

WORKSHEET #1 - 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".

$\sqrt{25} = 5$ because $5^2 = 25$ $\sqrt{36} = 6$ because _____ = _____ $\sqrt{100} =$ _____ $\sqrt{49} =$ _____

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

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):**

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

Simplify by looking for "Perfect Squares" (Simplifying Radicals that are not Perfect Squares):

1. $\sqrt{20} = \sqrt{4} \cdot \sqrt{5} = 2\sqrt{5}$
2. $\sqrt{27} = \sqrt{9}\sqrt{3} = 3\sqrt{3}$
3. $\sqrt{48} = \sqrt{16}\sqrt{3} = 4\sqrt{3}$
4. $\sqrt{45} = \sqrt{\quad}\sqrt{\quad} = \underline{\quad}\sqrt{\quad}$
5. $\sqrt{12} = \sqrt{\quad}\sqrt{\quad} = \underline{\quad}$
6. $\sqrt{50} =$ _____
7. $\sqrt{a^5} = \sqrt{a^4}\sqrt{a} = a^2\sqrt{a}$
8. $\sqrt{x^9} = \sqrt{\quad}\sqrt{\quad} = \underline{\quad}$
9. $\sqrt{x^3} =$ _____

Simplify by "Jail Break":

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

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

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