

# Solving Linear Equations Involving Brackets and Fractions **Extension**

1. Solve  $2(t + 1) = t + 3$

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2. Solve  $5a = 2(2a - 2)$

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3. Solve  $\frac{(4x + 1)}{2} = x + 2$

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

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5. Solve  $x + 3 = \frac{(x + 5)}{9}$

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6. Solve  $2b - 2 = \frac{2b - 4}{5}$

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7. Solve  $2(k + 5) = k + 20$

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8. Solve  $2(j + 4) = 2(2j - 3)$

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# Solving Linear Equations Involving Brackets and Fractions **Extension**

## Answers

1.  $t = 1$

2.  $a = -4$

3.  $x = 1.5$

4.  $x = 14$

5.  $x = \frac{-11}{4}$  or  $-2.75$

6.  $b = \frac{3}{4}$  or  $0.75$

7.  $k = 10$

8.  $j = 7$

# Solving Linear Equations Mixed Skills

1. Solve  $4n = 24$

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2. Solve  $2(t + 8) = 22$

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3. Solve  $3x + 3 = 2x + 9$

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4. Solve  $2t - 7 = 3$

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5. Solve  $2a - 3 = 24 - a$

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6. Solve  $\frac{5b - 8}{3} = 9$

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7. Solve  $12k + 13 = 8k - 9$

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8. Solve  $8y + 1 = 5 - y$

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9. Solve  $\frac{a}{3} + 4 = 9$

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10. Solve  $7(a + 2) = 3(2a + 10)$

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# Solving Linear Equations **Mixed Skills Answers**

1.  $n = 6$

2.  $t = 3$

3.  $x = 6$

4.  $t = 5$

5.  $a = 9$

6.  $b = 7$

7.  $k = -5.5$

8.  $y = \frac{4}{9}$

9.  $a = 15$

10.  $a = 16$

# Solving Linear Equations Mixed Skills

1. Solve  $4n = 24$

	$4n = 24$	
$\div 4$	$n =$	$\div 4$

2. Solve  $2(t + 8) = 22$

	$2(t + 8) = 22$	
	$2t + 16 = 22$	
$- 16$		$- 16$
$\div 2$	$t =$	$\div 2$

3. Solve  $3x + 3 = 2x + 9$

	$3x + 3 = 2x + 9$	
$- 2x$		$- 2x$
$- 3$	$x =$	$- 3$

4. Solve  $2t - 7 = 3$

	$2t - 7 = 3$	
$+ 7$		$+ 7$
$\div 2$	$t =$	$\div 2$

5. Solve  $2a - 3 = 24 - a$

	$2a - 3 = 24 - a$	
$+ a$		$+ a$
$+ 3$		$+ 3$
	$a =$	

6. Solve  $\frac{5b - 8}{3} = 9$

	$\frac{5b - 8}{3} = 9$	
$\times 3$		$\times 3$
$+ 8$		$+ 8$
$\div 5$	$b =$	$\div 5$

