

SIMPLIFYING RADICAL EXPRESSIONS

Perfect Squares: 1, 4, 9, 16, 25, _____, _____, _____, _____, _____, _____, 144...
 x^2, x^4, x^6, \dots Exponents must be _____.

$\sqrt{25}$ is read "the square root of 25".

$$\sqrt{25} = 5 \text{ because } 5^2 = 25 \quad \sqrt{36} = 6 \text{ because } \underline{\quad} = \underline{\quad} \quad \sqrt{100} = \underline{\quad} \quad \sqrt{49} = \underline{\quad}$$

$$\sqrt{a^6} = a^3 \text{ because } (a^3)^2 = a^6 \quad \sqrt{m^{16}} = m^8 \text{ because } \underline{\quad} = \underline{\quad} \quad \sqrt{y^{10}} = \underline{\quad} \quad \sqrt{a^2} = \underline{\quad}$$

Hint: Divide the exponent by _____.

In the expression \sqrt{a} , the $\sqrt{\quad}$ is called the radical and a is called the radicand.

Simplify (Simplifying Perfect Squares):

- $\sqrt{4}$
- $\sqrt{16}$
- $-\sqrt{100}$
- $\sqrt{a^8}$
- $\sqrt{w^{12}}$
- $\sqrt{a^6b^{10}}$
- $\sqrt{9a^2}$
- $-\sqrt{81m^{64}}$
- $\sqrt{49a^4b^{12}}$
- $\sqrt{121x^{14}y^6}$

Simplify (Simplifying Radicals that are not Perfect Squares):

- $\sqrt{20} = \sqrt{4} \cdot \sqrt{5} = 2\sqrt{5}$
- $\sqrt{27} = \sqrt{9}\sqrt{3} = 3\sqrt{3}$
- $\sqrt{48} = \sqrt{16}\sqrt{3} = 4\sqrt{3}$
- $\sqrt{45} = \sqrt{\quad}\sqrt{\quad} = \underline{\quad}\sqrt{\quad}$
- $\sqrt{12} = \sqrt{\quad}\sqrt{\quad} = \underline{\quad}$
- $\sqrt{50} = \underline{\quad}$
- $\sqrt{a^5} = \sqrt{a^4}\sqrt{a} = a^2\sqrt{a}$
- $\sqrt{x^9} = \sqrt{\quad}\sqrt{\quad} = \underline{\quad}$
- $\sqrt{x^3} = \underline{\quad}$

Simplify:

- $\sqrt{18}$
- $\sqrt{125}$
- $\sqrt{72}$
- $\sqrt{180}$
- $\sqrt{a^3}$
- $\sqrt{b^7}$
- $\sqrt{m^{11}}$
- $\sqrt{75x^7y^5}$
- $\sqrt{27a^{11}b^7}$
- $\sqrt{32a^7b^4}$
- $\sqrt{9a^8}$
- $\sqrt{45a^7}$
- $\sqrt{36x^2y^6}$
- $\sqrt{12x^{20}y^8}$
- $-\sqrt{200}$
- $\sqrt{196}$
- $\sqrt{63x^4y}$
- $\sqrt{6x^3}$
- $\sqrt{100x^5y}$
- $\sqrt{80x^{100}y^{49}}$

Homework Simplifying Radicals

Name _____

Class Time _____

Simplify each of the following expressions completely.

_____ 1. $\sqrt{64}$

_____ 2. $-\sqrt{18}$

_____ 3. $\sqrt{32}$

_____ 4. $\sqrt{50}$

_____ 5. $\sqrt{400}$

_____ 6. $\sqrt{x^6}$

_____ 7. $\sqrt{x^7}$

_____ 8. $\sqrt{16x^{16}}$

_____ 9. $\sqrt{9x^9}$

_____ 10. $\sqrt{40x^8}$

_____ 11. $\sqrt{25x^7}$

_____ 12. $\sqrt{12x^5}$

_____ 13. $\sqrt{a^2b^4}$

_____ 14. $\sqrt{49a^8x^{12}}$

_____ 15. $\sqrt{28x^9y^6}$

_____ 16. $\sqrt{32m^7n^{11}}$

_____ 17. $\sqrt{20x^{10}y^5}$

_____ 18. $\sqrt{100ab^4}$

_____ 19. $\sqrt{75x^8y^3}$

_____ 20. $\sqrt{98x^7y^5}$

_____ 21. $\frac{x^2+16x+63}{2x^2+19x+9}$

Homework: This worksheet**Answers to odd problems on worksheet:**

1. 8

3. $4\sqrt{2}$

5. 20

7. $x^3\sqrt{x}$

9. $3x^4\sqrt{x}$

11. $5x^3\sqrt{x}$

13. ab^2

15. $2x^4y^3\sqrt{7x}$

17. $2x^5y^2\sqrt{5y}$

19. $5x^4y\sqrt{3y}$

21. $\frac{x+7}{2x+1}$