Inspiring Greatness

INDEPENDENCE SCHOOL DISTRICT

Math Virtual Learning

Algebra 1 S2

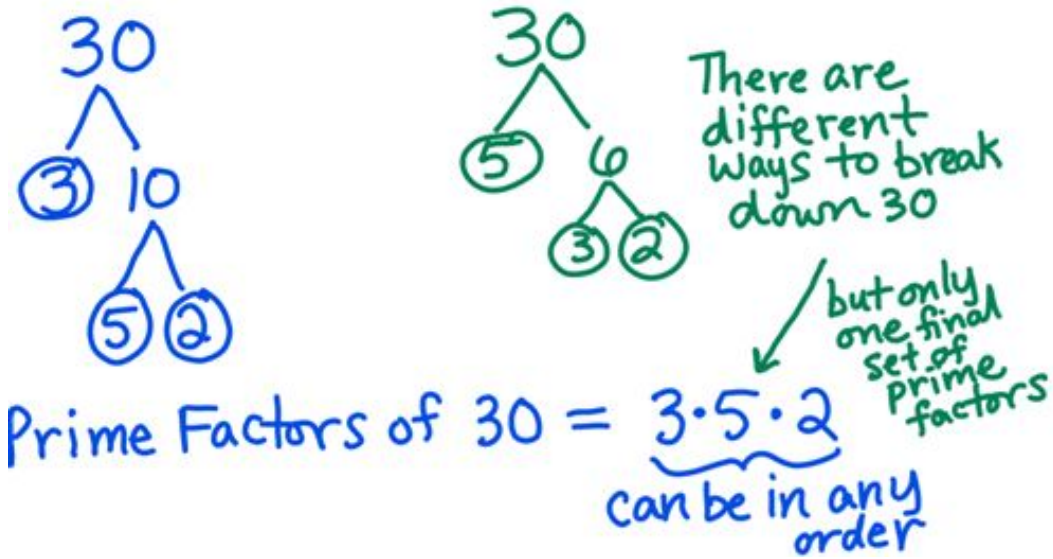
April 21st, 2020

Lesson: April 21st, 2020

Objective: Students will be able to simplify radicals

Warm-Up: Reviewing Factor Trees

Quick Review:
Use a factor tree to find the prime factors of 30.



Note: A **prime number** is a number that can only be divided by one and itself

You Try!
Find the prime factors of. . .