7. Solve  $12k + 13 = 8k - 9$

	$12k + 13 = 8k - 9$	
$- 8k$		$- 8k$
$- 13$		$- 13$
	$k =$	

8. Solve  $8y + 1 = 5 - y$

	$8y + 1 = 5 - y$	
$+ y$		$+ y$
$- 1$		$- 1$
	$y =$	

9. Solve  $\frac{a}{3} + 4 = 9$

	$\frac{a}{3} + 4 = 9$	
$- 4$		$- 4$
$\times 3$		$\times 3$
	$x =$	

10. Solve  $7(a + 2) = 3(2a + 10)$

	$7(a + 2) = 3(2a + 10)$	
$- 6a$		$- 6a$
$- 14$		$- 14$
	$a =$	



# Solving Linear Equations **Mixed Skills Answers**

1.  $n = 6$

2.  $t = 3$

3.  $x = 6$

4.  $t = 5$

5.  $a = 9$

6.  $b = 7$

7.  $k = -5.5$

8.  $y = \frac{4}{9}$

9.  $a = 15$

10.  $a = 16$

# Solving Linear Equations Mixed Skills

1. Solve  $4n = 24$

	$4n = 24$	
÷	$n =$	÷

2. Solve  $2(t + 8) = 22$

	$2(t + 8) = 22$	
-		-
÷	$t =$	÷

3. Solve  $3x + 3 = 2x + 9$

	$3x + 3 = 2x + 9$	
-		-
-	$x =$	-

4. Solve  $2t - 7 = 3$

	$2t - 7 = 3$	
+		+
÷	$t =$	÷

5. Solve  $2a - 3 = 24 - a$

	$2a - 3 = 24 - a$	
+		+
+		+
÷	$a =$	÷

6. Solve  $\frac{5b - 8}{3} = 9$

	$\frac{5b - 8}{3} = 9$	
×		×
+		+
÷	$b =$	÷

7. Solve  $12k + 13 = 8k - 9$

	$12k + 13 = 8k - 9$	
-		-
-		-
	$k =$	

8. Solve  $8y + 1 = 5 - y$

	$8y + 1 = 5 - y$	
+		+
-		-
	$y =$	

9. Solve  $\frac{a}{3} + 4 = 9$

	$\frac{a}{3} + 4 = 9$	
-		-
x		x
	$x =$	

10. Solve  $7(a + 2) = 3(2a + 10)$

	$7(a + 2) = 3(2a + 10)$	
Expand		
-		-
-	$a =$	-

# Solving Linear Equations **Mixed Skills Answers**

1.  $n = 6$

2.  $t = 3$

3.  $x = 6$

4.  $t = 5$

5.  $a = 9$

6.  $b = 7$

7.  $k = -5.5$

8.  $y = \frac{4}{9}$

9.  $a = 15$

10.  $a = 16$

Start

$$a + 4 = 12$$

$$a = 8$$

$$4x + 3 = 9$$

$$x = 1.5$$

$$2(y + 1) = 6$$

$$y = 2$$

$$4a + 8 = 2a + 6$$

$$a = -1$$

$$2k - 7 = 11$$

$$k = 9$$

$$\frac{2x + 5}{9} = 3$$

$$x = 11$$

$$5k + 5 = 3k - 10$$

$$k = -7.5$$

$$2(x + 3) = 7$$

Linear Equations Mixed Skills

$$x = 0.5$$

$$4x = 24$$

Linear Equations Mixed Skills

$$x = 6$$

$$3(3 + x) = 2(x + 1)$$

Linear Equations Mixed Skills

$$x = -7$$

$$2w = 18$$

Linear Equations Mixed Skills

$$w = 9$$

$$4b + 10 = b + 6$$

Linear Equations Mixed Skills

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

