Date	

LLOGON	<b>Reteach</b> Solving Radical Equations a	and Inequalities
	dical equations by raising both sides of t dex of the radical. For example, the inde $\sqrt{x} = 3$	
	$(\sqrt{x})^2 = 3^2$ $x = 9$	The index of $\sqrt{x}$ is 2. Raise both sides to the power of 2.
Solve: 3	$3\sqrt{x-2} = 18$	
Step 1	Isolate the radical. Divide both sides of the equation by 3 a	and simplify.
	$\frac{3\sqrt{x-2}}{3} = \frac{18}{3}$ $\sqrt{x-2} = 6$	
Step 2	$(\sqrt{x-2})^2 = 6^2$	simplify. Remember: $(\sqrt[n]{a})^n = a$ .
Step 4	Solve. $x = 38$	
Step 5	Check. $3\sqrt{x-2} = 18$ $3\sqrt{38-2} = 3\sqrt{36} = 3(6) = 18$	Always check for extraneous solutions when solving radical equations.
Salva aa	ab aquation. Chook your answer	

## Solve each equation. Check your answer.

<b>1.</b> $4\sqrt[3]{2x+11} = 12$	<b>2.</b> $5 + \sqrt{x - 3} = 9$	<b>3.</b> $2\sqrt{x+4} = 10$
$\frac{4\sqrt[3]{2x+11}}{4} = \frac{12}{4}$	$5-5+\sqrt{x-3}=9-5$	
$\sqrt[3]{2x+11}=3$		
$\left(\sqrt[3]{2x+11}\right)^3 = 3^3$		

8-8 S	olving Radical Equations and Inequalities (continued)
Solving eq	uations with rational exponents is similar to solving radical equations.
Solve: x =	$(x + 20)^{\frac{1}{2}}$ .
Step 1	Raise both sides to the reciprocal power. Think: $(a^{\frac{1}{n}})^n = a$ $x^2 = [(x + 20)^{\frac{1}{2}}]^2$
Step 2	Square both sides. $x^2 = x + 20$ The reciprocal of $\frac{1}{2}$ is 2.
Step 3	Write the quadratic equation in standard form. $x^2 - x - 20 = 0$ Set one side of the
Step 4	Factor. (x + 4)(x - 5) = 0
Step 5	Solve. (x + 4) = 0 or $(x - 5) = 0x = -4$ $x = 5$
Step 6	Check for extraneous solutions.
	$x = (x + 20)^{\frac{1}{2}}$ This is the only solution.
	$x = -4 \qquad x = 5$
	$-4?(-4+20)^{\frac{1}{2}}$ 5? $(5+20)^{\frac{1}{2}}$
	$-4 \neq (16)^{\frac{1}{2}}$ $5 = (25)^{\frac{1}{2}} \checkmark$

<b>4.</b> $(5x+6)^{\frac{1}{4}} = 3$	5.	$(6x-8)^{\frac{1}{3}}=4$	6.	$x = (x+6)^{\frac{1}{2}}$
$\left[ (5x+6)^{\frac{1}{4}} \right]^4 = 3^4$				

LESSON Practice A		LESSON Practice B	
8-8 Solving Radical Equ	ations and Inequalities	8-8 Solving Radical Equation	s and Inequalities
Rewrite each equation to isolate the	a radical.	Solve each equation.	
-	$+\sqrt{3x} - x = 0$ <b>3.</b> $\sqrt{2x+1} - 17 = 3x$	1. $\sqrt{x+6} = 7$	<b>2.</b> $\sqrt{5x} = 10$
$\sqrt{x} = 6$	$\sqrt{3x} = x - 8 \qquad \sqrt{2x + 1} = 3x + 1$	x = 43	x = 20
Identify to what power each equatio	n must be raised in order to	<b>3.</b> $\sqrt{2x+5} = \sqrt{3x-1}$	$4. \sqrt{x+4} = 3\sqrt{x}$
solve. Then solve.		x = 6	$x = \frac{1}{2}$
<b>4.</b> $\sqrt{x} = 4$ <b>5.</b> $\sqrt[4]{}$	$3x = 12$ <b>6.</b> $\sqrt[3]{x+1} = 4$	x = 0	$x = \frac{1}{2}$
0	4; $x = \frac{69}{2}$ 3; $x = 63$	$5.\sqrt[3]{x-6} = \sqrt[3]{3x+24}$	<b>6.</b> $3\sqrt[3]{x} = \sqrt[3]{7x+5}$
2; x = 10	3; X = 03	- x = -15	$x = \frac{1}{4}$
Solve the equation. Then identify an	y extraneous solutions.	x = -15	4
<b>7.</b> $2\sqrt{x+2} = 4$	<b>8.</b> $\sqrt{x+3} = x-3$	7. $\sqrt{-14x+2} = x-3$	8. $(x+4)^{\frac{1}{2}}=6$
	x = 1, x = 6; x = 1 is an	No solutions, since both $-1$ and	<i>x</i> = 32
x = 2; no extraneous solu	tions extraneous solution.	7 are extraneous	
Solve each equation or inequality.		<b>9.</b> $4(x-3)^{\frac{1}{2}}=8$	<b>10.</b> $4(x - 12)^{\frac{1}{3}} = -16$
<b>9.</b> $\sqrt{x+2} = 5$	<b>10.</b> $(4x)^{\frac{1}{2}} = 6$	<i>x</i> = 7	x = -52
00	0		
x = 23	X = 9	<ul> <li>Solve each inequality.</li> </ul>	
<b>11.</b> $(x+1)^{\frac{1}{3}} = 3$	<b>12.</b> $2\sqrt{x-3} = 10$	<b>11.</b> $\sqrt{3x+6} \le 3$	<b>12.</b> $\sqrt{x-4} + 3 > 9$
<i>x</i> = 26	x = 28	$-2 \le x \le 1$	x > 40
<b>13.</b> $\sqrt{2x} - 6 < 0$	$14. \sqrt{3x+1} \ge 8$		14. $\sqrt{2x-7} > 9$
10. VZA U ~ U	$17. y 0A = 1 \leq 0$	13. $\forall x + i \ge \forall 2x - 1$	14. $\forall 2x = 7 > 9$
$0 \le x < 18$	x ≥ 21	$\frac{1}{2} \le x \le 8$	x > 44
Solve.			
		Solve.	
	equality $\sqrt{x+3} + 5 \le 10$ . Ainsley's solution $x \le 22$ . Why are their solutions different?	<b>15.</b> A biologist is studying two species of anim $p_1$ , of one of the species is growing according to the species of the species of the species is growing according to the species of t	
Which is correct?	,	population, p2, of the other species is grow	ving according to $p_2 = 100t^2$
	prrect. Ainsley forgot that the radicand	where time, <i>t</i> , is measured in years. After populations of the two species be equal?	how many years will the
	cannot be negative.		E vooro
		Z	5 years
		-	
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LESSON Practice C			
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LESSON Practice C		LESSON Reteach 3-3 Solving Radical Equation Solve radical equations by raising both sides	s and Inequalities of the equation to the power
LESSON Practice C 8-8 Solving Radical Equ		LESSON Reteach Class Solving Radical Equation Solve radical equations by raising both sides of the index of the radical. For example, the ir	s and Inequalities of the equation to the power
<b>Practice C</b> <b>Solving Radical Equ</b> Solve each equation. $1.\sqrt[3]{4x+1} - 5 = 0$	uations and Inequalities 2. $3\sqrt{x-11} = 18$	LESSON         Reteach           3.3         Solving Radical Equation           Solve radical equations by raising both sides of the index of the radical. For example, the in $\sqrt{x} = 3$	s and Inequalities of the equation to the power adex of $\sqrt[n]{a}$ is <i>n</i> . Therefore,
LESSON Practice C Solving Radical Equ Solve each equation. $1.\sqrt[3]{4x+1} - 5 = 0$ x = 31	uations and Inequalities 2. $3\sqrt{x-11} = 18$ x = 47	LESSON Reteach Solve radical equations by raising both sides of the index of the radical. For example, the in $\sqrt{x} = 3$ $(\sqrt{x})^2 = 3^2$	s and Inequalities of the equation to the power dex of $\sqrt[n]{a}$ is <i>n</i> . Therefore, The index of $\sqrt{x}$ is 2. Raise
<b>Practice C</b> <b>Solving Radical Equ</b> Solve each equation. $1.\sqrt[3]{4x+1} - 5 = 0$	uations and Inequalities 2. $3\sqrt{x-11} = 18$	LESSON         Reteach           3.3         Solving Radical Equation           Solve radical equations by raising both sides of the index of the radical. For example, the in $\sqrt{x} = 3$	s and Inequalities of the equation to the power adex of $\sqrt[n]{a}$ is <i>n</i> . Therefore,
<b>Practice C</b> <b>Solving Radical Equ</b> Solve each equation. $1.\sqrt[3]{4x+1} - 5 = 0$ x = 31 $3.\sqrt[3]{10x+11} = 3$	uations and Inequalities 2. $3\sqrt{x-11} = 18$ $\frac{x = 47}{4\sqrt[3]{3x} = \sqrt[3]{2x+9}}$	LESSON Reteach Solve radical equations by raising both sides of the index of the radical. For example, the in $\sqrt{x} = 3$ $(\sqrt{x})^2 = 3^2$	s and Inequalities of the equation to the power dex of $\sqrt[n]{a}$ is <i>n</i> . Therefore, The index of $\sqrt{x}$ is 2. Raise
<b>Practice C</b> <b>Base Solving Radical Equ</b> Solve each equation. $1.\sqrt[3]{4x+1} - 5 = 0$ x = 31 $3.\sqrt[3]{10x+11} = 3$ x = 7	uations and Inequalities 2. $3\sqrt{x-11} = 18$ $\frac{x = 47}{4 \cdot \sqrt[3]{3x} = \sqrt[3]{2x+9}}$ x = 9	LESSON Reteach Solve radical equations by raising both sides of the index of the radical. For example, the in $\sqrt{x} = 3$ $(\sqrt{x})^2 = 3^2$ x = 9	s and Inequalities of the equation to the power dex of $\sqrt[n]{a}$ is <i>n</i> . Therefore, The index of $\sqrt{x}$ is 2. Raise
<b>Practice C</b> <b>Solving Radical Equ</b> Solve each equation. $1.\sqrt[3]{4x+1} - 5 = 0$ x = 31 $3.\sqrt[3]{10x+11} = 3$	uations and Inequalities 2. $3\sqrt{x-11} = 18$ $\frac{x = 47}{4\sqrt[3]{3x} = \sqrt[3]{2x+9}}$	Solve: $3\sqrt{x-2} = 18$	s and Inequalities of the equation to the power adex of $\sqrt{a}$ is <i>n</i> . Therefore, The index of $\sqrt{x}$ is 2. Raise both sides to the power of 2.