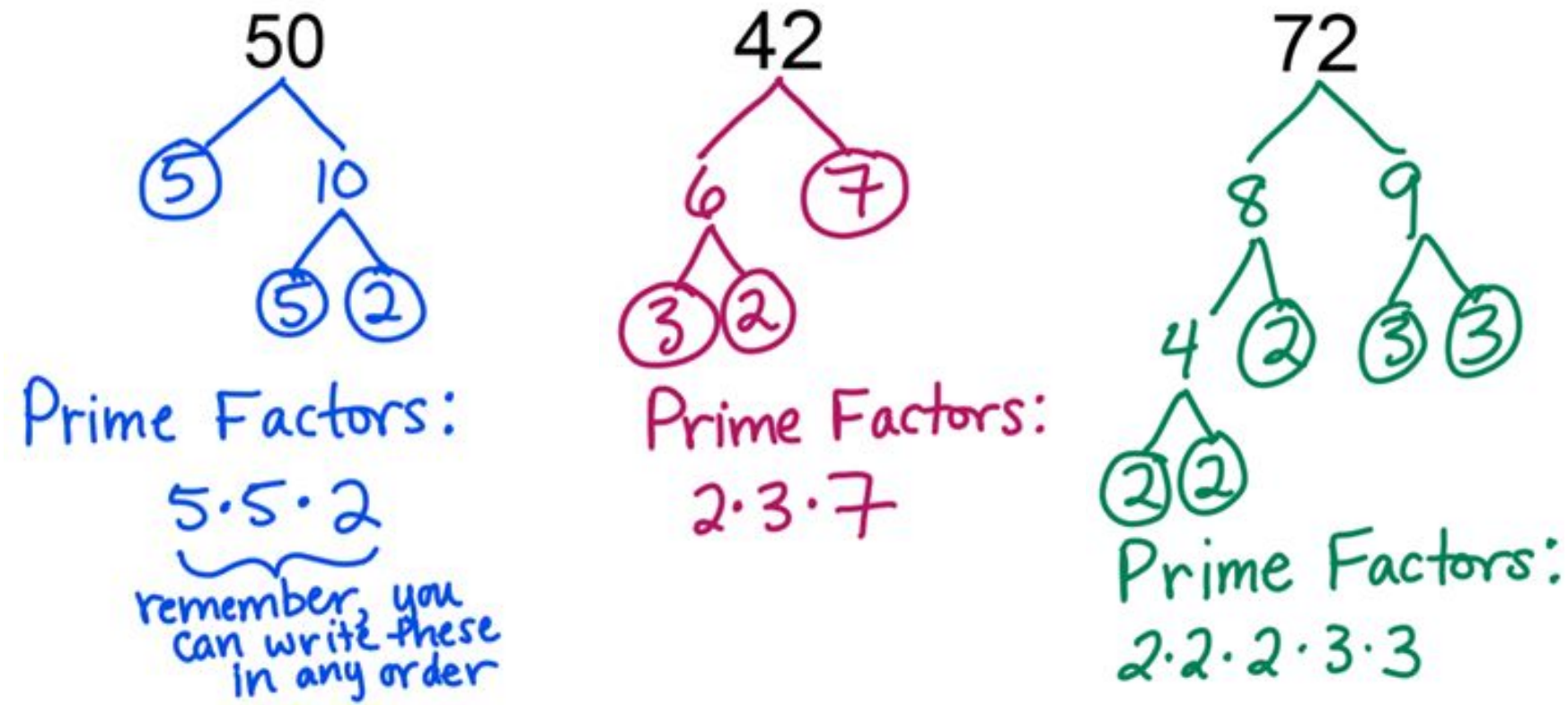
50

42

72

Helpful Tool: Multiplication Chart

Warm-Up: Reviewing Factor Trees (Answers)



Note: It's ok if your factor trees look different than these, as long as you end up with the same prime factors.

Warm-Up: Perfect Squares & Square Roots

What is a **perfect square**? Where can you find them in the multiplication chart?

Click here for a larger view of the Multiplication Chart

	1	2	3	4	5	6	7	8	9	10	11	12
1	1	2	3	4	5	6	7	8	9	10	11	12
2	2	4	6	8	10	12	14	16	18	20	22	24
3	3	6	9	12	15	18	21	24	27	30	33	36
4	4	8	12	16	20	24	28	32	36	40	44	48
5	5	10	15	20	25	30	35	40	45	50	55	60
6	6	12	18	24	30	36	42	48	54	60	66	72
7	7	14	21	28	35	42	49	56	63	70	77	84
8	8	16	24	32	40	48	56	64	72	80	88	96
9	9	18	27	36	45	54	63	72	81	90	99	108
10	10	20	30	40	50	60	70	80	90	100	110	120
11	11	22	33	44	55	66	77	88	99	110	121	132
12	12	24	36	48	60	72	84	96	108	120	132	144

Warm-Up: Perfect Squares & Square Roots

A **perfect square** is the product of a number times itself. The perfect squares in the multiplication chart are the green diagonal numbers.

1 x 1 = 1
2 x 2 = 4
3 x 3 = 9
4 x 4 = 16

	1	2	3	4
1	1	2	3	4
2	2	4	6	8
3	3	6	9	12
4	4	8	12	16

Warm-Up: Perfect Squares & Square Roots

What is a **square root**? What does the **square root symbol** look like?

A square root is the number that when multiplied by itself makes some other number (sometimes a perfect square).
Square root symbol is $\sqrt{\square}$

$$\sqrt{1} = 1$$

$$\sqrt{4} = 2$$

$$\sqrt{9} = 3$$

$$\sqrt{16} = 4$$

$$\sqrt{17} \approx 4.12$$

Warm-Up: Perfect Squares & Square Roots

Find the square root. If the answer is not an integer (whole number) then estimate what two numbers the square root would fall between.

For example: $\sqrt{17}$ Since 17 is not a perfect square, the answer will be a decimal. I know that the $\sqrt{16} = 4$ so the $\sqrt{17}$ must be a little more than 4 but less than 5 (since $\sqrt{25} = 5$).

Find the square root (or estimate what two numbers it falls between).