$$6y - 5 = 3y - 20$$

Linear Equations Mixed Skills

$$y = -5$$

$$2k + 6 = 11$$

Linear Equations Mixed Skills

$$k = 2.5$$

$$\frac{3b - 4}{7} = 2$$

Linear Equations Mixed Skills

$$b = 6$$

$$5w = 2w + 6$$

Linear Equations Mixed Skills

$$w = 2$$

$$2(2y - 15) = y + 3$$

Linear Equations Mixed Skills

$$y = 11$$

$$2a - 3 = 4$$

Linear Equations Mixed Skills

$$a = 3.5$$

$$\frac{x}{3} - 2 = 12$$

Linear Equations Mixed Skills

$$x = 42$$

$$8y + 1 = 5 - y$$

Linear Equations Mixed Skills

$$y = \frac{4}{9}$$

$$6k + 3 = 21$$

Linear Equations Mixed Skills

$$k = 3$$

$$2w = 18 - w$$

Linear Equations Mixed Skills

$$w = 6$$

$$10a = 8a + 12$$

Linear Equations Mixed Skills

$$a = 6$$

$$8y - 7 = 49$$

Linear Equations Mixed Skills

$$y = 7$$

$$\frac{y}{3} + 1 = 12$$

Linear Equations Mixed Skills

$$y = 33$$

$$2w + 4 = 3w$$

Linear Equations Mixed Skills

$$w = 4$$

$$2(5k - 3) = 14$$

Linear Equations Mixed Skills

$$k = 2$$

$$2a + 3 = -3$$

Linear Equations Mixed Skills

$$a = -3$$

$$9b = b + 16$$

Linear Equations Mixed Skills

$$b = 2$$

End



Start

$$a + 4 = 12$$

$$a = 8$$

$$4x + 3 = 9$$

$$x = 1.5$$

$$2(y + 1) = 6$$

$$y = 2$$

$$4a + 8 = 2a + 6$$

$$a = -1$$

$$2k - 7 = 11$$

$$k = 9$$

$$\frac{2x + 5}{9} = 3$$

$$x = 11$$

$$5k + 5 = 3k - 10$$

$$k = -7.5$$

$$2(x + 3) = 7$$

Linear Equations Mixed Skills

$$x = 0.5$$

$$4x = 24$$

Linear Equations Mixed Skills

$$x = 6$$

$$3(3 + x) = 2(x + 1)$$

Linear Equations Mixed Skills

$$x = -7$$

$$2w = 18$$

Linear Equations Mixed Skills

$$w = 9$$

$$4b + 10 = b + 6$$

Linear Equations Mixed Skills

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

$$6y - 5 = 3y - 20$$

Linear Equations Mixed Skills

$$y = -5$$

$$2k + 6 = 11$$

Linear Equations Mixed Skills

$$k = 2.5$$

$$\frac{3b - 4}{7} = 2$$

Linear Equations Mixed Skills

$$b = 6$$

$$5w = 2w + 6$$

Linear Equations Mixed Skills

$$w = 2$$

$$2(2y - 15) = y + 3$$

Linear Equations Mixed Skills

$$y = 11$$

$$2a - 3 = 4$$

Linear Equations Mixed Skills

$$a = 3.5$$

$$\frac{x}{3} - 2 = 12$$