LESSON Practice C BB3 Solving Radical Equ Solve each equation. $1.\sqrt[3]{4x+1} - 5 = 0$ x = 31 $3.\sqrt[3]{10x+11} = 3$ x = 7 $5. x + 2 = \sqrt{3x+6}$ x = -2 and $x = 1$	uations and Inequalities 2. $3\sqrt{x-11} = 18$ $\frac{x = 47}{4 \cdot \sqrt[3]{3x} = \sqrt[3]{2x+9}}$ x = 9	Solve: $3\sqrt{x-2} = 18$ Solve: $3\sqrt{x-2} = 18$ Solve: $3\sqrt{x-2} = 18$	s and Inequalities of the equation to the power adex of $\sqrt{a}$ is <i>n</i> . Therefore, The index of $\sqrt{x}$ is 2. Raise both sides to the power of 2.
LESSON Practice C BB3 Solving Radical Equ Solve each equation. $1.\sqrt[3]{4x+1} - 5 = 0$ x = 31 $3.\sqrt[3]{10x+11} = 3$ x = 7 $5. x + 2 = \sqrt{3x+6}$ x = -2 and $x = 1$	$2. \ 3\sqrt{x-11} = 18$ $2. \ 3\sqrt{x-11} = 18$ $4. \sqrt[3]{3x} = \sqrt[3]{2x+9}$ $\frac{x = 9}{6. \ (10x-25)^{\frac{1}{2}} = x}$ $x = 5$	<b>Reteach</b> <b>Reteach</b> <b>Solve radical equations by raising both sides</b> of the index of the radical. For example, the in $\sqrt{x} = 3$ $(\sqrt{x})^2 = 3^2$ x = 9 Solve: $3\sqrt{x-2} = 18$ <b>Step 1</b> Isolate the radical. Divide both sides of the equation by $\frac{3\sqrt{x-2}}{3} = \frac{18}{3}$	s and Inequalities of the equation to the power adex of $\sqrt{a}$ is <i>n</i> . Therefore, The index of $\sqrt{x}$ is 2. Raise both sides to the power of 2.
U U U U U U U U U U U U U U U U U U U	$2. \ 3\sqrt{x-11} = 18$ $2. \ 3\sqrt{x-11} = 18$ $\frac{x = 47}{4 \sqrt[3]{3x} = \sqrt[3]{2x+9}}$ $6. \ \frac{x = 9}{(10x-25)^{\frac{1}{2}} = x}$ $\frac{x = 5}{8. \ 4(7x+18)^{\frac{1}{2}} = 4x}$	Solve: $3\sqrt{x-2} = 18$ Solve: $3\sqrt{x-2} = 18$ Solve: $3\sqrt{x-2} = 18$	s and Inequalities of the equation to the power adex of $\sqrt{a}$ is <i>n</i> . Therefore, The index of $\sqrt{x}$ is 2. Raise both sides to the power of 2.
LESSON Practice C BB3 Solving Radical Equ Solve each equation. $1.\sqrt[3]{4x+1} - 5 = 0$ x = 31 $3.\sqrt[3]{10x+11} = 3$ x = 7 $5. x + 2 = \sqrt{3x+6}$ x = -2 and $x = 1$	$2. \ 3\sqrt{x-11} = 18$ $2. \ 3\sqrt{x-11} = 18$ $4. \sqrt[3]{3x} = \sqrt[3]{2x+9}$ $\frac{x = 9}{6. \ (10x-25)^{\frac{1}{2}} = x}$ $x = 5$	Solve: $3\sqrt{x-2} = 18$ Solve: $3\sqrt{x-2} = 6$ Solve: $3\sqrt{x-2} = 6$ Solve: $3\sqrt{x-2} = 6$	s and Inequalities of the equation to the power dex of √a is <i>n</i> . Therefore, The index of √x is 2. Raise both sides to the power of 2. 3 and simplify.
USSON Practice C Solving Radical Equ Solve each equation. 1. $\sqrt[3]{4x+1} - 5 = 0$ $\frac{x = 31}{3.\sqrt[3]{10x+11} = 3}$ $\frac{x = 7}{5. x + 2 = \sqrt{3x+6}}$ $\frac{x = -2 \text{ and } x = 1}{7. 5(6x+1)^{\frac{1}{4}} = 10}$ $x = \frac{5}{2}$	Lations and Inequalities 2. $3\sqrt{x-11} = 18$ $\frac{x = 47}{4 \cdot \sqrt[3]{3x} = \sqrt[3]{2x+9}}$ $\frac{x = 9}{6 \cdot (10x-25)^{\frac{1}{2}} = x}$ $\frac{x = 5}{8 \cdot 4(7x+18)^{\frac{1}{2}} = 4x}$ x = 9; x = -2  is an	<b>EXAMPLE 183001</b> <b>Iteration</b> <b>Solve</b> radical equations by raising both sides of the index of the radical. For example, the in $\sqrt{x} = 3$ $(\sqrt{x})^2 = 3^2$ x = 9 Solve: $3\sqrt{x-2} = 18$ <b>Step 1</b> Isolate the radical. Divide both sides of the equation by $\frac{3\sqrt{x-2}}{3} = \frac{18}{3}$ $\sqrt{x-2} = 6$	s and Inequalities of the equation to the power dex of √a is <i>n</i> . Therefore, The index of √x is 2. Raise both sides to the power of 2. 3 and simplify.
<b>Practice C</b> <b>Solve each equation.</b> 1. $\sqrt[3]{4x+1} - 5 = 0$ x = 31 $\sqrt[3]{10x+11} = 3$ x = 7 x = -2 and $x = 1x = \frac{5}{2}Solve each inequality.$	Lations and Inequalities 2. $3\sqrt{x-11} = 18$ $\frac{x = 47}{4 \cdot \sqrt[3]{3x} = \sqrt[3]{2x+9}}$ 6. $\frac{x = 9}{(10x-25)^{\frac{1}{2}} = x}$ $\frac{x = 5}{8 \cdot 4(7x+18)^{\frac{1}{2}} = 4x}$ x = 9; x = -2  is an extraneous solution.	<b>Instance</b> <b>Reteach</b> <b>Solve</b> radical equations by raising both sides of the index of the radical. For example, the in $\sqrt{x} = 3$ $(\sqrt{x})^2 = 3^2$ x = 9 Solve: $3\sqrt{x-2} = 18$ <b>Step 1</b> Isolate the radical. Divide both sides of the equation by $\frac{3\sqrt{x-2}}{3} = \frac{18}{3}$ $\sqrt{x-2} = 6$ <b>Step 2</b> Square both sides of the equation at $(\sqrt{x}-2)^2 = 6^2$ x - 2 = 36	s and Inequalities of the equation to the power ndex of $\sqrt{a}$ is <i>n</i> . Therefore, The index of $\sqrt{x}$ is 2. Raise both sides to the power of 2. 3 and simplify.
<b>Practice C</b> <b>Solve each equation.</b> 1. $\sqrt[3]{4x+1} - 5 = 0$ $\frac{x = 31}{3.\sqrt{10x+11} = 3}$ $\frac{x = 7}{5. x + 2 = \sqrt{3x+6}}$ $\frac{x = -2 \text{ and } x = 1}{7. 5(6x+1)^{\frac{1}{4}} = 10}$ <b>Solve each inequality.</b> 9. $\sqrt{4x+5} = 3$	Lations and Inequalities 2. $3\sqrt{x-11} = 18$ $\frac{x = 47}{4 \cdot \sqrt[3]{3x} = \sqrt[3]{2x+9}}$ $\frac{x = 9}{6 \cdot (10x-25)^{\frac{1}{2}} = x}$ $\frac{x = 5}{8 \cdot 4(7x+18)^{\frac{1}{2}} = 4x}$ x = 9; x = -2  is an	<b>EXAMPLE 19:00:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpretability:</b> <b>Interpreta</b>	s and Inequalities of the equation to the power ndex of $\sqrt{a}$ is <i>n</i> . Therefore, The index of $\sqrt{x}$ is 2. Raise both sides to the power of 2. 3 and simplify.