$\sqrt{49}$ $\sqrt{38}$ $\sqrt{80}$ $\sqrt{100}$

Warm-Up: Perfect Squares & Square Roots

Answers

$\sqrt{49}$

7

$\sqrt{38}$

Between 6 and 7, but closer to 6 since $\sqrt{36} = 6$

$\sqrt{80}$

Between 8 and 9, but closer to 9 since $\sqrt{81} = 9$

$\sqrt{100}$

10

*****Important Note*****

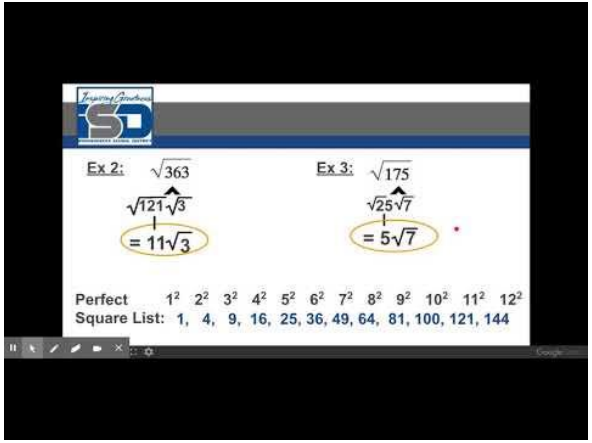
In each of these square root examples, I have only given the positive answer. It is important to remember that **in our study of quadratics we will use both the positive and negative answers of the square root.**

So, BOTH answers for $\sqrt{49}$ are **7** and **-7**.

Today's Lesson

In today's lesson we will be simplifying radicals to their exact values.

Go ahead and click below to get started with today's video.



Today's Examples

Ex 1: $\sqrt{12}$

Ex 2: $\sqrt{363}$

Ex 3: $\sqrt{175}$

Ex 4: $\sqrt{63n^3}$

Ex 5: $\sqrt{512r^2}$

Ex 6: $\sqrt{32xy^5}$

Ex 7: $\sqrt{343x^3y^2z^{10}}$

Ex 8: $\sqrt{64x^4y^5z^3}$

Today's Independent Practice

1) $\sqrt{144}$

2) $\sqrt{8}$

3) $\sqrt{98}$

4) $\sqrt{252}$

5) $\sqrt{50v}$

6) $\sqrt{196k^3}$

7) $\sqrt{36a^2}$

8) $\sqrt{112v}$

9) $\sqrt{48x^3y^3}$

0) $\sqrt{72x^3y^2}$

11) $\sqrt{45ab^4}$

12) $\sqrt{28x^2y^2}$

13) $\sqrt{150h^2jk^4}$

14) $\sqrt{320h^2jk^2}$

15) $\sqrt{8x^4yz}$

16) $\sqrt{294m^4n^3p^4}$

Today's Independent Practice

Simplify:

1) $\sqrt{144} = 12$

$12 \quad 12$

2) $\sqrt{8} = 2\sqrt{2}$

$\sqrt{4} \quad \sqrt{2}$

3) $\sqrt{98} = 7\sqrt{2}$

$\sqrt{49}\sqrt{2}$

4) $\sqrt{252} = 6\sqrt{7}$

$\sqrt{36}\sqrt{7}$

Today's Independent Practice

Simplify:

5) $\sqrt{50v} = 5\sqrt{2v}$

$\sqrt{25}\sqrt{2}$

6) $\sqrt{196k^3} = 14k\sqrt{k}$

$\sqrt{49}\sqrt{4}$

$7 \bullet 2$

7) $\sqrt{36a^2} = 6a$

6 6

8) $\sqrt{112v} = 4\sqrt{7v}$

$\sqrt{16}\sqrt{7}$

Today's Independent Practice

Simplify:

9) $\sqrt{48x^3y^3} = 4xy\sqrt{3xy}$

$\sqrt{16}\ \sqrt{3}$

10) $\sqrt{72x^3y^2} = 6xy\sqrt{2x}$

$\sqrt{36}\ \sqrt{2}$

11) $\sqrt{45ab^4} = 3b^2\sqrt{5a}$

$\sqrt{9}\ \sqrt{5}$

12) $\sqrt{28x^2y^2} = 2xy\sqrt{7}$

$\sqrt{4}\ \sqrt{7}$

Today's Independent Practice

Simplify:

13) $\sqrt{150h^2jk^4} = 5hk^2\sqrt{6j}$

$\sqrt{25}\sqrt{6}$

14) $\sqrt{320h^2jk^2} = 8hk\sqrt{5j}$

$\sqrt{64}\sqrt{5}$

15) $\sqrt{8x^4yz} = 2x^2\sqrt{2yz}$

$\sqrt{4}\sqrt{2}$

16) $\sqrt{294m^4n^3p^4} = 7m^2np^2\sqrt{6n}$

$\sqrt{49}\sqrt{6}$

Additional Practice:

Click on the links below to get additional practice and to check your understanding!

Extra Video over Simplifying Radicals

Extra Practice with Simplifying Radicals

Practice Simplifying Expressions (no variables)

Practice Simplifying Expressions (with variables)