

Find and sit in assigned seat!

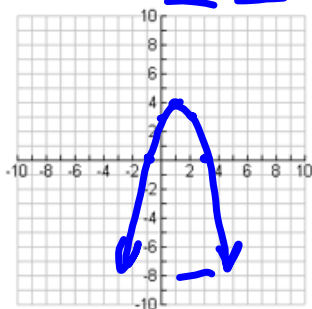


Grab a Week #1 Packet off the front table Bell Ringer

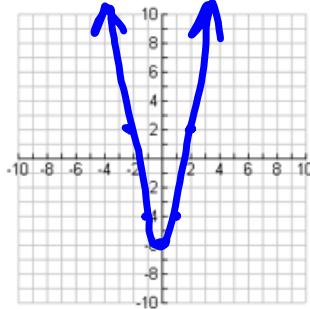
Tuesday 11/19

Graph the following functions and describe the transformations from the parent function $f(x) = x^2$

1. $f(x) = -(x - 1)^2 + 4$



2. $f(x) = 2x^2 - 6$



Hand out disclosures

RHS Secondary Math II Disclosure

Erika Biehn – erika.biehn@ccsdut.org

Course Description – students will cover:

Number and Quantity: Real and Complex Number Systems

Algebra: Expressions, Equations and Inequalities

Functions: Write and Interpret Linear, Quadratic, Exponential and Trigonometric Functions

Geometry: Similar Triangles, Circles, Measurement and Dimension

Statistics: Categorical and Quantitative Data, Conditional Probability

More detailed info can be accessed at <https://www.schools.utah.gov/file/99ed3612-4b81-4d40-bdb6-92fab69b62a8>

Materials – Students need the following materials

- A notebook or binder with paper
- Pencil and Eraser
- Class Textbook (class set provided – available online – may check out as needed)
- Calculators will be provided in class, but **CANNOT** be taken home.
 - Recommended Calculator: TI-84 Plus CE

To use an online graphing calculator visit: <https://www.desmos.com/calculator>

Grade Breakdown – Weighted categories

- **Essential Learning Standards (80%)** – The bulk of your grade is based on your ability to show competency on essential standards that will further impact your math education. You will be expected to be competent in these areas upon leaving the class. Standards are assessed with quizzes and tests given throughout each trimester. Students may retake any standard quiz or test until they are proficient with that specific standard. Students are required to retake any standard scoring below 70%.
- **Assignments (10%)** – In-class assignments and homework are meant to help prepare you for demonstrating competency. We will have some online homework assignments through: <https://www.bigideasmath.com> (login with clever use your school google account) Assignments are due two days after being assigned.
- **Final Exam (10%)** – A comprehensive final will be given at the end of the trimester. All the material covered in Math II up to the test date may be included on the final exam. We will work hard to prepare, as there will NOT be any retakes for the Final Exam.

Big Ideas Math Apps: Students can access the textbook on their phone by downloading the **Big Ideas Math** app. There is also a **Big Ideas Math Videos** app with extra examples as well as a **Big Ideas Math Solutions** app where students can check their answers. (Coming soon - a Big Ideas Homework app)

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(Turn over)

Parent and Student Disclosure Acknowledgement

Student success is a team effort! When students, parents, and teachers work together to support and reinforce learning, student success is made easier. Acknowledging and complying with the items outlined in this disclosure will provide a framework for this success. To indicate that you have read, understand, and are willing to support these class rules and expectations, please sign and date the back, cut off this bottom piece and return to me.

What is the best way to contact you?

Email

Phone Call

Text

*Any information you would like me to know about your child: _____

Rules and Expectations - Each student has a right to learn in a safe and productive environment

- Take advantage of all learning opportunities Respect and cooperate with teacher and classmates
- Follow all classroom procedures and school policies Maintain and engage in a safe learning environment

Behavior – if a student misbehaves, these steps will be followed:

- Students will fill out an “Oops Slip” when their behavior is affecting themselves and others from learning.
 - 1-2 slips = recorded warnings
 - 3 slips = parent contact
 - 4-5 slips = behavior contract
 - 6 + slips = meeting with administration to discuss placement

Box o’ Distraction

- If an item is inhibiting student learning, it will be confiscated and placed in the “Box o’ Distraction.” **Said items may be picked up after school. If you don’t want your phone taken away, don’t have it out at inappropriate times!!!** Distractions include but are not limited to:
 - Phone, ipod/music player, ipad/tablet, other music/electronic devices, headphones, reading book, makeup, food, toys, games etc...
- Mrs. Biehn determines what designates the definition of *distracting*