<b>Practice C</b> <b>Solve each equation.</b> 1. $\sqrt[3]{4x+1} - 5 = 0$ x = 31 $\sqrt[3]{10x+11} = 3$ x = 7 x = -2 and $x = 1x = \frac{5}{2}Solve each inequality.$	Lations and Inequalities 2. $3\sqrt{x-11} = 18$ $\frac{x = 47}{4 \cdot \sqrt[3]{3x} = \sqrt[3]{2x+9}}$ 6. $\frac{x = 9}{(10x-25)^{\frac{1}{2}} = x}$ $\frac{x = 5}{8 \cdot 4(7x+18)^{\frac{1}{2}} = 4x}$ x = 9; x = -2  is an extraneous solution.	<b>EXAMPLE</b> Notice Provided HTML Reference in the second state of the equation by raising both sides of the index of the radical. For example, the in $\sqrt{x} = 3$ $(\sqrt{x})^2 = 3^2$ x = 9 Solve: $3\sqrt{x-2} = 18$ Step 1 isolate the radical. Divide both sides of the equation by $\frac{3\sqrt{x-2}}{3} = \frac{18}{3}$ $\sqrt{x-2} = 6$ Step 2 Square both sides of the equation at $(\sqrt{x}-2)^2 = 6^2$ x = 236 Step 4 Solve. x = 38	s and Inequalities of the equation to the power ndex of $\sqrt{a}$ is <i>n</i> . Therefore, The index of $\sqrt{x}$ is 2. Raise both sides to the power of 2. 3 and simplify. Remember: $(\sqrt[n]{a})^n = a$ .
<b>Practice C</b> <b>Solving Radical Equ</b> Solve each equation. $1.\sqrt[3]{4x+1} - 5 = 0$ x = 31 $3.\sqrt[3]{10x+11} = 3$ x = 7 $5. x + 2 = \sqrt{3x+6}$ x = -2  and  x = 1 $7. 5(6x+1)^{\frac{1}{4}} = 10$ $x = \frac{5}{2}$ Solve each inequality. $9. \sqrt{4x+5} = 3$ $-\frac{5}{4} \le x \le 1$	Pations and Inequalities 2. $3\sqrt{x-11} = 18$ x = 47 4. $\sqrt[3]{3x} = \sqrt[3]{2x+9}$ x = 9 6. $(10x-25)^{\frac{1}{2}} = x$ x = 5 8. $4(7x+18)^{\frac{1}{2}} = 4x$ x = 9; x = -2 is an extraneous solution. 10. $\sqrt[3]{x+3} \ge 2$ $x \ge 5$	Reteach Solve radical equations by raising both sides of the index of the radical. For example, the in $\sqrt{x} = 3$ $(\sqrt{x})^2 = 3^2$ x = 9 Solve: $3\sqrt{x-2} = 18$ Step 1 Isolate the radical. Divide both sides of the equation by $\frac{3\sqrt{x-2}}{3} = \frac{18}{3}$ $\sqrt{x-2} = 6$ Step 2 Square both sides of the equation and $(\sqrt{x}-2)^2 = 6^2$ x = 38 Step 4 Solve. x = 38 Step 5 Check.	s and Inequalities of the equation to the power ndex of $\sqrt{a}$ is <i>n</i> . Therefore, The index of $\sqrt{x}$ is 2. Raise both sides to the power of 2. 3 and simplify.
<b>Practice C</b> <b>Solve each equation.</b> 1. $\sqrt[3]{4x+1} - 5 = 0$ $\frac{x = 31}{3.\sqrt{10x+11} = 3}$ $\frac{x = 7}{5. x + 2 = \sqrt{3x+6}}$ $\frac{x = -2 \text{ and } x = 1}{7. 5(6x+1)^{\frac{1}{4}} = 10}$ <b>Solve each inequality.</b> 9. $\sqrt{4x+5} = 3$	$ \begin{array}{r}                                     $	<b>EXAMPLE</b> Notice Provided HTML Reference in the second state of the equation by raising both sides of the index of the radical. For example, the in $\sqrt{x} = 3$ $(\sqrt{x})^2 = 3^2$ x = 9 Solve: $3\sqrt{x-2} = 18$ Step 1 isolate the radical. Divide both sides of the equation by $\frac{3\sqrt{x-2}}{3} = \frac{18}{3}$ $\sqrt{x-2} = 6$ Step 2 Square both sides of the equation at $(\sqrt{x}-2)^2 = 6^2$ x = 236 Step 4 Solve. x = 38	s and Inequalities of the equation to the power idex of $\sqrt{a}$ is <i>n</i> . Therefore, The index of $\sqrt{x}$ is 2. Raise both sides to the power of 2. 3 and simplify. Remember: $(\sqrt[n]{a})^n = a$ . Always check for extraneous solutions
<b>Practice C</b> <b>Solving Radical Equ</b> Solve each equation. $1.\sqrt[3]{4x+1} - 5 = 0$ x = 31 $3.\sqrt[3]{10x+11} = 3$ x = 7 $5. x + 2 = \sqrt{3x+6}$ x = -2  and  x = 1 $7. 5(6x+1)^{\frac{1}{4}} = 10$ $x = \frac{5}{2}$ Solve each inequality. $9. \sqrt{4x+5} = 3$ $-\frac{5}{4} \le x \le 1$	$\begin{array}{r} \textbf{vations and Inequalities} \\ 2. \ 3\sqrt{x-11} \ = 18 \\ \hline \\ \hline \\ 4. \sqrt[3]{3x} = \sqrt[3]{2x+9} \\ \hline \\ \hline \\ 6. \ (10x-25)^{\frac{1}{2}} = x \\ \hline \\ \hline \\ 8. \ 4(7x+18)^{\frac{1}{2}} = 4x \\ x = 9; \ x = -2 \text{ is an extraneous solution.} \\ \hline \\ \hline \\ 10. \sqrt[3]{x+3} \ge 2 \\ \hline \\ \hline \\ 12. \ \sqrt[3]{x-6} + 7 > 4 \end{array}$	Reteach Reteach Solve radical equations by raising both sides of the index of the radical. For example, the ir $\sqrt{x} = 3$ $(\sqrt{x})^2 = 3^2$ x = 9 Solve: $3\sqrt{x-2} = 18$ Step 1 Isolate the radical. Divide both sides of the equation by $\frac{3\sqrt{x-2}}{3} = \frac{18}{3}$ $\sqrt{x-2} = 6$ Step 2 Square both sides of the equation and $(\sqrt{x} - 2)^2 = 6^2$ x - 2 = 36 Step 4 Solve. x = 38 Step 5 Check. $3\sqrt{x-2} = 3(6) = 18$	s and Inequalities of the equation to the power idex of $\sqrt{a}$ is <i>n</i> . Therefore, The index of $\sqrt{x}$ is 2. Raise both sides to the power of 2. 3 and simplify. Remember: $(\sqrt[n]{a})^n = a$ . Always check for extraneous solutions
<b>Practice C</b> <b>Solve each equation.</b> 1. $\sqrt[3]{4x+1} - 5 = 0$ $\frac{x = 31}{3.\sqrt[3]{10x+11} = 3}$ $\frac{x = 7}{5. x + 2 = \sqrt{3x+6}}$ $\frac{x = -2 \text{ and } x = 1}{7. 5(6x+1)^{\frac{1}{4}} = 10}$ $x = \frac{5}{2}$ Solve each inequality. 9. $\sqrt{4x+5} \le 3$ $\frac{-\frac{5}{4} \le x \le 1}{11. \sqrt{x-7} + 9 < 12}$ $\frac{7 \le x < 16}{5}$	Pations and Inequalities 2. $3\sqrt{x-11} = 18$ x = 47 4. $\sqrt[3]{3x} = \sqrt[3]{2x+9}$ x = 9 6. $(10x-25)^{\frac{1}{2}} = x$ x = 5 8. $4(7x+18)^{\frac{1}{2}} = 4x$ x = 9; x = -2 is an extraneous solution. 10. $\sqrt[3]{x+3} \ge 2$ $x \ge 5$	<b>Reteach</b> <b>Beteach</b> Solve radical equations by raising both sides of the index of the radical. For example, the in $\sqrt{x} = 3$ $(\sqrt{x})^2 = 3^2$ x = 9 Solve: $3\sqrt{x-2} = 18$ <b>Step 1</b> Isolate the radical. Divide both sides of the equation by $\frac{3\sqrt{x-2}}{3} = \frac{18}{3}$ $\sqrt{x-2} = 6$ <b>Step 2</b> Square both sides of the equation and $(\sqrt{x} - 2)^2 = 6^2$ x - 2 = 36 <b>Step 4</b> Solve. x = 38 <b>Step 5</b> Check. $3\sqrt{x-2} = 18$ $3\sqrt{38} - 2 = 3\sqrt{36} = 3(6) = 18$ Solve each equation. Check your answer.	<b>s and Inequalities</b> of the equation to the power idex of $\sqrt{a}$ is <i>n</i> . Therefore, The index of $\sqrt{x}$ is 2. Raise both sides to the power of 2. 3 and simplify. Remember: $(\sqrt[n]{a})^n = a$ . Always check for extraneous solutions when solving radical equations.
