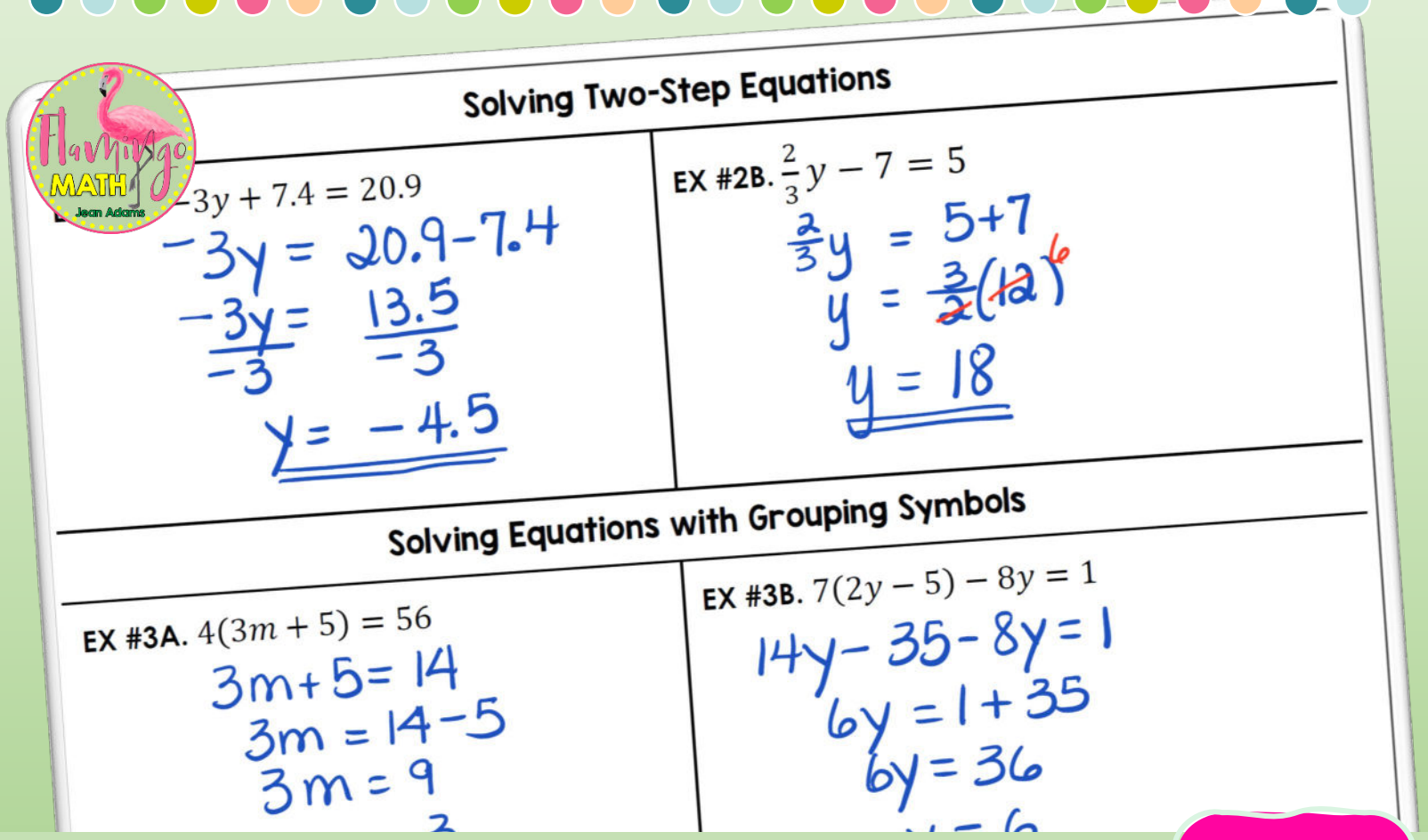
Algebra 2 Honors

Solving Equations



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1.3

Lesson 3: Solving Equations

_____ – a statement that two expressions are equal

_____ – all the values of the variable that make the equation true.

_____ – operations that undo each other

_____ – an equation that is true for every value of the variable

_____ – an equation that uses at least two different letters as variables

Properties of Equality

Let *a*, *b*, and *c* represent real numbers

Property	Definition	Example
Reflexive	$a = a$	
Symmetric	If $a = b$, then $b = a$	
Transitive	If $a = b$ and $b = c$, then $a = b$	
Substitution	If $a = b$, then you can replace *a* with *b* and vice versa	

