

Watch. Practice. Understand. | Lesson 102

Algebra 1 Concepts Student Must Know for the Diagnostic T

Watch the matching video: <https://www.youtube.com/watch?v=MfGmUW4RSs4>

Practice focus: Linear equations

Related course review; confirm topics with your teacher.

Name: _____ Date: _____ Show your reasoning and check units.

01 Solve $5x - 7 = 28$.

02 Solve $3(2x - 1) = 4x + 9$.

03 Solve $(x + 2)/3 = (x - 4)/2$.

04 A gym charges \$25 plus \$8 per visit. A bill is \$89. How many visits?

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Practice focus: Systems of equations and inequalities

Related course review; confirm topics with your teacher.

Name: _____ Date: _____ Show your reasoning and check units.

05 Solve $x + y = 9$ and $2x - y = 6$.

06 Solve $3x + 2y = 16$ and $x - y = 2$.

07 Does $(2, 3)$ satisfy $y \geq x + 1$ and $x + y < 8$?

08 A shop sells 20 drinks: \$3 juice and \$2 water. Revenue is \$48. Find each count.

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Watch the matching video: <https://www.youtube.com/watch?v=MfGmUW4RSs4>

Practice focus: Quadratic equations and graphs

Related course review; confirm topics with your teacher.

Name: _____ Date: _____ Show your reasoning and check units.

09 Solve $x^2 - 7x + 12 = 0$.

10 Solve $x^2 + 4x - 1 = 0$ exactly.

11 Find the vertex, axis and minimum of $y = 2(x - 3)^2 - 8$.

12 A rectangle has area 60 m^2 and length 4 m more than width. Find its dimensions.

Worked answers | Lesson 102

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01 Solve $5x - 7 = 28$.

Add 7: $5x = 35$. Divide by 5: $x = 7$.

02 Solve $3(2x - 1) = 4x + 9$.

Expand: $6x - 3 = 4x + 9$. Thus $2x = 12$, so $x = 6$.

03 Solve $(x + 2)/3 = (x - 4)/2$.

Multiply by 6: $2x + 4 = 3x - 12$. Hence $x = 16$.

04 A gym charges \$25 plus \$8 per visit. A bill is \$89. How many visits?

$25 + 8v = 89$, so $8v = 64$ and $v = 8$ visits.

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05 Solve $x + y = 9$ and $2x - y = 6$.

Add equations: $3x = 15$, so $x = 5$ and $y = 4$.

06 Solve $3x + 2y = 16$ and $x - y = 2$.

$y = x - 2$. Then $5x - 4 = 16$, so $x = 4$ and $y = 2$.

07 Does $(2, 3)$ satisfy $y \geq x + 1$ and $x + y < 8$?

$3 \geq 3$ and $5 < 8$ are both true, so yes.

08 A shop sells 20 drinks: \$3 juice and \$2 water. Revenue is \$48. Find each count.

$j + w = 20$ and $3j + 2w = 48$. Subtract twice the first equation: $j = 8$, $w = 12$.

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09 Solve $x^2 - 7x + 12 = 0$.

Factor: $(x - 3)(x - 4) = 0$. Roots: 3 and 4.

10 Solve $x^2 + 4x - 1 = 0$ exactly.

Complete the square: $(x + 2)^2 = 5$. Thus $x = -2 \pm \sqrt{5}$.

11 Find the vertex, axis and minimum of $y = 2(x - 3)^2 - 8$.

Vertex (3, -8); axis $x = 3$. Since $2 > 0$, minimum is -8.

12 A rectangle has area 60 m^2 and length 4 m more than width. Find its dimensions.

$w(w + 4) = 60$, so $(w + 10)(w - 6) = 0$. Reject -10: width 6 m, length 10 m.