<b>Practice C</b> <b>Solving Radical Equ</b> Solve each equation. $1.\sqrt[3]{4x+1} - 5 = 0$ $\frac{x = 31}{3.\sqrt[3]{10x+11} = 3}$ $\frac{x = 7}{5. x+2 = \sqrt{3x+6}}$ $\frac{x = -2 \text{ and } x = 1}{7. 5(6x+1)^{\frac{1}{4}} = 10}$ $x = \frac{5}{2}$ Solve each inequality. 9. $\sqrt{4x+5} = 3$ $\frac{-\frac{5}{4} \le x \le 1}{11. \sqrt{x-7} + 9 < 12}$ $\frac{7 \le x < 16}{13. \sqrt{3x-1} > \sqrt{x+7}}$	Pations and Inequalities 2. $3\sqrt{x-11} = 18$ x = 47 4. $\sqrt[3]{3x} = \sqrt[3]{2x+9}$ 6. $(10x-25)^{\frac{1}{2}} = x$ x = 5 8. $4(7x+18)^{\frac{1}{2}} = 4x$ x = 9; x = -2 is an extraneous solution. 10. $\sqrt[3]{x+3} \ge 2$ $x \ge 5$ 12. $\sqrt[3]{x-6} + 7 > 4$ $x \ge -21$ 14. $\sqrt[3]{x+2} - 1 \le 4$	<b>Reteach</b> <b>Solve</b> radical equations by raising both sides of the index of the radical. For example, the in $\sqrt{x} = 3$ $(\sqrt{x})^2 = 3^2$ x = 9 Solve: $3\sqrt{x-2} = 18$ <b>Step 1</b> Isolate the radical. Divide both sides of the equation by $\frac{3\sqrt{x-2}}{3} = \frac{18}{3}$ $\sqrt{x-2} = 6$ <b>Step 2</b> Square both sides of the equation and $(\sqrt{x} - 2)^2 = 6^2$ x - 2 = 36 <b>Step 4</b> Solve. x = 38 <b>Step 5</b> Check. $3\sqrt{x-2} = 18$ $3\sqrt{38-2} = 3\sqrt{36} = 3(6) = 18$ <b>Solve each equation.</b> Check your answer. 1. $4\sqrt[3]{2x+11} = 12$ 2. $5 + \sqrt{x-1}$	<b>s and Inequalities</b> of the equation to the power idex of $\sqrt{a}$ is <i>n</i> . Therefore, The index of $\sqrt{x}$ is 2. Raise both sides to the power of 2. 3 and simplify. and simplify. Remember: $(\sqrt[n]{a})^n = a$ . Always check for extraneous solutions when solving radical equations. $\overline{3} = 9$ 3. $2\sqrt{x+4} = 10$
<b>Practice C</b> <b>Solve each equation.</b> 1. $\sqrt[3]{4x+1} - 5 = 0$ $\frac{x = 31}{3.\sqrt[3]{10x+11} = 3}$ $\frac{x = 7}{5. x + 2 = \sqrt{3x+6}}$ $\frac{x = -2 \text{ and } x = 1}{7. 5(6x+1)^{\frac{1}{4}} = 10}$ $x = \frac{5}{2}$ Solve each inequality. 9. $\sqrt{4x+5} \le 3$ $\frac{-\frac{5}{4} \le x \le 1}{11. \sqrt{x-7} + 9 < 12}$ $\frac{7 \le x < 16}{5}$	$\begin{array}{c} \text{vations and Inequalities} \\ 2. \ 3\sqrt{x-11} = 18 \\ \hline x = 47 \\ 4. \sqrt[3]{3x} = \sqrt[3]{2x+9} \\ \hline 0. \ (10x-25)^{\frac{1}{2}} = x \\ \hline x = 9 \\ \hline 0. \ (10x-25)^{\frac{1}{2}} = x \\ \hline x = 5 \\ \hline 10. \sqrt[3]{x+3} \ge 2 \\ \hline 10. \sqrt[3]{x+3} \ge 2 \\ \hline x \ge 5 \\ \hline 12. \ \sqrt[3]{x-6} + 7 > 4 \\ \hline x \ge -21 \\ \hline \end{array}$	<b>Reteach</b> <b>Solve</b> radical equations by raising both sides of the index of the radical. For example, the in $\sqrt{x} = 3$ $(\sqrt{x})^2 = 3^2$ x = 9 Solve: $3\sqrt{x-2} = 18$ <b>Step 1</b> Isolate the radical. Divide both sides of the equation by $\frac{3\sqrt{x-2}}{3} = \frac{18}{3}$ $\sqrt{x-2} = 6$ <b>Step 2</b> Square both sides of the equation and $(\sqrt{x} - 2)^2 = 6^2$ x - 2 = 36 <b>Step 4</b> Solve. x = 38 <b>Step 5</b> Check. $3\sqrt{x-2} = 18$ $3\sqrt{38-2} = 3\sqrt{36} = 3(6) = 18$ <b>Solve each equation.</b> Check your answer. 1. $4\sqrt[3]{2x+11} = 12$ 2. $5 + \sqrt{x-1}$	<b>s and Inequalities</b> of the equation to the power idex of $\sqrt{a}$ is <i>n</i> . Therefore, The index of $\sqrt{x}$ is 2. Raise both sides to the power of 2. 3 and simplify. Remember: $(\sqrt[n]{a})^n = a$ . Always check for extraneous solutions when solving radical equations.
<b>Practice C</b> <b>Solve each equation.</b> 1. $\sqrt[3]{4x+1} - 5 = 0$ $\frac{x = 31}{3.\sqrt[3]{10x+11} = 3}$ $\frac{x = 7}{5. x + 2 = \sqrt{3x+6}}$ $\frac{x = -2 \text{ and } x = 1}{7. 5(6x+1)^{\frac{1}{4}} = 10}$ $x = \frac{5}{2}$ Solve each inequality. 9. $\sqrt{4x+5} \le 3$ $\frac{-\frac{5}{4} \le x \le 1}{11. \sqrt{x-7} + 9 < 12}$ $\frac{7 \le x < 16}{\sqrt{3x-1} > \sqrt{x+7}}$ x > 4	Pations and Inequalities 2. $3\sqrt{x-11} = 18$ x = 47 4. $\sqrt[3]{3x} = \sqrt[3]{2x+9}$ 6. $(10x-25)^{\frac{1}{2}} = x$ x = 5 8. $4(7x+18)^{\frac{1}{2}} = 4x$ x = 9; x = -2 is an extraneous solution. 10. $\sqrt[3]{x+3} \ge 2$ $x \ge 5$ 12. $\sqrt[3]{x-6} + 7 > 4$ $x \ge -21$ 14. $\sqrt[3]{x+2} - 1 \le 4$	<b>EXAMPLE NOTE:</b> <b>Interpretation:</b> <b>Interpretation:</b> <b>Solve radical equations by raising both sides</b> of the index of the radical. For example, the in $\sqrt{x} = 3$ $(\sqrt{x})^2 = 3^2$ x = 9 Solve: $3\sqrt{x-2} = 18$ <b>Step 1</b> Isolate the radical. Divide both sides of the equation by $\frac{3\sqrt{x-2}}{3} = \frac{18}{3}$ $\sqrt{x-2} = 6$ <b>Step 2</b> Square both sides of the equation at $(\sqrt{x}-2)^2 = 6^2$ x - 2 = 36 <b>Step 4</b> Solve. x = 38 <b>Step 5</b> Check. $\frac{3\sqrt{x-2}}{3(38-2)} = 18$ $\frac{3\sqrt{x}-2}{3(38-2)} = 18$ <b>Solve each equation. Check your answer.</b> 1. $4\sqrt[3]{2x+11} = 12$ $4 = \frac{3\sqrt{2x+11}}{4} = \frac{12}{4}$ $x = 5 + \frac{1}{2}$	<b>s and Inequalities</b> of the equation to the power dex of $\sqrt{a}$ is <i>n</i> . Therefore, The index of $\sqrt{x}$ is 2. Raise both sides to the power of 2. 3 and simplify. <b>Remember:</b> $(\sqrt[n]{a})^n = a$ . Always check for extraneous solutions when solving radical equations. $\overline{a} = 9$ $\sqrt{x-3} = 9 - 5$ <b>3.</b> $2\sqrt{x+4} = 10$ $\sqrt{x-4} = 5$
<b>Practice C</b> <b>Solving Radical Equ</b> Solve each equation. 1. $\sqrt[3]{4x+1} - 5 = 0$ $\frac{x = 31}{3}$ . $\sqrt[3]{10x+11} = 3$ $\frac{x = 7}{5}$ . x = -2 and $x = 17. \frac{5(6x+1)^{\frac{1}{4}} = 10}{x = \frac{5}{2}}Solve each inequality.9. \sqrt{4x+5} = 3\frac{-\frac{5}{4} \le x \le 1}{11}.\sqrt{x-7} + 9 < 12\frac{7 \le x < 16}{x > 4}Solve.$	$\begin{array}{r} \text{vations and Inequalities} \\ 2. 3\sqrt{x-11} = 18 \\ \hline x = 47 \\ 4. \sqrt[3]{3x} = \sqrt[3]{2x+9} \\ \hline x = 9 \\ 6. \frac{x = 9}{(10x-25)^{\frac{1}{2}} = x} \\ \hline x = 5 \\ \hline 8. \frac{4(7x+18)^{\frac{1}{2}} = 4x}{x = 9; x = -2 \text{ is an extraneous solution.}} \\ \hline 10. \sqrt[3]{x+3} \ge 2 \\ \hline 12. \sqrt[3]{x-6} + 7 > 4 \\ \hline x \ge -21 \\ \hline 14. \sqrt[3]{x+2} - 1 \le 4 \\ \hline -2 \le x \le 123 \end{array}$	<b>EXAMPLE NOTE:</b> <b>Reteach</b> <b>Solve radical equations by raising both sides</b> of the index of the radical. For example, the in $\sqrt{x} = 3$ $(\sqrt{x})^2 = 3^2$ x = 9 Solve: $3\sqrt{x-2} = 18$ <b>Step 1</b> Isolate the radical. Divide both sides of the equation by $\frac{3\sqrt{x-2}}{3} = \frac{18}{3}$ $\sqrt{x-2} = 6$ <b>Step 2</b> Square both sides of the equation at $(\sqrt{x}-2)^2 = 6^2$ x - 2 = 36 <b>Step 4</b> Solve. x = 38 <b>Step 5</b> Check. $3\sqrt{x-2} = 18$ $3\sqrt{38-2} = 3\sqrt{36} = 3(6) = 18$ <b>Solve each equation.</b> Check your answer. 1. $4\sqrt[3]{2x+11} = 12$ $4\sqrt[3]{2x+11} = 3$ $\sqrt{x}$	s and Inequalities of the equation to the power dex of $\sqrt{a}$ is <i>n</i> . Therefore, The index of $\sqrt{x}$ is 2. Raise both sides to the power of 2. 3 and simplify. Always check for extraneous solutions when solving radical equations. $\overline{3} = 9$ $\sqrt{x-3} = 9 - 5$ $\overline{-3} = 4$ $\overline{x+4} = 25$