Solving One-Step Equations

EX #1A. Solve. $x + 9 = -15$

EX #1B. Solve. $12b = 18$

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Solving Two-Step Equations

EX #2A. $-3y + 7.4 = 20.9$

EX #2B. $\frac{2}{3}y - 7 = 5$

Solving Equations with Grouping Symbols

EX #3A. $4(3m + 5) = 56$

EX #3B. $7(2y - 5) - 8y = 1$

EX #3C. $\frac{1}{3}(9w + 15) = -7$

Solving More Difficult Equations

EX #4A. $-3(2k + 5) = -9(k + 4)$

EX #4B. $3(2x - 1) - 2(3x + 4) = 11x$

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EX #4C. $\frac{2x - 5}{4} = \frac{-3}{8}$

Application

EX #5: A formal garden can incorporate hundreds of thousands of brightly-colored flowers as well as grass, gravel, and fountains to form designs. Suppose a garden has a perimeter of 320 meters. What would the dimensions of the garden be if the length is 3 times the width?

Solving Literal Equations

EX #6: Solve each literal equation for the specified variable.

A. Standard Form of a Line. Solve for *y*: $Ax + By = C$

B. The equation $K = C + 273$ relates the temperatures for two different scales. *K* is Kelvins and *C* is Celsius degrees. What is *C* in terms of *K* ?

A. $7x + 6 - 4x = 12 + 3x - 8$

B. $2x + 3(x - 4) = 2(2x - 6) + x$

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NOTES

Name _____ Date_____

I.3

Solving Equations Practice

Problems 1 – 12, Solve each equation.

1. $1.3x + 5 = -5.4$	**2.** $24 - k = 16$
3. $7y - 8 - 3y = 40$	**4.** $-7m + 9 = m + 1$
5. $-3(5x - 2) = 6$	**6.** $2(y - 4) = 5(y - 7)$
7. $-7y - 24 = -129$	**8.** $-6x + 5 = -6x - 9$
9. $\frac{4}{m} = \frac{2}{9}$	**10.** $8 - \frac{x}{2} = -6$
11. $6 - 2(3x - 1) = 5 + 3(2x + 4)$	**12.** $4.5 - x + 0$

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Problems 13 – 16, Solve each equation for the indicated variable.

13. $s = \frac{1}{2}gt^2$; for g	**14.** $A = \frac{1}{2}h\,(b_1 + b_2)$; for h
15. $P = 2L + 2W$; for W	**16.** $Ax + By = C$; for y

Problems 17 – 20, write an equation to solve each problem.

17. The length of a rectangle is 3 inches greater than its width. The perimeter is 28 inches. Find the dimensions of the rectangle.

18. Two planes left an airport at the same time. One flew north at a set speed and the other flew south at one-and-a-half times the speed of the other plane. Three hours later the planes were 2400 miles apart. How fast was each plane flying?

19. The measure of the supplement of an angle is 24° more than three times the measure of the original angle. Find the measures of the angles.

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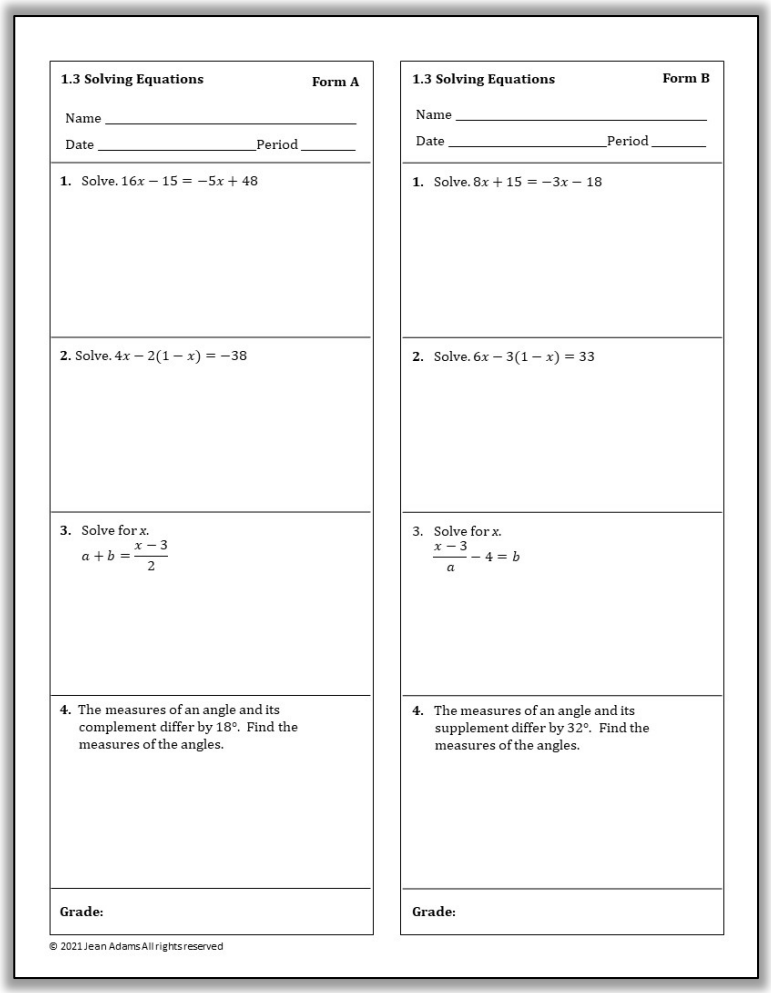
Practice Sets