Linear Equations Mixed Skills

$$x = 42$$

$$8y + 1 = 5 - y$$

Linear Equations Mixed Skills

$$y = \frac{4}{9}$$

$$6k + 3 = 21$$

Linear Equations Mixed Skills

$$k = 3$$

$$2w = 18 - w$$

Linear Equations Mixed Skills

$$w = 6$$

$$10a = 8a + 12$$

Linear Equations Mixed Skills

$$a = 6$$

$$8y - 7 = 49$$

Linear Equations Mixed Skills

$$y = 7$$

$$\frac{y}{3} + 1 = 12$$

Linear Equations Mixed Skills

$$y = 33$$

$$2w + 4 = 3w$$

Linear Equations Mixed Skills

$$w = 4$$

$$2(5k - 3) = 14$$

Linear Equations Mixed Skills

$$k = 2$$

$$2a + 3 = -3$$

Linear Equations Mixed Skills

$$a = -3$$

$$9b = b + 16$$

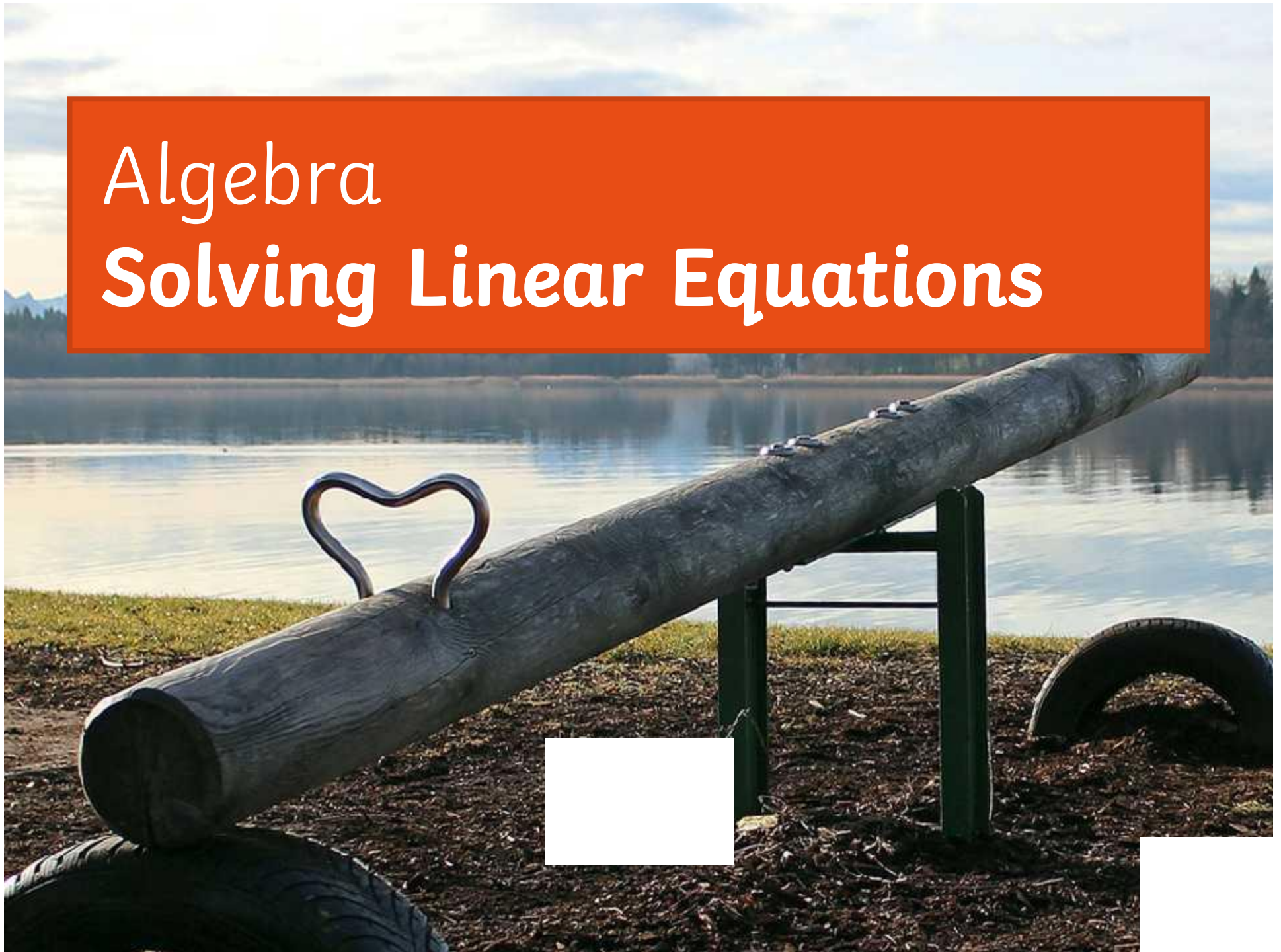
Linear Equations Mixed Skills

$$b = 2$$

End

# Algebra

## Solving Linear Equations



# Learning Objective

To solve more complicated linear equations.

## Success Criteria

- Solve linear equations with an unknown on both sides.
- Solve linear equations with brackets and an unknown on both sides.
- Solve linear equations with fractions and an unknown on both sides.

# Starter: Snowballs

$$4x + 2 = 20$$

How much can you say?

On your scrap paper, write down anything you can about this equation.

You have 1 minute!

Start

Stop



# Solving Linear Equations with an Unknown on Both Sides

Solve the following equation:  $2a = a + 3$

What is the question asking? It is asking us to find out the value of  $a$ . Something multiplied by 2 is equal to adding 3 to the same number.

Your aim is to gather the letters on one side and numbers on the other. Remember you are only able to cancel one term or number at a time and you must use its inverse when cancelling.

$$\begin{array}{c} 2a = a + 3 \\ -a \left[ \begin{array}{c} a = 3 \end{array} \right] -a \end{array}$$

Final answer:  $a = 3$



# Solving Linear Equations with an Unknown on Both Sides

Solve the following equation:  $5x + 4 = 3x + 10$

What is the question asking? It is asking us to find out the value of  $x$ . Something multiplied by 5 then add 4 is equal to multiplying the same number by 3 and then adding 10.