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<b>Practice C</b> <b>Solving Radical Equ</b> Solve each equation. 1. $\sqrt[3]{4x+1} - 5 = 0$ $\frac{x = 31}{3}$ . $\sqrt[3]{10x+11} = 3$ $\frac{x = 7}{5}$ . x = -2 and $x = 17. 5(6x+1)^{\frac{1}{4}} = 10x = \frac{5}{2}Solve each inequality.9. \sqrt{4x+5} \le 3\frac{-\frac{5}{4} \le x \le 1}{11}.11. \sqrt{x-7} + 9 < 12\frac{7 \le x < 16}{x > 4}Solve.15. Einstein's theory of relativity state:as the object's velocity increases.$	tations and Inequalities 2. $3\sqrt{x-11} = 18$ x = 47 4. $\sqrt[3]{3x} = \sqrt[3]{2x+9}$ 6. $\frac{x=9}{(10x-25)^{\frac{1}{2}} = x}$ x = 5 8. $4(7x+18)^{\frac{1}{2}} = 4x$ x = 9; x = -2 is an extraneous solution. 10. $\sqrt[3]{x+3} \ge 2$ $x \ge 5$ 12. $\sqrt[3]{x-6} + 7 > 4$ $x \ge -21$ 14. $\sqrt[3]{x+2} - 1 \le 4$ $-2 \le x \le 123$ that the mass of an object increases The mass. $m(y)$ , of an object increases The mass. $m(y)$ , of an object increases	<b>EXAMPLE NOTE:</b> <b>Reteach</b> <b>Bigson</b> Solve radical equations by raising both sides of the index of the radical. For example, the in $\sqrt{x} = 3$ $(\sqrt{x})^2 = 3^2$ x = 9 Solve: $3\sqrt{x-2} = 18$ Step 1 Isolate the radical. Divide both sides of the equation by $\frac{3\sqrt{x-2}}{3} = \frac{18}{3}$ $\sqrt{x-2} = 6$ Step 2 Square both sides of the equation at $(\sqrt{x-2})^2 = 6^2$ x - 2 = 36 Step 4 Solve. x = 38 Step 5 Check. $\frac{3\sqrt{x-2}}{3\sqrt{3}-2} = 18$ $\frac{3\sqrt{3}8-2}{3\sqrt{3}6} = 3(6) = 18$ Solve each equation. Check your answer. 1. $4\sqrt[3]{2x+11} = 12$ $4\sqrt[3]{2x+11} = 3$ $(\sqrt[3]{2x+11} = 3$ $(\sqrt[3]{2x+11})^3 = 3^3$ $\frac{x}{3}$	s and Inequalities of the equation to the power idex of $\sqrt{a}$ is <i>n</i> . Therefore, The index of $\sqrt{x}$ is 2. Raise both sides to the power of 2. 3 and simplify. Always check for extraneous solutions when solving radical equations. $\overline{3} = 9$ $\sqrt{x-3} = 9 - 5$ $\overline{-3} = 4$ -3 = 16 x = 21
<b>Practice C</b> <b>Solving Radical Equ</b> Solve each equation. 1. $\sqrt[3]{4x+1} - 5 = 0$ $\frac{x = 31}{3}$ . $\sqrt[3]{10x+11} = 3$ $\frac{x = 7}{5}$ . x = -2 and $x = 17. 5(6x+1)^{\frac{1}{4}} = 10x = \frac{5}{2}Solve each inequality.9. \sqrt{4x+5} \le 3\frac{-\frac{5}{4} \le x \le 1}{11}.11. \sqrt{x-7} + 9 < 12\frac{7 \le x < 16}{x > 4}Solve.15. Einstein's theory of relativity state:as the object's velocity increases.$	Pations and Inequalities 2. $3\sqrt{x-11} = 18$ x = 47 4. $\sqrt[3]{3x} = \sqrt[3]{2x+9}$ x = 9 6. $(10x-25)^{\frac{1}{2}} = x$ x = 5 8. $4(7x+18)^{\frac{1}{2}} = 4x$ x = 9; x = -2 is an extraneous solution. 10. $\sqrt[3]{x+3} \ge 2$ $x \ge 5$ 12. $\sqrt[3]{x-6} + 7 > 4$ $x \ge -21$ 14. $\sqrt[3]{x+2} - 1 \le 4$ $-2 \le x \le 123$ s that the mass of an object increases	<b>EXAMPLE NOTE:</b> <b>Reteach</b> <b>Solve radical equations by raising both sides</b> of the index of the radical. For example, the in $\sqrt{x} = 3$ $(\sqrt{x})^2 = 3^2$ x = 9 Solve: $3\sqrt{x-2} = 18$ <b>Step 1</b> Isolate the radical. Divide both sides of the equation by $\frac{3\sqrt{x-2}}{3} = \frac{18}{3}$ $\sqrt{x-2} = 6$ <b>Step 2</b> Square both sides of the equation at $(\sqrt{x}-2)^2 = 6^2$ x - 2 = 36 <b>Step 4</b> Solve. x = 38 <b>Step 5</b> Check. $3\sqrt{x-2} = 18$ $3\sqrt{38-2} = 3\sqrt{36} = 3(6) = 18$ <b>Solve each equation.</b> Check your answer. 1. $4\sqrt[3]{2x+11} = 12$ $4\sqrt[3]{2x+11} = 3$ $\sqrt{x}$	s and Inequalities of the equation to the power dex of $\sqrt{a}$ is <i>n</i> . Therefore, The index of $\sqrt{x}$ is 2. Raise both sides to the power of 2. 3 and simplify. Remember: $(\sqrt[n]{a})^n = a$ . Always check for extraneous solutions when solving radical equations. $\overline{3} = 9$ $\sqrt{x-3} = 9 - 5$ $\overline{-3} = 4$ x + 4 = 25 $\overline{-3} = 16$ x = 21
<b>Practice C</b> <b>Solving Radical Equ</b> <b>Solve each equation.</b> $1.\sqrt[3]{4x+1} - 5 = 0$ x = 31 $3.\sqrt[3]{10x+11} = 3$ x = 7 $5. x + 2 = \sqrt{3x+6}$ x = -2  and  x = 1 $7. 5(6x+1)^{\frac{1}{4}} = 10$ $x = \frac{5}{2}$ <b>Solve each inequality.</b> $9. \sqrt{4x+5} = 3$ $-\frac{5}{4} \le x \le 1$ $11. \sqrt{x-7} + 9 < 12$ $7 \le x < 16$ $13. \sqrt{3x-1} > \sqrt{x+7}$ x > 4 <b>Solve.</b> 15. Einstein's theory of relativity state: as the object's velocity increases. with velocity, v, is given by $m(v) =$ and $m_0$ is the mass of the object at a state object	Pations and Inequalities 2. $3\sqrt{x-11} = 18$ x = 47 4. $\sqrt[3]{3x} = \sqrt[3]{2x+9}$ x = 9 6. $(10x-25)^{\frac{1}{2}} = x$ x = 5 8. $4(7x+18)^{\frac{1}{2}} = 4x$ x = 9; x = -2 is an extraneous solution. 10. $\sqrt[3]{x+3} = 2$ $x \ge 5$ 12. $\sqrt[3]{x-6} + 7 > 4$ $x \ge -21$ 14. $\sqrt[3]{x+2} - 1 \le 4$ $-2 \le x \le 123$ s that the mass of an object increases The mass, $m(y)$ , of an object increases The mass, $m(y)$ , of an object increases The mass $m(y)$ , of an object increases The mass $m(y)$ , of an object increases The mass $m(y)$ , of an object increases $\frac{m_0}{\sqrt{1-\frac{y^2}{c^2}}}$ , where $c$ is the speed of light $\sqrt{1-\frac{y^2}{c^2}}$ , where $c$ is the speed of light at rest. In terms of $c$ , solve for the velocity	<b>Reteach</b> <b>Betach</b> <b>Solve</b> radical equations by raising both sides of the index of the radical. For example, the in $\sqrt{x} = 3$ $(\sqrt{x})^2 = 3^2$ x = 9 Solve: $3\sqrt{x-2} = 18$ <b>Step 1</b> Isolate the radical. Divide both sides of the equation by $\frac{3\sqrt{x-2}}{3} = \frac{18}{3}$ $\sqrt{x-2} = 6$ <b>Step 2</b> Square both sides of the equation and $(\sqrt{x}-2)^2 = 6^2$ x = 2 = 36 <b>Step 4</b> Solve. x = 38 <b>Step 5</b> Check. $3\sqrt{x-2} = 18$ $3\sqrt{38-2} = 3\sqrt{36} = 3(6) = 18$ <b>Solve each equation.</b> Check your answer. 1. $4\sqrt[3]{2x+11} = 12$ $4\sqrt[3]{2x+11} = 3$ $(\sqrt[3]{2x+11} = 3$ $(\sqrt[3]{2x+11} = 3^3$ 2x + 11 = 27	s and Inequalities of the equation to the power idex of $\sqrt{a}$ is <i>n</i> . Therefore, The index of $\sqrt{x}$ is 2. Raise both sides to the power of 2. 3 and simplify. Remember: $(\sqrt[n]{a})^n = a$ . Always check for extraneous solutions when solving radical equations. $\overline{3} = 9$ $\sqrt{x-3} = 9 - 5$ $\overline{-3} = 4$ x + 4 = 25 $\overline{-3} = 16$ x = 21 $2\sqrt{21 + 4} = 10$
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8-8 Solving Radical Equations and Inequalities (continued)	8-8 Multiple Radicals
	Equations may involve more than one radical. In that case, the solution process is repeated to eliminate multiple radicals. For example:
Solving equations with rational exponents is similar to solving radical equations.	$\sqrt{x} + \sqrt{x-5} = 5$
Solve: $x = (x + 20)^{\frac{1}{2}}$ .	To solve, isolate one radical and square both sides as shown below.