Class Resources

Big Ideas online textbook and resources: <https://www.bigideasmath.com>
 Class website: www.biehnmath.weebly.com
 Canvas: <https://ccsdut.instructure.com/login/ldap>
 Tutoring is available after school Mon-Thurs 2:45 - 4:15 in room 208

Grading

A	93 – 100%	B-	80 – 82%	D+	67 – 69%
A-	90 – 92%	C+	77 – 79%	D	63 – 66%
B+	87 – 89%	C	73 – 76%	D-	62 – 60%
B	83 – 86%	C-	70 – 72%	F	Below 60%

Communication

Any questions or concerns, **please feel free to visit** or contact me by email or phone.
 Email: erika.biehn@ccsdut.org Phone: (435) 792-7780 ext 5438

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STUDENT NAME (printed): _____ HOUR: _____

STUDENT SIGNATURE: _____

PARENT/GUARDIAN SIGNATURE: _____

PARENT/GUARDIAN EMAIL: _____

Simplify - Review

1. $\sqrt{16} = 4$
 $(4 \cdot 4)$

2. $\sqrt{64} = 8$
 $(8 \cdot 8)$

3. $\sqrt{225} = 15$

4. $\sqrt{2025} =$
 45

5. $\sqrt{57600}$
 $= 240$
 240^2

6. $\sqrt{36} = 6$

Essential Question

How can you multiply, divide and simplify square roots?

Square Roots and Multiplication

Is $\sqrt{4} \cdot \sqrt{9}$ equal to $\sqrt{4 \cdot 9}$?

$$\begin{array}{ccc} 2 \cdot 3 & & \sqrt{36} \\ 6 & = & 6 \end{array}$$

In general, is $\sqrt{a} \cdot \sqrt{b}$ equal to $\sqrt{a \cdot b}$? Explain your reasoning

$$\begin{array}{ccc} \sqrt{25} \cdot \sqrt{16} & = & \sqrt{25 \cdot 16} \\ 5 \cdot 4 & & = \sqrt{400} \\ 20 & & = 20 \end{array}$$

 **Core Concept****Product Property of Square Roots**

Words The square root of a product equals the product of the square roots of the factors.

Numbers $\sqrt{9 \cdot 5} = \sqrt{9} \cdot \sqrt{5} = 3\sqrt{5}$

Algebra $\sqrt{ab} = \sqrt{a} \cdot \sqrt{b}$, where $a, b \geq 0$

$$\sqrt{ab} = \sqrt{a} \cdot \sqrt{b}$$

Simplify Examples...

You can use perfect squares or factor trees to simplify. Lets try both

Square Root Method:

$$\begin{aligned} \text{a. } \sqrt{108} &= \sqrt{36 \cdot 3} \\ &= \sqrt{36} \cdot \sqrt{3} \\ &= 6\sqrt{3} \end{aligned}$$

Factor Trees:

$$\sqrt{108} = 2 \cdot 3 \sqrt{3}$$

$$\begin{aligned} &\sqrt{108} \\ &\sqrt{4} \sqrt{9 \cdot 3} \end{aligned}$$

Square Root Method:

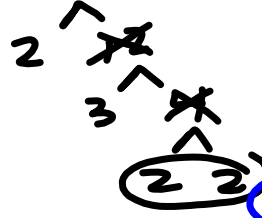
$$\begin{aligned} \text{b. } \sqrt{9x^3} &= \sqrt{9 \cdot x^2 \cdot x} \\ &= \sqrt{9} \cdot \sqrt{x^2} \cdot \sqrt{x} \\ &= 3x\sqrt{x} \end{aligned}$$

Factor Trees:

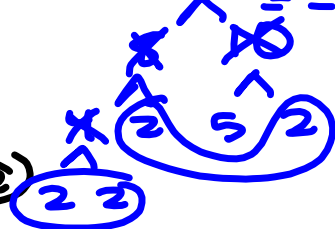
$$\sqrt{9x^3} = 3x\sqrt{x}$$

Simplify each expression.