Remember your aim is to gather letters on one side and numbers on the other.

$$5x + 4 = 3x + 10$$

$-3x$	$2x + 4 = 10$	$-3x$
$-4$	$2x = 6$	$-4$
$\div 2$	$x = 3$	$\div 2$

Final answer:  $x = 3$

# Solving Linear Equations with an Unknown on Both Sides

Solve each of the following equations:

1.  $3a = 9 + 2a$        $a = 9$

2.  $7p = 60 - 3p$        $p = 6$

3.  $2w = 18 - w$        $w = 6$

4.  $2x - 3 = 3 - 4x$        $x = 1$

5.  $3x + 2 = x + 12$        $x = 5$

Hide  
answers

# Solving Linear Equations Involving Brackets and an Unknown on Both Sides

Solve the following equation:  $3(2t - 4) = 4t - 2$

**Step 1:** Expand the bracket.  $6t - 12 = 4t - 2$

**Step 2:** Use the Funnel Method to solve your equation.

$$\begin{array}{r|l|l} & 6t - 12 = 4t - 2 & \\ +12 & 6t = 4t + 10 & +12 \\ -4t & 2t = 10 & -4t \\ \div 2 & t = 5 & \div 2 \end{array}$$

Final answer:  $t = 5$

# Solving Linear Equations Involving Fractions and an Unknown on Both Sides

Solve the following equation:  $y + 2 = \frac{y}{2} + 1$

Note: to cancel out the fraction, we must multiply by the denominator.

$$\begin{array}{r|l|l} & y + 2 = \frac{y}{2} + 1 & \\ -1 & y + 1 = \frac{y}{2} & -1 \\ \times 2 & 2y + 2 = y & \times 2 \\ -2 & 2y = y - 2 & -2 \\ -y & y = -2 & -y \end{array}$$

Final answer:  $y = -2$

# Plenary: Loop Cards

Have a go at the **Unknowns on Both Sides Loop Cards**.

Linear Equations Unknown on Both Sides	
Start	$2x + 1 = x + 3$

Linear Equations Unknown on Both Sides	
$x = 2$	$5x + 4 = 3x + 10$

Linear Equations Unknown on Both Sides	
$x = 3$	$4a + 8 = 2a + 6$





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## Algebra Solving Linear Equations Teaching Ideas

**Learning Objective:** To solve more complicated linear equations.

- Success Criteria:**
- Solve linear equations with an unknown on both sides.
  - Solve linear equations with brackets and an unknown on both sides.
  - Solve linear equations with fractions and an unknown on both sides.

**Context:** This lesson is designed to be the second lesson on solving linear equations and focuses on solving them with an unknown on both sides. Students should have a confident understanding of basic numeracy, including inverse operations as well as knowledge of how to expand a single bracket. Additionally, students should be secure in solving linear equations with an unknown on one side.

### Starter

#### Snowballs

The starter is an alternative way of ensuring that all students can comment on how to solve a linear equation with an unknown on one side. Hand each student a scrap of paper as they come into the room and display the equation on the slide. Allow them no more than 1 minute to write down anything they can about the equation; these comments can range in complexity. For example, some may comment that the first step is to move the 2, or that it is simply an equation and you must find the value of  $x$ .

Once all students have written a comment, they pass their slip of paper to someone else who will read what is already written on the note and then make a different comment. Repeat 3 to 4 times. On the final go, invite students to share their answers. This way, students will gather a wealth of comments and should be able to, collectively, recall how to solve linear equations with an unknown on one side.

### Main Activities

#### Solving Equations with an Unknown on Both Sides

You can use **slides 4 and 5** as whole-class walkthroughs of how to solve linear equations with unknowns on both sides. This activity is designed to be discussed thoroughly with students; you should use your discretion regarding the pace of the delivery. Alternatively, you may wish to display the question first and allow students time to discuss their ideas of how to approach the question, in pairs or small groups. The whole class could then be brought back together to reinforce understanding or address misconceptions and mistakes.