Step 1 Raise both sides to the reciprocal power. Think: $(a^{\frac{1}{n}})^n = a$ $x^2 = [(x+20)^{\frac{1}{2}}]^2$	$\sqrt{x} = 5 - \sqrt{x-5}$
<b>Step 2</b> Square both sides. The reciprocal of $\frac{1}{2}$ is 2.	$(\sqrt{x})^2 = (5 - \sqrt{x-5})^2$ $x = 25 - 10\sqrt{x-5} + (x-5)$
$x^2 = x + 20$	$x = 25 - 10 \sqrt{x} - 5 + (x - 5)$ Notice that now there is only one radical in the equation. Repeat the
Step 3 Write the quadratic equation in standard form.	process, isolate the radical, square, and solve.
$x^2 - x - 20 = 0$ Set one side of the	$x = 25 - 10\sqrt{x-5} + (x-5)$ $-20 = -10\sqrt{x-5}$
Step 4 Factor. (x + 4)(x - 5) = 0 equation equal to zero.	$-20 = -10 \sqrt{x} - 5$ $2 = \sqrt{x-5}$
Step 5 Solve.	$2^2 = (\sqrt{x-5})^2$
(x+4) = 0 or $(x-5) = 0$	4 = x - 5
$x = -4 \qquad x = 5$	9 = x
Step 6 Check for extraneous solutions.	Solve each equation. Check each answer to ensure that it does not
$x = (x + 20)^{\frac{1}{2}}$ This is the only solution.	include extraneous solutions. 1. $\sqrt{x-3} = \sqrt{x+15} - 2$ 2. $\sqrt{x+16} = x - \sqrt{x+7}$
$x = -4 \qquad x = 5$ -4? (-4 + 20) <sup>1/2</sup> 5? (5 + 20) <sup>1/2</sup>	15.25 9
$-4 \neq (16)^{\frac{1}{2}} \mathbf{x} \qquad 5 \neq (3 \pm 20)$ $-4 \neq (16)^{\frac{1}{2}} \mathbf{x} \qquad 5 = (25)^{\frac{1}{2}} \mathbf{y}$	
	<b>3.</b> $\sqrt{x-3} - \sqrt{x-2} = 1$ <b>4.</b> $\sqrt{\sqrt{x-3}} = \sqrt{x-15}$
Solve each equation.	No solution 19
<b>4.</b> $(5x+6)^{\frac{1}{4}} = 3$ <b>5.</b> $(6x-8)^{\frac{1}{3}} = 4$ <b>6.</b> $x = (x+6)^{\frac{1}{2}}$	5. $\sqrt{x-3} = \frac{2}{\sqrt{x-3}}$ 6. $\sqrt{x^2 - 7x + 12} - x = x - 6$
$\left[(5x+6)^{\frac{1}{4}}\right]^4 = 3^4 \qquad \left[(6x-8)^{\frac{1}{3}}\right]^3 = 4^3 \qquad x^2 = \left[(x+6)^{\frac{1}{2}}\right]^2$	$\sqrt{x-3}$ 5 3
$5x + 6 = 81 \qquad 6x - 8 = 64 \qquad x^2 = x + 6$	<b>7.</b> $\sqrt{\sqrt{3x+1}} = \sqrt{\sqrt{50x+6}}$ <b>8.</b> $\sqrt[3]{x-7} = \sqrt[3]{x-1}$
$5x = 75 \qquad 6x = 72 \qquad x^2 - x - 6 = 0$	5 or $-\frac{1}{9}$ 8 or $-1$
<u>x = 15</u> <u>x = 12</u> $(x-3)(x+2) = 0$	<b>9.</b> $\sqrt{x+2} = 1 + \sqrt{x-3}$ <b>10.</b> $\sqrt[3]{x+2} = \sqrt[3]{\frac{x}{2}+5}$
X = 3	7 6
Copyright © by Holt, Rinehart and Winston. 63 Holt Algebra 2	Copyright © by Hole, Rinehart and Winston. 64 Holt Algebra 2
LESSON Problem Solving	Reading Strategy
<b>3-8</b> Solving Radical Equations and Inequalities         The formula $s = \sqrt{30/d}$ can be used to estimate the speed, $s$ , in miles per hour that a car is traveling when it goes into a skid, where $f$ is the coefficient of friction and $d$ is the length of the skid marks in feet.         1. How does the speed vary as the length of the skid marks?       Directly         2. Kody skids to a stop on a street with a speed limit of 35 mi/h. His skid marks measure 52 ft, and the coefficient of friction is 0.7. Kody says that he was driving only about 30 mi/h. Kody wants to prove that he was not speeding.         a. Solve the equation for $d$ in terms of $s$ . $d = \frac{s^2}{30f}$ b. How long would the skid marks be if he had been driving at a speed of 35 mi/h?       About 58 ft         c. Was Kody speeding or not? Explain how you know.	<b>B</b> -B Use Vocabulary You can solve radical equations in a three-step process. For example, to solve the equation $\sqrt{x} - 4 = 0$ , follow the steps below. <b>STEP 1:</b> Isolate the radical $\sqrt{x} = 4$ $\sqrt{x} = 4$ $\sqrt{x} = (\sqrt{x})^2 = (4)^2$ To Isolate the radical means to have only the radical on one side of the equation and all other variables and constants on the other side of the equation.
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<b>3.8</b> Solving Radical Equations and Inequalities         The formula $s = \sqrt{30/d}$ can be used to estimate the speed, $s$ , in miles per hour that a car is traveling when it goes into a skid, where $f$ is the coefficient of friction and $d$ is the length of the skid marks in feet.         1. How does the speed vary as the length of the skid marks?       Directly         2. Kody skids to a stop on a street with a speed limit of 35 mi/h. His skid marks measure 52 ft, and the coefficient of friction is 0.7. Kody says that he was driving only about 30 mi/h. Kody wants to prove that he was not speeding.         a. Solve the equation for $d$ in terms of $s$ . $d = \frac{s^2}{30f}$ b. How long would the skid marks be if he had been driving at a speed of 35 mi/h?       About 58 ft         c. Was Kody speeding or not? Explain how you know.       No; possible answer: his skid marks were only 52 ft, not 58 ft.         d. Find his actual speed.       About 33 mi/h         3. Ashley skids to a stop on a street with a speed limit of 15 mi/h to avoid a dog who runs into the street about 20 ft ahead of her. Ashley claims to have been going less than 15 mi/h. The coefficient of friction is 0.7.         a. If Ashley were driving the speed limit, by what distance would she have missed the dog?	<b>B</b> 38 Use Vocabulary You can solve radical equations in a three-step process. For example, to solve the equation $\sqrt{x} - 4 = 0$ , follow the steps below. <b>STEP 1:</b> Isolate the radical $\sqrt{x} = 4$ $\sqrt{x} = 4$ To isolate the radical means to have only the radical on one side of the equation and all other variables and constants on the other side of the equation. To understand what it means to raise a number to a power, think about how the exponent is located slightly higher than the base. Isolate the radical in each equation.
