1 4 9 16 25 36 49 64 81 100 121 144 169 196 225 256 289 324 361 400

ALGEBRA I Lesson

Simplifying Radicals: Recall that to simplify a radical, you must be familiar with the numbers that are perfect squares, which are listed in the margin at the left. The roots are 1 through 20. Follow the procedures and examples below to help solve the problems that follow.

① Is the number under the radical a perfect square? If it is, take the square root and write the root without the radical symbol.

Ex: $\sqrt{25} = 5$

$\sqrt{144} = 12$

② If the number under the radical is not a perfect square. Find the largest perfect square that divides into the number evenly. Write the number as a product.

Ex: $\sqrt{24}$ → not a perfect square

$\sqrt{24} = \sqrt{4 \cdot 6}$ The 24 is written as $4 \cdot 6$ because 4 is the largest perfect square that goes into 24 evenly

$\sqrt{24} = \sqrt{4 \cdot 6} = 2\sqrt{6}$ Take the square root of the factor that is the largest perfect square and write that root outside of the radical. Keep the other factor under the radical.

③ If the number under the radical is not a perfect square and has no factors that are perfect squares, the answer remains the same.

Ex: $\sqrt{15} = \sqrt{15}$ $\sqrt{51} = \sqrt{51}$

Worksheet – Simplifying Radicals. Simplify each radical completely. The first two have been done for you.

1. $\sqrt{125} = \sqrt{25 \cdot 5} = 5\sqrt{5}$

2. $\sqrt{288} = \sqrt{144 \cdot 2} = 12\sqrt{2}$

3. $\sqrt{90}$

5. $\sqrt{36}$

7. $\sqrt{216}$

9. $\sqrt{45}$

11. $\sqrt{88}$

13. $\sqrt{76}$

15. $\sqrt{104}$

Solving Linear Equations

Remember the goal in solving a linear equation is to get the variable alone on one side and everything else on the other. This is a step-by-step process, which is outlined below.

Step 1: Simplify each side of the equation separately.
- Eliminate parentheses
- Combine like terms

Step 2: If the variable is on both sides, add or subtract to get the variable on one side of the equation. If the variable is eliminated in this step, look at the equation you have. If it is true, write identity. If it is false, write no solution. Move to the next problem.

Step 3: Look at the side of the equation with the variable and undo, the operations that have been done to the variable. This usually means to undo any addition or subtraction first then undo any multiplication or division,

Step 4: Check your answer.

Example: $3+2(2x+5)=6(x-1)+3$

$3+4x+10=6x-6+3$

$4x+13=6x-3$

$-4x \quad -4x$

$13=2x-3$

$+3 \quad +3$

$\frac{16}{2}=\frac{2x}{2}$

$8=x$

Check:

$3+2(2\cdot 8+5) \stackrel{?}{=} 6(8-1)+3$

$3+2(16+5) \stackrel{?}{=} 6\cdot 7+3$

$3+2\cdot 21 \stackrel{?}{=} 42+3$

$3+42 \stackrel{?}{=} 45$

$45 \stackrel{?}{=} 45$ ✓

Example: $\frac{x+6}{5}=9$

$5\left(\frac{x+6}{5}\right)=9\cdot 5$

$x+6=45$

$-6 \quad -6$

$x=39$

Notice the division is undone first in this example!!

Check $\frac{39+6}{5} \stackrel{?}{=} 9$

$\frac{45}{5} \stackrel{?}{=} 9$

$9=9$ ✓

Algebra 1 Name_____ ID: 1

FID Assignment: Solving Equations

Date_____ Period____

Solve each equation.
SHOW ALL WORK!

1) $3x + 2 = 11$

2) $-4 = 6 - 2x$

3) $\frac{x}{-8} - 1 = 2$

5) $8x - 4 = -60$

6) $-10 + \frac{1}{2}x = -14$

7) $5(1 + 3x) = 50$

8) $x - 4 = -9 + x$

9) $22 = -7x - 6 + 11x$