**Slide 6** has 5 practice questions for students to apply what they have seen on the walkthrough. Allow students to complete these independently or in pairs. Whilst students are completing the questions, you could use this time to coach students still unsure of how to solve linear equations with an unknown on both sides. If all students are comfortable with the process, you could ask students to justify their answers to check for understanding, for example, 'Why have you done that?', 'Explain to me how you got that answer.'

## Solving Equations Involving Brackets and Fractions

You can use **slides 7 and 8** in the same way as the previous activities. Each step can be revealed with a single click so, again, you are able to work through the examples at a pace which suits the needs of your class. It is recommended that you continually check for understanding of how and why something has moved, especially because the steps are trickier and can easily be done incorrectly.

Following these activities, you may wish to use the various student-led activity sheets to help them consolidate their understanding. Sheets available include [Unknowns on Both Sides Differentiated Activity Sheets](#) or extend students with the [Brackets and Fractions Activity Sheet](#). Alternatively, the [Mixed Skills Differentiated Activity Sheets](#) and [Mixed Linear Equations Loop Cards](#) aim to bring together the two lessons on solving linear equations.

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## Plenary

Using the [Unknowns on Both Sides Loop Cards](#), hand out a card to each student. Each student will also need a whiteboard and pen or some scrap paper. Ask the student who has 'Start' on their card to read the question on their card. Allow students 30 seconds to calculate the answer to the question. If a student has the answer on their card, they must read the answer followed by the question on their card. Repeat until the students have made it round the class in a loop.



