 2(x - (-2))^2 - 10$. Vertex $(-2, -10)$; axis $x = -2$; range $y \geq -10$. Solve $(x - (-2))^2 = 10/2$: $x = -2 \pm \sqrt{(10/2)}$.