Simplifying Radicals
Tuesday, August 20, 2019 8:44 AM

Simplifying Radicals pg 20

Perfect Squares

$1^2 = 1$
$2^2 = 4$
$3^2 = 9$
$4^2 = 16$
$5^2 = 25$
$6^2 = 36$
$7^2 = 49$
$8^2 = 64$
$9^2 = 81$
$10^2 = 100$
$11^2 = 121$
$12^2 = 144$
$13^2 = 169$
$14^2 = 196$
$15^2 = 225$
$16^2 = 256$

Simplify

1. $\sqrt{64} = 8$

2. $\sqrt{48}$
$\sqrt{16} \cdot \sqrt{3}$
$\boxed{4\sqrt{3}}$

2b. $\sqrt{48} = 2 \cdot 2\sqrt{3}$
$\boxed{4\sqrt{3}}$

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what perfect square goes into it?

3. $\sqrt{72}$
$\sqrt{36} \cdot \sqrt{2}$
$\boxed{6\sqrt{2}}$

4. $\sqrt{-16}$
$\sqrt{16}\ \sqrt{-1}$
$4i$

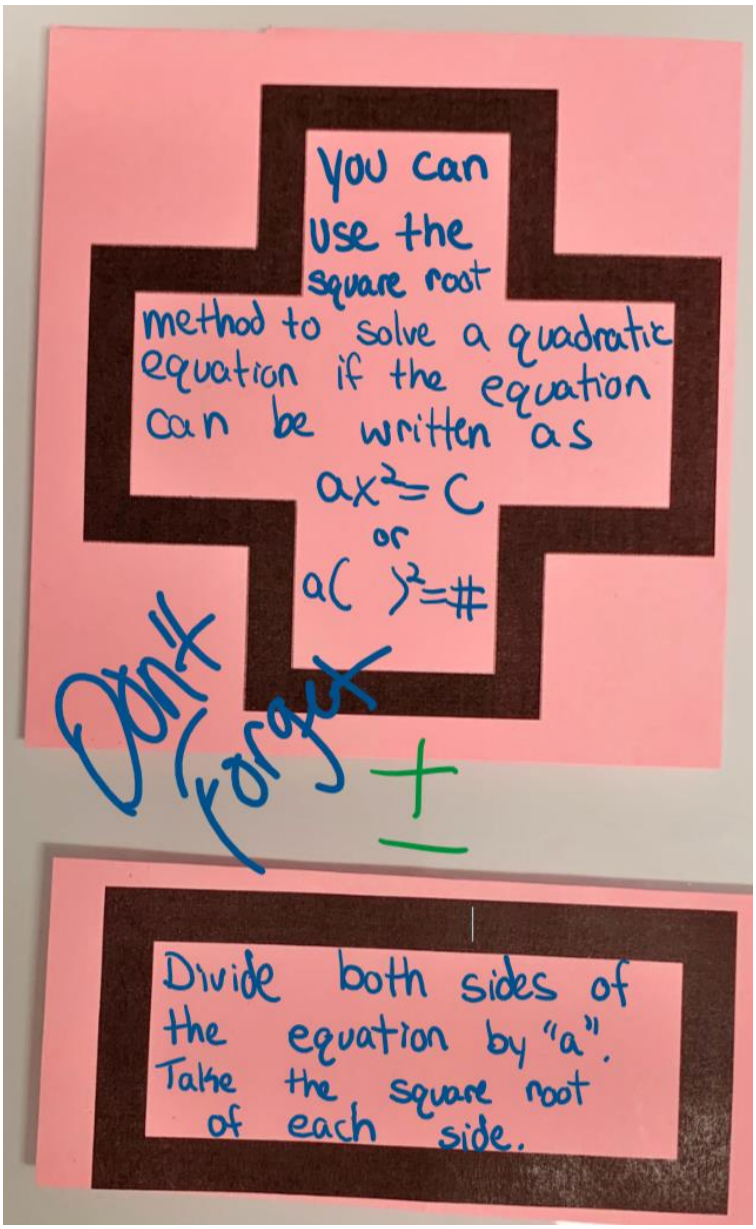
If there is a negative under the radical, you will have i in your answer.

5. $\sqrt{-54}$
$\sqrt{9} \cdot \sqrt{6} \cdot \sqrt{-1}$
$3i\sqrt{6}$

6. $\sqrt{75}$
$\sqrt{25} \cdot \sqrt{3}$
$5\sqrt{3}$

7. $\sqrt{-28}$
$\sqrt{-1}\sqrt{4}\sqrt{7}$
$2i\sqrt{7}$

8. $\sqrt{363}$
$\sqrt{-1} \cdot \sqrt{121} \cdot \sqrt{3}$
$11i\sqrt{3}$



Ex. Solve by the Square Root Method

1. $5x^2 - 180 = 0$

$+180 \quad +180$

$\frac{5x^2}{5} = \frac{180}{5}$

$\sqrt{x^2} = \sqrt{36}$

$x = \pm 6$

2. $\frac{3x^2}{3} = \frac{15}{3}$

$\sqrt{x^2} = \sqrt{5}$

$x = \pm\sqrt{5}$

3) $\frac{5(x-4)^2}{5} = \frac{100}{5}$

$\sqrt{(x-4)^2} = \sqrt{20}$

$\sqrt{4}\cdot\sqrt{5}$

$x - 4 = \pm 2\sqrt{5}$

$+4 \quad +4$

$x = 4 \pm 2\sqrt{5}$

$4+2\sqrt{5}, \ 4-2\sqrt{5}$

Moving Words

Solve each equation in the top block and find the solution set in the bottom block. (One equation has no solution.) Transfer the word from the top box to the corresponding bottom box.

$x^2 = 81$ TO	$y^2 - 49 = 0$ MAKE	$4x^2 - 200 = -20$ THE	$(x - 2)^2 = 28$ STUDENTS
$a^2 = 20$ WAS	$x^2 - 16 = 8$ ONCE	$7y^2 + 18 = 4$ THERE	$3(x - 5)^2 = 12$ TEACHER
$3n^2 = 45$ IN	$b^2 + 11 = 86$ TEN	$(x - 1)^2 = 9$ LAUGH	$5(n + 1)^2 = 40$ TEN
$7x^2 = 84$ WHO	$2x^2 - 3 = 15$ NO	$(a + 3)^2 = 25$ TOLD	$(2x - 3)^2 = 81$ JOKES
$2v^2 = 180$ BUT	$5w^2 + 8 = 58$ A	$(t - 4)^2 = 7$ DID	$(4t + 1)^2 = 49$ PUN

no solution THERE	$\{\pm 2\sqrt{6}\}$ ONCE	$\{\pm 2\sqrt{5}\}$ WAS	$\{\pm \sqrt{10}\}$ A	$\{7, 3\}$ TEACHER
$\{\pm 2\sqrt{3}\}$ WHO	$\{2, -8\}$ TOLD	$\{\pm 5\sqrt{3}\}$ TEN	$\{6, -3\}$ JOKES	$\{\pm 9\}$ TO
$\{\pm 7\}$ MAKE	$\{\pm 2\sqrt{3}\}$ THE	$\{2 \pm 2\sqrt{7}\}$ STUDENTS	$\{4, -2\}$ LAUGH	$\{\pm 3\sqrt{10}\}$ BUT
$\{\pm 3\}$ NO	$\{\frac{3}{2}, -2\}$ PUN	$\{\pm\sqrt{15}\}$ IN	$\{-1 \pm 2\sqrt{2}\}$ TEN	$\{4 \pm \sqrt{7}\}$ DID