1. $\sqrt{24} = 2\sqrt{6}$

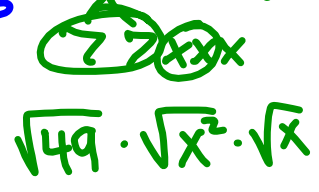


2. $-\sqrt{80} = -2 \cdot 2 \sqrt{5} = -4\sqrt{5}$



$\sqrt{16 \cdot 5}$
 $\sqrt{16} \cdot \sqrt{5}$
 $= 4\sqrt{5}$

3. $\sqrt{49x^3} = 7x\sqrt{x}$



$\sqrt{49} \cdot \sqrt{x^2} \cdot \sqrt{x}$

4. $\sqrt{75n^5}$



$5n^2\sqrt{3n}$

What about square roots of negative numbers???

no sol

$$\sqrt{-16}$$

$$\sqrt{-24}$$

$$\sqrt{-1}$$

~~$$(\underline{4})(\underline{4}) = -16$$~~

~~$$(\underline{-4})(\underline{-4}) = -16$$~~

$$(4)(-4) = -16$$

Square Roots and Division

Is $\frac{\sqrt{100}}{\sqrt{4}}$ equal to $\sqrt{\frac{100}{4}}$? $=\sqrt{25}$

$\frac{10}{2}=5$ $=$ 5

In general, is $\frac{\sqrt{a}}{\sqrt{b}}$ equal to $\sqrt{\frac{a}{b}}$? Explain your reasoning.

Yes!

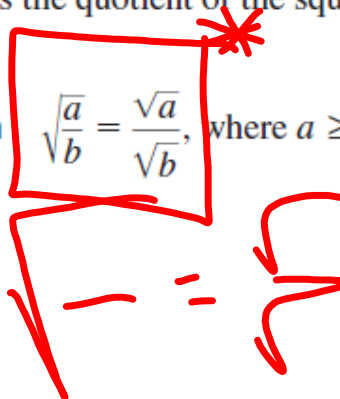
Core Concept

Quotient Property of Square Roots

Words The square root of a quotient equals the quotient of the square roots of the numerator and denominator.

Numbers $\sqrt{\frac{3}{4}} = \frac{\sqrt{3}}{\sqrt{4}} = \frac{\sqrt{3}}{2}$

Algebra $\sqrt{\frac{a}{b}} = \frac{\sqrt{a}}{\sqrt{b}}$, where $a \geq 0$ and $b > 0$



Separate numerator and denominator and square root individually

a. $\sqrt{\frac{15}{64}} = \frac{\sqrt{15}}{\sqrt{64}}$
 $= \frac{\sqrt{15}}{8}$

$\sqrt{15}$
 $3 \cdot 5$

b. $\sqrt{\frac{81}{x^2}} = \frac{\sqrt{81}}{\sqrt{x^2}}$
 $= \frac{9}{x}$

Simplify each expression

$$\begin{array}{lll}
 5. \sqrt{\frac{23}{9}} = \frac{\sqrt{23}}{\sqrt{9}} = \frac{\sqrt{23}}{3} & 6. -\sqrt{\frac{17}{100}} & 7. \sqrt{\frac{36}{z^2}} & 8. \sqrt{\frac{4x^2}{64}} \\
 & = -\frac{\sqrt{17}}{\sqrt{100}} = \frac{\sqrt{17}}{10} & = \frac{6}{z} & = \frac{\sqrt{4x^2}}{\sqrt{64}} \\
 & & & = \frac{2x}{8} = \frac{x}{4}
 \end{array}$$

Cubes...

$1^3 = 1$

$(-1)^3 = -1$

$2^3 = 8$

$(-2)^3 = -8$

$3^3 = 27$

$(-3)^3 = -27$

$4^3 = 64$

$(-4)^3 = -64$

$5^3 = 125$

$(-5)^3 = -125$

$6^3 = 216$

$(-6)^3 = -216$

What about cube roots...

$\sqrt[3]{27} = 3$

~~3~~

$\sqrt[3]{-125} = -5$

~~5~~

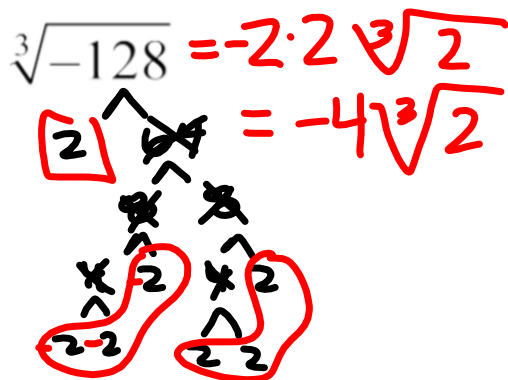
$\sqrt[3]{216} = 6$

$\sqrt[3]{-1} = -1$
 $(-1)(-1)(-1)$

Perfect Cube Method:

$$\begin{aligned}
 \text{a. } \sqrt[3]{-128} &= \sqrt[3]{-64 \cdot 2} \\
 &= \sqrt[3]{-64} \cdot \sqrt[3]{2} \\
 &= -4\sqrt[3]{2}
 \end{aligned}$$