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3-8       Solving Radical Equations and Inequalities         The formula s = √30/d can be used to estimate the speed, s, in miles per hour that a car is traveling when it goes into a skid, where f is the coefficient of friction and d is the length of the skid marks?       Directly         1. How does the speed vary as the length of the skid marks?       Directly         2. Kody skids to a stop on a street with a speed limit of 35 mi/h. His skid marks measure 52 ft, and the coefficient of friction is 0.7. Kody says that he was driving only about 30 mi/h. Kody wants to prove that he was not speeding.         a. Solve the equation for d in terms of s.       d = s²/30f         b. How long would the skid marks be if he had been driving at a speed of 35 mi/h?       About 58 ft         c. Was Kody speeding or not? Explain how you know.       No; possible answer: his skid marks were only 52 ft, not 58 ft.         d. Find his actual speed.       About 33 mi/h         3. Ashley skids to a stop on a street with a speed limit of 15 mi/h to avoid a dog who runs into the street about 20 ft ahead of her. Ashley claims to have been going less than 15 mi/h. The coefficient of friction is 0.7.         a. If Ashley were driving the speed limit, by what distance would she have missed the dog?       By at least 15 ft         Choose the letter for the best answer.       5. On a busy highway with a speed limit	<b>B38</b> Use Vocabulary You can solve radical equations in a three-step process. For example, to solve the equation $\sqrt{x} - 4 = 0$ , follow the steps below. <b>STEP 1:</b> Isolate the radical $\sqrt{x} = 4$ To isolate the radical means to have only the radical on one side of the equation and all other variables and constants on the other side of the equation. <b>Solute the radical in each equation</b> . <b>Isolate the radical in each equation</b> . <b>Isola</b>
<b>3.3</b> Solving Radical Equations and Inequalities The formula $s = \sqrt{30/d}$ can be used to estimate the speed, <i>s</i> , in miles per hour that a car is traveling when it goes into a skid, where <i>f</i> is the coefficient of friction and <i>d</i> is the length of the skid marks in feet. 1. How does the speed vary as the length of the skid marks? <u>Directly</u> 2. Kody skids to a stop on a street with a speed limit of 35 mi/h. His skid marks measure 52 ft, and the coefficient of friction is 0.7. Kody says that he was driving only about 30 mi/h. Kody wants to prove that he was not speeding. a. Solve the equation for <i>d</i> in terms of <i>s</i> . b. How long would the skid marks be if he had been driving at a speed of 35 mi/h? About 58 ft c. Was Kody speeding or not? Explain how you know. <u>No; possible answer: his skid marks were only 52 ft, not 58 ft</u> . d. Find his actual speed. 3. Ashley skids to a stop on a street with a speed limit of 15 mi/h to avoid a dog who runs into the street about 20 ft ahead of her. Ashley claims to have been going less than 15 mi/h. The coefficient of friction is 0.7. a. If Ashley were driving the speed limit, by what distance would she have missed the dog? <u>About 9 ft</u> b. If Ashley were driving less than 10 mi/h, by what distance would she have missed the dog? <u>By at least 15 ft</u> Choose the letter for the best answer.	<b>B36</b> Use Vocabulary You can solve radical equations in a three-step process. For example, to solve the equation $\sqrt{x} - 4 = 0$ , follow the steps below. <b>STEP 1:</b> Isolate the radical $\sqrt{x} = 4$ $\sqrt{x} = 4$ To isolate the radical means to have only the radical on one side of the equation and all other variables and constants on the other side of the equation. <b>Isolate the radical in each equation</b> . <b>Isolate the radical in each equation</b> . <b>Isolate the radical in each equation</b> . <b>Isolate the radical in each equation</b> . <b>I</b> $\sqrt{x} + 3 = 0$ $\sqrt{x} = -3$ $2 \sqrt{x+2} - 6 = 0$ $\sqrt{x} = -2$ $4 \cdot \frac{1}{2}\sqrt{x} - 9 = 0$ $5 - 2\sqrt{x+6} = -4$ <b>Isolate the solution</b> be raised?
<ul> <li>Solving Radical Equations and Inequalities</li> <li>The formula s = √30/d can be used to estimate the speed, s, in miles per hour that a car is traveling when it goes into a skid, where f is the coefficient of friction and d is the length of the skid marks? Directly</li> <li>Kody skids to a stop on a street with a speed limit of 35 mi/h. His skid marks measure 52 ft, and the coefficient of friction is 0.7. Kody says that he was driving only about 30 mi/h. Kody wants to prove that he was not speeding.</li> <li>a. Solve the equation for <i>d</i> in terms of <i>s</i>.</li> <li>b. How long would the skid marks be if he had been driving at a speed of 35 mi/h?</li> <li>c. Was Kody speeding or not? Explain how you know.</li> <li>No; possible answer: his skid marks were only 52 ft, not 58 ft.</li> <li>d. Find his actual speed.</li> <li>About 33 mi/h</li> <li>3. Ashley skids to a stop on a street with a speed limit of 15 mi/h to avoid a dog who runs into the street about 20 ft ahead of her. Ashley claims to have been going less than 15 mi/h. The coefficient of friction is 0.7.</li> <li>a. If Ashley were driving he speed limit, by what distance would she have missed the dog?</li> <li><u>By at least 15 ft</u></li> <li>Choose the letter for the best answer.</li> <li>4. Barney was driving at 25 mi/h. A car pulls out 30 ft ahead of him. Which statement is true?</li> <li>A Barney hits the car.</li> </ul>	<b>B38</b> Use Vocabulary You can solve radical equations in a three-step process. For example, to solve the equation $\sqrt{x} - 4 = 0$ , follow the steps below. <b>STEP 1:</b> Isolate the radical $\sqrt{x} = 4$ $\sqrt{x} = 4$ $\sqrt{x} = 4$ $\sqrt{x}^2 = (4)^2$ To <b>isolate</b> the radical means to have only the radical on one side of the equation. To <b>isolate</b> the radical means to have only the other variables and constants on the other variables and constants on the other side of the equation. <b>Isolate</b> the radical <b>in each equation</b> . <b>Isolate</b> the <b>radical in each equation</b> . <b>1.</b> $\sqrt{x} + 3 = 0$ $\sqrt{x} = -3$ $2. \sqrt{x+2} - 6 = 0$ $\sqrt{x} = -2$ $4. \frac{1}{2}\sqrt{x} - 9 = 0$ $\sqrt{x} = 18$ <b>5.</b> $-2\sqrt{x+6} = -4$ $\sqrt{x+6} = 2$
<ul> <li>Solving Radical Equations and Inequalities</li> <li>The formula s = √30/d can be used to estimate the speed, s, in miles per hour that a car is traveling when it goes into a skid, where f is the coefficient of friction and d is the length of the skid marks? Directly</li> <li>Kody skids to a stop on a street with a speed limit of 35 mi/h. His skid marks measure 52 ft, and the coefficient of friction is 0.7. Kody says that he was driving only about 30 mi/h. Kody wants to prove that he was not speeding.</li> <li>a. Solve the equation for d in terms of s.</li> <li>b. How long would the skid marks be if he had been driving at a speed of 35 mi/h?</li> <li>c. Was Kody speeding or not? Explain how you know.</li> <li>No; possible answer: his skid marks were only 52 ft, not 58 ft.</li> <li>d. Find his actual speed.</li> <li>3. Ashley skids to a stop on a street with a speed limit of 15 mi/h to avoid a dog who runs into the street about 20 ft ahead of her. Ashley claims to have been going less than 15 mi/h. The coefficient of friction is 0.7.</li> <li>a. If Ashley were driving the speed limit, by what distance would she have missed the dog?</li> <li><u>By at least 15 ft</u></li> <li>Choose the letter for the best answer.</li> <li>4. Barney was driving at 25 mi/h. A car puls out 30 ft ahead of him. Which statement is true?</li> <li>A Barney stops less than a foot from the car.</li> </ul>	<b>B36</b> Use Vocabulary You can solve radical equations in a three-step process. For example, to solve the equation $\sqrt{x} - 4 = 0$ , follow the steps below. <b>STEP 1:</b> Isolate the radical $\sqrt{x} = 4$ $\sqrt{x} = 4$ To isolate the radical means to have only the radical on one side of the equation and all other variables and constants on the other side of the equation. <b>Isolate the radical in each equation</b> . <b>Isolate the radical in each equation</b> . <b>Isolate the radical in each equation</b> . <b>Isolate the radical in each equation</b> . <b>I</b> $\sqrt{x} + 3 = 0$ $\sqrt{x} = -3$ $2 \sqrt{x+2} - 6 = 0$ $\sqrt{x} = -2$ $4 \cdot \frac{1}{2}\sqrt{x} - 9 = 0$ $5 - 2\sqrt{x+6} = -4$ <b>Isolate the solution</b> be raised?