Linear Equations  
Unknown on Both Sides

Start

$$2x + 1 = x + 3$$

Linear Equations  
Unknown on Both Sides

$$x = 2$$

$$5x + 4 = 3x + 10$$

Linear Equations  
Unknown on Both Sides

$$x = 3$$

$$4a + 8 = 2a + 6$$

Linear Equations  
Unknown on Both Sides

$$a = -1$$

$$6b + 1 = b + 11$$

Linear Equations  
Unknown on Both Sides

$$b = 2$$

$$5k + 5 = 3k - 10$$

Linear Equations  
Unknown on Both Sides

$$k = -7.5$$

$$7r - 5 = 5r - 3$$

Linear Equations  
Unknown on Both Sides

$$r = 1$$

$$6y - 5 = 3y - 20$$

Linear Equations  
Unknown on Both Sides

$$y = -5$$

$$7t - 2 = 3t + 10$$

Linear Equations  
Unknown on Both Sides

$$t = 3$$

$$4b + 10 = b + 6$$

Linear Equations  
Unknown on Both Sides

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

$$5k = 2k + 6$$

Linear Equations  
Unknown on Both Sides

$$k = 2$$

$$2a = a + 3$$

Linear Equations  
Unknown on Both Sides

$$a = 3$$

$$4x - 30 = x + 3$$

Linear Equations  
Unknown on Both Sides

$$x = 11$$

$$3x + 3 = 2x + 9$$

Linear Equations  
Unknown on Both Sides

$$x = 6$$

$$2t + 5 = t + 3$$

Linear Equations  
Unknown on Both Sides

$$t = -2$$

$$3r + 2 = 2r + 7$$

Linear Equations  
Unknown on Both Sides

$$r = 5$$

$$10y = 8y + 12$$

Linear Equations  
Unknown on Both Sides

$$y = 6$$

$$12b + 1 = 3b + 7$$

Linear Equations  
Unknown on Both Sides

$$b = \frac{6}{9} \text{ or } \frac{2}{3}$$

$$4x = 2x + 8$$

Linear Equations  
Unknown on Both Sides

$$x = 4$$

$$2a - 3 = 24 - a$$

Linear Equations  
Unknown on Both Sides

$$a = 9$$

$$25k - 10 = 10k + 8$$

Linear Equations  
Unknown on Both Sides

$$k = \frac{18}{15} \text{ or } 1.2$$

$$8y + 1 = 5 - y$$

Linear Equations  
Unknown on Both Sides

$$y = \frac{4}{9}$$

$$6a - 12 = 8a$$

Linear Equations  
Unknown on Both Sides

$$a = -6$$

$$2b = 18 - b$$

Linear Equations  
Unknown on Both Sides

$$b = 6$$

$$2r + 4 = 3r$$

Linear Equations  
Unknown on Both Sides

$$r = 4$$

$$3t = 35 - 2t$$

Linear Equations  
Unknown on Both Sides

$$t = 7$$

$$9r = r + 16$$

Linear Equations  
Unknown on Both Sides

$$r = 2$$

$$7k = 60 - 3k$$

Linear Equations  
Unknown on Both Sides

$$k = 6$$

$$4t = 60 + 10t$$

Linear Equations  
Unknown on Both Sides

$$t = -10$$

$$3a = 12 + 7a$$

Linear Equations  
Unknown on Both Sides

$$a = -3$$

End

Linear Equations  
Unknown on Both Sides

Start

$$2x + 1 = x + 3$$

Linear Equations  
Unknown on Both Sides

$$x = 2$$

$$5x + 4 = 3x + 10$$

Linear Equations  
Unknown on Both Sides

$$x = 3$$

$$4a + 8 = 2a + 6$$

Linear Equations  
Unknown on Both Sides

$$a = -1$$

$$6b + 1 = b + 11$$

Linear Equations  
Unknown on Both Sides

$$b = 2$$

$$5k + 5 = 3k - 10$$

Linear Equations  
Unknown on Both Sides

$$k = -7.5$$

$$7r - 5 = 5r - 3$$

Linear Equations  
Unknown on Both Sides

$$r = 1$$

$$6y - 5 = 3y - 20$$

Linear Equations  
Unknown on Both Sides

$$y = -5$$

$$7t - 2 = 3t + 10$$

Linear Equations  
Unknown on Both Sides

$$t = 3$$

$$4b + 10 = b + 6$$

Linear Equations  
Unknown on Both Sides

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

$$5k = 2k + 6$$

Linear Equations  
Unknown on Both Sides

$$k = 2$$

$$2a = a + 3$$

Linear Equations  
Unknown on Both Sides

$$a = 3$$

$$4x - 30 = x + 3$$

Linear Equations  
Unknown on Both Sides

$$x = 11$$

$$3x + 3 = 2x + 9$$

Linear Equations  
Unknown on Both Sides

$$x = 6$$

$$2t + 5 = t + 3$$

Linear Equations  
Unknown on Both Sides

$$t = -2$$

$$3r + 2 = 2r + 7$$

Linear Equations  
Unknown on Both Sides

$$r = 5$$

$$10y = 8y + 12$$

Linear Equations  
Unknown on Both Sides

$$y = 6$$

$$12b + 1 = 3b + 7$$

Linear Equations  
Unknown on Both Sides