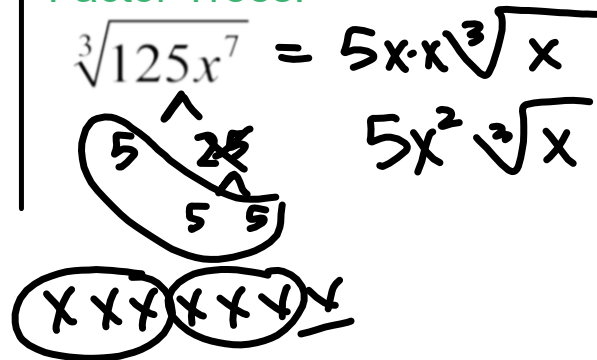
Factor Trees:



Perfect Cube Method:

$$\begin{aligned}
 \text{b. } \sqrt[3]{125x^7} &= \sqrt[3]{125 \cdot x^6 \cdot x} \\
 &= \sqrt[3]{125} \cdot \sqrt[3]{x^6} \cdot \sqrt[3]{x} \\
 &= 5x^2\sqrt[3]{x}
 \end{aligned}$$

Factor Trees:



Try this one!

$$\frac{\sqrt[3]{\frac{y}{216}}}{\sqrt[3]{216}} = \frac{\sqrt[3]{y}}{6}$$

And this one!

$$\frac{\sqrt[3]{\frac{8x^4}{27y^3}}}{\sqrt[3]{27y^3}} = \frac{2x\sqrt[3]{x}}{3y}$$

Simplify each expression.

9. $\sqrt[3]{54}$

10. $\sqrt[3]{16x^4}$

11. $\sqrt[3]{\frac{a}{-27}}$

12. $\sqrt[3]{\frac{25c^7d^3}{64}}$

Rationalizing the Denominator. The process by which a fraction is rewritten so that the denominator contains only rational numbers.

AKA get all roots out of the denominator!!!



Rationalize the denominator example...

$$\frac{\sqrt{5}}{\sqrt{3n}} \cdot \frac{\sqrt{3n}}{\sqrt{3n}} = \frac{\sqrt{15n}}{\sqrt{3 \cdot 3 \cdot n \cdot n}} = \frac{\sqrt{15n}}{3n}$$

$$\begin{aligned} \text{a. } \frac{\sqrt{5}}{\sqrt{3n}} &= \frac{\sqrt{5}}{\sqrt{3n}} \cdot \frac{\sqrt{3n}}{\sqrt{3n}} \\ &= \frac{\sqrt{15n}}{\sqrt{9n^2}} \\ &= \frac{\sqrt{15n}}{\sqrt{9} \cdot \sqrt{n^2}} \\ &= \frac{\sqrt{15n}}{3n} \end{aligned}$$

Simplify each expression.

$$13. \frac{1}{\sqrt{5}} \cdot \frac{\sqrt{5}}{\sqrt{5}} = \frac{\sqrt{5}}{5}$$

$$14. \frac{\sqrt{10}}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{\sqrt{30}}{3}$$

$$15. \frac{7}{\sqrt{2x}}$$

$$16. \sqrt{\frac{2y^2}{3}}$$

How to rationalize the denominator when it's a cube root...

$$\frac{2}{\sqrt[3]{9}}$$

$$\frac{2}{\sqrt[3]{9}} = \frac{2}{\sqrt[3]{9}} \cdot \frac{\sqrt[3]{3}}{\sqrt[3]{3}}$$

$$= \frac{2\sqrt[3]{3}}{\sqrt[3]{27}}$$

$$= \frac{2\sqrt[3]{3}}{3}$$

$$\frac{5}{\sqrt[3]{36}}$$

$$\frac{-10}{\sqrt[3]{16}}$$

The conjugate has the opposite sign between the 2 terms. It can be used to simplify expressions when there are two terms in the denominator.

Simplify $\frac{7}{2 - \sqrt{3}}$

What would you multiply by to rationalize the denominator??

$$\frac{8}{1 + \sqrt{3}}$$

$$\frac{\sqrt{13}}{\sqrt{5} - 2}$$

$$\frac{12}{\sqrt{2} + \sqrt{7}}$$

due Thursday

4.1 Day 1 hw

pg 197-198 #s 1-3, 13, 17-31 odd, 35, 37, 45-53 odd