<ul> <li>Solving Radical Equations and Inequalities</li> <li>The formula s = √30/d can be used to estimate the speed, s, in miles per hour that a car is traveling when it goes into a skid, where f is the coefficient of friction and d is the length of the skid marks? Directly</li> <li>Kody skids to a stop on a street with a speed limit of 35 mi/h. His skid marks measure 52 ft, and the coefficient of friction is 0.7. Kody says that he was driving only about 30 mi/h. Kody wants to prove that he was not speeding.</li> <li>a. Solve the equation for d in terms of s.</li> <li>b. How long would the skid marks be if he had been driving at a speed of 35 mi/h?</li> <li>c. Was Kody speeding or not? Explain how you know.</li> <li>No; possible answer: his skid marks were only 52 ft, not 58 ft.</li> <li>d. Find his actual speed.</li> <li>About 33 mi/h</li> <li>3. Ashley skids to a stop on a street with a speed limit of 15 mi/h to avoid a dog who runs into the street about 20 ft ahead of her. Ashley claims to have been going less than 15 mi/h. The coefficient of friction is 0.7.</li> <li>a. If Ashley were driving the speed limit, by what distance would she have missed the dog?</li> <li><u>By at least 15 ft</u></li> <li>Choose the letter for the best answer.</li> <li>4. Barney was driving at 25 mi/h. A car pulls out 30 ft ahead of him. Which statement is true?</li> <li>A Barney stops less than a foot from the car.</li> <li>C Barney misses the car by 3 ft.</li> </ul>	<b>B38</b> Use Vocabulary You can solve radical equations in a three-step process. For example, to solve the equation $\sqrt{x} - 4 = 0$ , tollow the steps below. <b>STEP 1:</b> Isolate the radical $\sqrt{x} = 4$ $\sqrt{x} = 4$ To isolate the radical means to have only the radical on one side of the equation and all other variables and constants on the other side of the equation. <b>Isolate the radical in each equation</b> . <b>Isolate the radical in each equation</b> . <b>Isolate the radical in each equation</b> . <b>Isolate the radical in each equation</b> . <b>I</b> $\sqrt{x} + 3 = 0$ $\sqrt{x} = -3$ $2 \sqrt{x + 2} - 6 = 0$ $\sqrt{x} = -2$ $4 \cdot \frac{1}{2}\sqrt{x} - 9 = 0$ $5 \cdot -2\sqrt{x + 6} = -4$ <b>Isolate the solution be sides of each equation be raise?</b> <b>6.</b> $\sqrt[3]{x} = 2$ <b>1.</b> $\sqrt{x} + 3 = 3$ <b>Fourth power</b> <b>8.</b> $\sqrt[3]{x} = -3$ <b>9.</b> $\sqrt[3]{x} = -4$ <b>1.</b> $\sqrt{x} + 2 = 1$ <b>Second Power</b>
<b>3.8</b> Solving Radical Equations and Inequalities         The formula $s = \sqrt{30/d}$ can be used to estimate the speed, $s$ , in miles per hour that a car is traveling when it goes into a skid, where $f$ is the coefficient of friction and $d$ is the length of the skid marks?       Directly         2. Kody skids to a stop on a street with a speed limit of 35 mi/h. His skid marks measure 52 ft, and the coefficient of friction is 0.7. Kody says that he was driving only about 30 mi/h. Kody wants to prove that he was not speeding. $d = \frac{s^2}{30f}$ a. Solve the equation for $d$ in terms of $s$ . $d = \frac{s^2}{30f}$ b. How long would the skid marks be if he had been driving at a speed of 35 mi/h?       About 58 ft         c. Was Kody speeding or not? Explain how you know.       No; possible answer: his skid marks were only 52 ft, not 58 ft.         d. Find his actual speed.       About 33 mi/h         3. Ashley skids to a stop on a street with a speed limit of 15 mi/h to avoid a dog who runs into the street about 20 ft ahead of her. Ashley claims to have been going less than 15 mi/h. The coefficient of friction is 0.7.         a. If Ashley were driving the speed limit, by what distance would she have missed the dog?       By at least 15 ft         Choose the letter for the best answer.         4. Barney was driving at 25 mi/h. A car pulls out 30 ft ahead of him. Which statement is true?       S. On a busy highway with a speed limit of 70 mi/h, a truck ahead of Verna jack-knifes across the road. Verna jack-knifes across the road. Verna jack-knifes across the road. Verna jack-knifes across the	<b>B38</b> Use Vocabulary You can solve radical equations in a three-step process. For example, to solve the equation $\sqrt{x} - 4 = 0$ , follow the steps below. <b>STEP 1:</b> Isolate the radical $\sqrt{x} = 4$ $\sqrt{x} = 4$ To isolate the radical means to have only the radical on one side of the equation and all other variables and constants on the other side of the equation. <b>Isolate the radical in each equation</b> . <b>Isolate the radical in each equation</b> . 1. $\sqrt{x} + 3 = 0$ $\sqrt{x} = -3$ 2. $\sqrt{x + 2} - 6 = 0$ $\sqrt{x} = -3$ 2. $\sqrt{x + 2} - 6 = 0$ $\sqrt{x} = -2$ 4. $\frac{1}{2}\sqrt{x} - 9 = 0$ $\sqrt{x} = 18$ 5. $-2\sqrt{x + 6} = -4$ $\sqrt{x} + 6 = 2$ <b>To what power</b> hould both sides of each equation be raised? 6. $\sqrt[3]{x} = 2$ <u>Third power</u> $7. \sqrt{x + 2} = 1$ <u>Second Power</u>
<ul> <li>Solving Radical Equations and Inequalities</li> <li>The formula s = √30/d can be used to estimate the speed, s, in miles per hour that a car is traveling when it goes into a skid, where f is the coefficient of friction and d is the length of the skid marks in feet.</li> <li>1. How does the speed vary as the length of the skid marks? Directly</li> <li>2. Kody skids to a stop on a street with a speed limit of 35 mi/h. His skid marks measure 52 ft, and the coefficient of friction is 0.7. Kody says that he was driving only about 30 mi/h. Kody wants to prove that he was not speeding.</li> <li>a. Solve the equation for d in terms of s.</li> <li>b. How long would the skid marks be if he had been driving at a speed of 35 mi/h?</li> <li>c. Was Kody speeding or not? Explain how you know.</li> <li>No; possible answer: his skid marks were only 52 ft, not 58 ft.</li> <li>d. Find his actual speed.</li> <li>3. Ashley skids to a stop on a street with a speed limit of 15 mi/h to avoid a dog who runs into the street about 20 ft ahead of her. Ashley claims to have been going less than 15 mi/h. The coefficient of friction is 0.7.</li> <li>a. If Ashley were driving the speed limit, by what distance would she have missed the dog?</li> <li><u>About 9 ft</u></li> <li>b. If Ashley were driving less than 10 mi/h, by what distance would she have missed the dog?</li> <li><u>Barney</u> stops less than a foot from the car.</li> <li>(a) Barney stops less than a foot from the car.</li> <li>(b) Barney sisses the car by 3 ft.</li> <li>(c) Barney sisses the car by 3 ft.</li> <li>(c) Barney's skid marks measure 23 ft.</li> </ul>	<b>B33</b> Use Vocabulary You can solve radical equations in a three-step process. For example, to solve the equation $\sqrt{x} - 4 = 0$ , follow the steps below. <b>STEP 1:</b> Isolate the radical $\sqrt{x} = 4$ $\sqrt{x} = 4$ $\sqrt{x}^2 = (4)^2$ To isolate the radical means to have only the radical on one side of the equation and all other variables and constants on the other side of the equation. To understand what it means to raise a number to a power, think about how the exponent is located slightly higher than the base. <b>Isolate the radical in each equation</b> 1. $\sqrt{x} + 3 = 0$ $\sqrt{x} = -3$ 2. $\sqrt{x + 2} - 6 = 0$ $\sqrt{x} = -2$ 4. $\frac{1}{2}\sqrt{x} - 9 = 0$ $\sqrt{x} = 18$ 5. $-2\sqrt{x + 6} = -4$ $\sqrt{x + 6} = 2$ <b>To what power should both sides of each equation be raised?</b> 6. $\sqrt[3]{x} = 2$ <b>Third power</b> 8. $\sqrt[3]{x - 3} = 3$ <b>Fourth power</b> 9. $\sqrt[3]{x} = -4$ <b>Third power</b> Solve the following equations. 10. $\sqrt{x} - 7 = 1$ 11. $\sqrt{x + 2} = 3$
<ul> <li>Solving Radical Equations and Inequalities</li> <li>The formula s = √30/d can be used to estimate the speed, s, in miles per hour that a car is traveling when it goes into a skid, where f is the coefficient of friction and d is the length of the skid marks? Directly</li> <li>Kody skids to a stop on a street with a speed limit of 35 mi/h. His skid marks measure 52 ft, and the coefficient of friction is 0.7. Kody says that he was driving only about 30 mi/h. Kody wants to prove that he was not speeding.</li> <li>a. Solve the equation for d in terms of s.</li> <li>b. How long would the skid marks be if he had been driving at a speed of 35 mi/h?</li> <li>c. Was Kody speeding or not? Explain how you know.</li> <li>No; possible answer: his skid marks were only 52 ft, not 58 ft.</li> <li>d. Find his actual speed.</li> <li>3. Ashley skids to a stop on a street with a speed limit of 15 mi/h to avoid a dog who runs into the street about 20 ft ahead of her. Ashley claims to have been going less than 15 mi/h. The coefficient of friction is 0.7.</li> <li>a. If Ashley were driving the speed limit, by what distance would she have missed the dog?</li> <li><u>About 9 ft</u></li> <li>b. If Ashley were driving at 25 mi/h. A car pulls out 30 ft ahead of him. Which statement is true?</li> <li>A Barney was driving at 25 mi/h. A car puls out 30 ft ahead of him. Which statement is true?</li> <li>A Barney misses than a foot from the car.</li> <li>(a) Barney soby less than a foot from the car.</li> <li>(b) Barney is ble less than a foot from the car.</li> <li>(c) Barney misses the car by 3 ft.</li> <li>(c) Barney skid marks measure 23 ft.</li> </ul>	<b>B33</b> Use Vocabulary You can solve radical equations in a three-step process. For example, to solve the equation $\sqrt{x} - 4 = 0$ , tollow the steps below. <b>STEP 1:</b> Isolate the radical $\sqrt{x} = 4$ $\sqrt{x} = 4$ $\sqrt{x} = 4$ $\sqrt{x} = 4$ $\sqrt{x} = 4$ To isolate the radical means to have only the radical on one side of the equation and all other variables and constants on the other side of the equation. To understand what it means to raise a number to a power, think about how the exponent is located slightly higher than the base. <b>Isolate the radical in each equation.</b> 1. $\sqrt{x} + 3 = 0$ $\sqrt{x} = -3$ 2. $\sqrt{x + 2} - 6 = 0$ $\sqrt{x} = -2$ 4. $\frac{1}{2}\sqrt{x} - 9 = 0$ $\sqrt{x} = -18$ 5. $-2\sqrt{x + 6} = -4$ <b>To what power should both sides of each equation be raised?</b> 6. $\sqrt[3]{x} = 2$ <u>Third power</u> 8. $\sqrt[3]{x} - 3 = 3$ <u>Fourth power</u> <b>Solve the following equations.</b>