$$b = \frac{6}{9} \text{ or } \frac{2}{3}$$

$$4x = 2x + 8$$

Linear Equations  
Unknown on Both Sides

$$x = 4$$

$$2a - 3 = 24 - a$$

Linear Equations  
Unknown on Both Sides

$$a = 9$$

$$25k - 10 = 10k + 8$$

Linear Equations  
Unknown on Both Sides

$$k = \frac{18}{15} \text{ or } 1.2$$

$$8y + 1 = 5 - y$$

Linear Equations  
Unknown on Both Sides

$$y = \frac{4}{9}$$

$$6a - 12 = 8a$$

Linear Equations  
Unknown on Both Sides

$$a = -6$$

$$2b = 18 - b$$

Linear Equations  
Unknown on Both Sides

$$b = 6$$

$$2r + 4 = 3r$$

Linear Equations  
Unknown on Both Sides

$$r = 4$$

$$3t = 35 - 2t$$

Linear Equations  
Unknown on Both Sides

$$t = 7$$

$$9r = r + 16$$

Linear Equations  
Unknown on Both Sides

$$r = 2$$

$$7k = 60 - 3k$$

Linear Equations  
Unknown on Both Sides

$$k = 6$$

$$4t = 60 + 10t$$

Linear Equations  
Unknown on Both Sides

$$t = -10$$

$$3a = 12 + 7a$$

Linear Equations  
Unknown on Both Sides

$$a = -3$$

End



# Solving Linear Equations with Unknowns on Both Sides

1. Solve  $5x = 2x + 6$

	$5x = 2x + 6$	
$- 2x$		$- 2x$
$\div 3$	$x =$	$\div 3$

2. Solve  $2a = a + 3$

	$2a = a + 3$	
$- a$	$a =$	$- a$

3. Solve  $2x + 1 = x + 3$

	$2x + 1 = x + 3$	
$- x$		$- x$
$- 1$	$x =$	$- 1$

4. Solve  $5x + 4 = 3x + 10$

	$5x + 4 = 3x + 10$	
$- 3x$		$- 3x$
$- 4$		$- 4$
$\div 2$	$x =$	$\div 2$

5. Solve  $4a + 8 = 2a + 6$

	$4a + 8 = 2a + 6$	
$- 2a$		$- 2a$
$- 8$		$- 8$
$\div 2$	$a =$	$\div 2$

6. Solve  $6b + 1 = b + 11$

	$6b + 1 = b + 11$	
$- b$		$- b$
$- 1$		$- 1$
	$b =$	

7. Solve  $5k + 5 = 3k - 10$

	$5k + 5 = 3k - 10$	
$- 3k$		$- 3k$
$- 5$		$- 5$
	$k =$	

8. Solve  $7r - 5 = 5r - 3$

	$7r - 5 = 5r - 3$	
$- 5r$		$- 5r$
$+ 5$		$+ 5$
	$r =$	

9. Solve  $7x - 2 = 3x + 10$

	$7x - 2 = 3x + 10$	
$- 3x$		$- 3x$
$+ 2$		$+ 2$
	$x =$	

10. Solve  $4b + 10 = b + 6$

	$4b + 10 = b + 6$	
$- b$		$- b$
$- 10$		$- 10$
	$b =$	

# Solving Linear Equations with Unknowns on Both Sides

## Answers

1.  $x = 2$

2.  $a = 3$

3.  $x = 2$

4.  $x = 3$

5.  $a = -1$

6.  $b = 2$

7.  $k = -7.5$

8.  $r = 1$

9.  $x = 3$

10.  $b = -\frac{4}{3}$

# Solving Linear Equations with Unknowns on Both Sides

1. Solve  $5x = 2x + 6$

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2. Solve  $2a = a + 3$

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3. Solve  $2x + 1 = x + 3$

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4. Solve  $5x + 4 = 3x + 10$

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5. Solve  $4a + 8 = 2a + 6$

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6. Solve  $6b + 1 = b + 11$

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7. Solve  $5k + 5 = 3k - 10$

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8. Solve  $7r - 5 = 5r - 3$

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9. Solve  $7x - 2 = 3x + 10$

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10. Solve  $4b + 10 = b + 6$

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1. Solve  $5x = 2x + 6$

	$5x = 2x + 6$	
-		-
÷	$x =$	÷

2. Solve  $2a = a + 3$

	$2a = a + 3$	
-		-
	$a =$	

3. Solve  $2x + 1 = x + 3$

	$2x + 1 = x + 3$	
-		-
-		-
	$x =$	

4. Solve  $5x + 4 = 3x + 10$

	$5x + 4 = 3x + 10$	
-		-
-		-
÷	$x =$	÷

5. Solve  $4a + 8 = 2a + 6$

	$4a + 8 = 2a + 6$	
-		-
-		-
÷	$a =$	÷

6. Solve  $6b + 1 = b + 11$

	$6b + 1 = b + 11$	
-		-
-		-
÷	$b =$	÷

7. Solve  $5k + 5 = 3k - 10$

	$5k + 5 = 3k - 10$	
-		-
-		-
÷	$k =$	÷

8. Solve  $7r - 5 = 5r - 3$

	$7r - 5 = 5r - 3$	
-		-
+		+
÷	$r =$	÷

9. Solve  $7x - 2 = 3x + 10$

	$7x - 2 = 3x + 10$	
-		-
+		+
÷	$x =$	÷

10. Solve  $4b + 10 = b + 6$

	$4b + 10 = b + 6$	
-		-
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