

QUIZ DATES: _____ & _____

TEST DATE: _____

Math 2

Name _____

Unit 3 – Quadratic Functions Continued

Date _____ Pd _____

Lesson 2 → Simplifying Square Roots

PERFECT SQUARES

1²
2²
3²
4²
5²

NUMBER MULTIPLIED	PERFECT SQUARES	NUMBER MULTIPLIED	PERFECT SQUARES	NUMBER MULTIPLIED	PERFECT SQUARES	NUMBER MULTIPLIED	PERFECT SQUARES
1 X 1 =	1	6 X 6 =	36	11 X 11 =	121	16 X 16 =	256
2 X 2 =	4	7 X 7 =	49	12 X 12 =	144	17 X 17 =	289
3 X 3 =	9	8 X 8 =	64	13 X 13 =	169	18 X 18 =	324
4 X 4 =	16	9 X 9 =	81	14 X 14 =	196	19 X 19 =	361
5 X 5 =	25	10 X 10 =	100	15 X 15 =	225	20 X 20 =	400

Taking the square root of a number is the **inverse** of raising the number to the second power.

SQUARE ROOTS and CUBE ROOTS

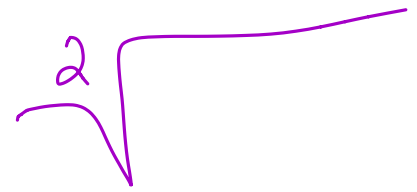
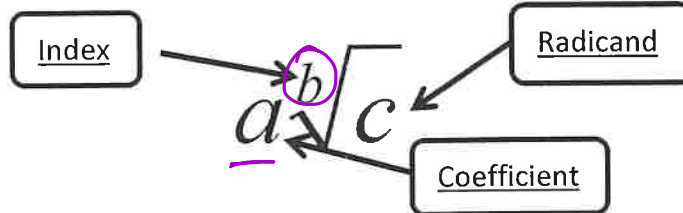
For example: If $3^2 = 9$, then $\sqrt{9} = 3$. For example: If $7^2 = 49$, then $\sqrt{49} = 7$.

Taking the cube root of a number is the inverse of raising the number to the third power.

For example: If $3^3 = 27$, then $\sqrt[3]{27} = 3$. For example: If $7^3 = 343$, then $\sqrt[3]{343} = 7$.

PARTS OF A RADICAL

An expression that contains a square root is a radical. It can have three parts.



➤ Simplify the following radical expressions.

$\sqrt{100} = 10$ $3\sqrt{121} = 3 \cdot 11 = 33$ $-\sqrt{225} = -15$ $-2\sqrt{144} = -24$
 $\sqrt{25} = 5$ $7\sqrt{81} = 7 \cdot 9 = 63$ $\pm\sqrt{49} = \pm 7$ $\pm 9\sqrt{9} = \pm 27$

➤ What is the radicand is not a perfect square but has a factor that is a perfect square?

• Simplify: $\sqrt{24} = \sqrt{4 \cdot 6} = 2\sqrt{6}$

Handwritten factorization for 24: $1 \cdot 24$, $2 \cdot 12$, $3 \cdot 8$, $4 \cdot 6$

What is the highest factor of 24 that is also a perfect square? _____. Therefore, $24 = ___ \cdot ___$

• Simplify: $\sqrt{32} = \sqrt{16 \cdot 2} = 4\sqrt{2}$

Handwritten factorization for 32: $1 \cdot 32$, $2 \cdot 16$, $4 \cdot 8$

What is the highest factor of 32 that is also a perfect square? _____. Therefore, $32 = ___ \cdot ___$

• Simplify: $\sqrt{54} = 3\sqrt{6}$

Handwritten factorization for 54: $1 \cdot 54$, $2 \cdot 27$, $3 \cdot 18$, $6 \cdot 9$

What is the highest factor of 54 that is also a perfect square? _____. Therefore, $54 = ___ \cdot ___$

➤ Classwork:

1. $\sqrt{18}$ $3\sqrt{2}$	2. $\sqrt{20}$ $2\sqrt{5}$	3. $\sqrt{40}$ $2\sqrt{10}$	4. $\sqrt{50}$ $5\sqrt{2}$	5. $\sqrt{63}$ $3\sqrt{7}$
6. $\pm\sqrt{63}$ $\pm 3\sqrt{7}$	7. $\sqrt{48}$ $4\sqrt{3}$	8. $\sqrt{98}$ $7\sqrt{2}$	9. $\sqrt{75}$ $5\sqrt{3}$	10. $\sqrt{256}$ 16
11. $2\sqrt{18}$ $6\sqrt{2}$	12. $-4\sqrt{12}$ $-8\sqrt{3}$	13. $5\sqrt{24}$ $10\sqrt{6}$	14. $-\frac{1}{2}\sqrt{20}$ $-\sqrt{5}$	15. $5\sqrt{500}$ $50\sqrt{5}$
16. $-\sqrt{44}$	17. $12\sqrt{60}$	18. $-10\sqrt{80}$	19. $\frac{1}{2}\sqrt{8}$	20. $\pm\sqrt{12}$
21. $3\sqrt{250}$	22. $-\frac{4}{5}\sqrt{50}$	23. $\pm 7\sqrt{90}$	24. $3\sqrt{10}$	25. $\pm 2\sqrt{117}$
26. $\sqrt{x^2}$ X	27. $\sqrt{16x^2}$ $4x$	28. $\sqrt{9x^3}$ $3x\sqrt{x}$	29. $\sqrt{27x^4}$ $3x^2\sqrt{3}$	30. $\sqrt{48x^3}$ $4x\sqrt{3x}$

$$1) \sqrt{24}$$

$$\begin{array}{r} 2 \overline{) 24} \\ \underline{3 \overline{) 12}} \\ 2 \overline{) 4} \\ \underline{2} \\ 2 \sqrt{6} \end{array}$$

$$2) \sqrt{32}$$

$$\begin{array}{r} 2 \overline{) 32} \\ \underline{4 \overline{) 16}} \\ \underline{2 \overline{) 8}} \\ \underline{2} \\ 4 \sqrt{2} \end{array}$$

$$3) \sqrt[3]{54}$$

$$\begin{array}{r} \overline{) 54} \\ 3 \overline{) 27} \\ \underline{3 \overline{) 9}} \\ 3 \sqrt[3]{6} \end{array}$$

Math 2

Unit 3 – Rational Exponents and Solving Quadratics

Lesson 2 → Simplifying Square Roots HOMEWORK

Name _____

Date _____ Pd _____

1. $\sqrt{125n}$	2. $\sqrt{216v}$	3. $\sqrt{512k^2}$
4. $\sqrt{512m^3}$	5. $\sqrt{216k^4}$	6. $\sqrt{100v^3}$
7. $\sqrt{80p^3}$	8. $\sqrt{45p^2}$	9. $\sqrt{147m^3n^3}$
10. $\sqrt{200m^4n}$	11. $\sqrt{75x^2y}$	12. $\sqrt{64m^3n^3}$
13. $\sqrt{16u^4v^3}$	14. $\sqrt{28x^3y^3}$	15. $\sqrt{36x^2y^3}$
16. $\sqrt{384x^4y^3}$	17. $7\sqrt{96m^3}$	18. $6\sqrt{72x^2}$
19. $-6\sqrt{150r}$	20. $5\sqrt{80a^3}$	21. $2\sqrt{125v}$
22. $-8\sqrt{24k^3}$	23. $-4\sqrt{192x}$	24. $2\sqrt{8p^2q^3r}$
25. $-4\sqrt{216x^2y^2z}$	26. $-3\sqrt{24a^4b^2c^3}$	27. $3\sqrt{16x^4y^4z}$
28. $-2\sqrt{48a^3b^4c^2}$	29. $6\sqrt{75mp^2q^3}$	30. $4\sqrt{36x^2y^3z^4}$