Lesson Warm-Ups



1.3 Solving Equations **Form A**

Name _____

Date _____ Period _____

1. Solve. $16x - 15 = -5x + 48$

2. Solve. $4x - 2(1 - x) = -38$

3. Solve for x.

$a + b = \frac{x - 3}{2}$

4. The measures of an angle and its complement differ by 18°. Find the measures of the angles.

Grade:

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1.3 Solving Equations **Form B**

Name _____

Date _____ Period _____

1. Solve. $8x + 15 = -3x - 18$

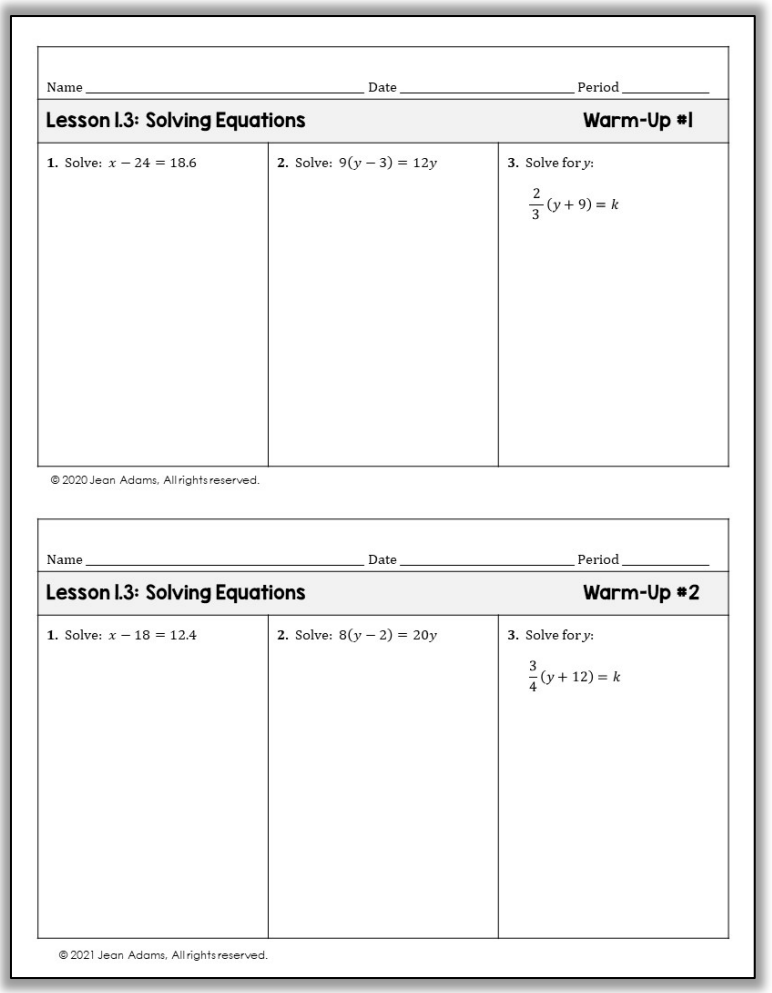
2. Solve. $6x - 3(1 - x) = 33$

3. Solve for x.

$\frac{x - 3}{a} - 4 = b$

4. The measures of an angle and its supplement differ by 32°. Find the measures of the angles.

Grade:



Name _____ Date _____ Period _____

Lesson I.3: Solving Equations **Warm-Up #1**

1. Solve: $x - 24 = 18.6$	**2.** Solve: $9(y - 3) = 12y$	**3.** Solve for y: $\frac{2}{3}(y + 9) = k$

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Name _____ Date _____ Period _____

Lesson I.3: Solving Equations **Warm-Up #2**

1. Solve: $x - 18 = 12.4$	**2.** Solve: $8(y - 2) = 20y$	**3.** Solve for y: $\frac{3}{4}(y + 12) = k$

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Daily Lesson Quiz