Do Now:

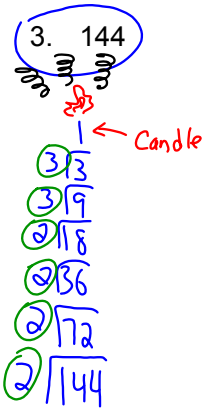
Use factor trees to find the prime factorization of the following numbers:

1. 64 2. 81 3. 144

2, 3, 5, 7, 11, 13, ...

Primes Only

$2^4 \cdot 3^2$



9.1 Square Roots

8.NS
8.EE

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

- SWBAT find and approximate square roots of numbers.
- SWBAT understand number systems; make reasonable estimates.
- Calculators: No

The square root of a number n is a number m such that $m^2 = n$

- Every positive number has two square roots
  -one positive
  -one negative
- The radical sign $\sqrt{}$ represents a non-negative square root
- ± reads "plus or minus"

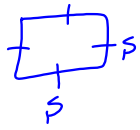
Find the square roots of the number.

1. 16 $= \sqrt{16} = 4$ or $-4 = \pm 4$
2. 49 $= \sqrt{49} = 7$ or $-7 = \pm 7$
3. 100 $= \sqrt{100} = \pm 10$
4. 121 $= \sqrt{121} = \pm 11$

Perfect Squares

In September of every even-numbered year, people in Marostica, Italy, play an unusual chess game. Each chess piece is portrayed by a person. The people portraying theknights are even on horseback!

The chessboard is a square with an area of 324 square meters. What is the length of each side of the board?



$A = s^2$

$\sqrt{324} = \sqrt{s^2}$

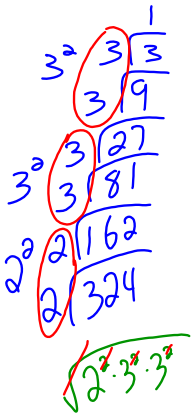
$\sqrt{324} = s$

$2 \cdot 3 \cdot 3 = s$

$18 = s$

$A = b \cdot h$

18 meters

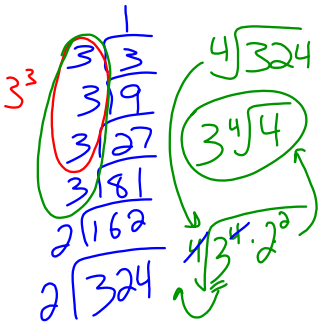


$\sqrt[3]{324}$

$\sqrt[3]{3^3 \cdot 3 \cdot 2^2}$

$3\sqrt[3]{3 \cdot 2^2}$

$3\sqrt[3]{12}$



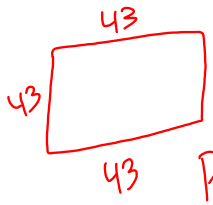
A square ice skating rink has an area of 1849 square feet. What is the perimeter of the rink?

$\sqrt{1849} = 43$

$A = s^2$

$\sqrt{1849} = \sqrt{s^2}$

$43 = s$



$P = 4(43) = 172$ ft

Approximate $\sqrt{51}$ to the nearest integer

No decimals

$5^2 = 25$

$6^2 = 36$

$7^2 = 49$

$8^2 = 64$

$\sqrt{51} \approx \pm 7$

approximate sign

Approximate $-\sqrt{67}$ to the nearest integer.

$\sqrt{67}$

$8^2 = 64$
$9^2 = 81$
$\sqrt{67} \approx \pm 8$

$-\sqrt{67} \approx -8$

A radical expression is an expression that involves a radical sign.

- Treat the horizontal bar as a grouping symbol
- Evaluate the expression inside the radical first before finding the square root

Evaluate when a = 11 and b = 5

$2\sqrt{a+b^2}$

$2 \cdot \sqrt{11+5^2}$

$2 \cdot \sqrt{11+25}$

$2 \cdot \sqrt{36}$

$2 \cdot (\pm 6)$ → $2(6) = 12$, $2(-6) = -12$

± 12

Evaluate when g = 5 and h = 3

$\sqrt{g(h+2)}$

$\sqrt{5(3+2)}$

PEMDAS

$\sqrt{5(5)}$

$\sqrt{25}$

± 5

OK

Distributive Prop.

$\sqrt{15+10}$

$\sqrt{25}$

± 5

An amusement park ride includes a free fall drop of 272 feet. You can use the equation $d = 16t^2$ to determine the time t in seconds that it takes a dropped object to fall a distance of d feet. How long does the free fall part of the ride take?

A construction worker building a skyscraper accidently drops a hammer from a height of 1600 feet. Use the equation $d = 16t^2$ to determine the time t in seconds that it takes the bolt to fall to the ground below.

Solve the equation. Round to the nearest tenth if necessary.

$2x^2 = 32$

Solve the equation. Round to the nearest tenth if necessary.

$90 = 1.52t^2 + 8$

Solve the equation. Round to the nearest tenth if necessary.

$5n^2 - 4 = 74$

Exit Pass 9.1

You know that one square root of a number *w* is 9. What is the other square root? What is the value of *w*?

"Don't blame the sea if you cannot catch a fish."

Working individually or with a partner, complete the workbook.

Workbook pg.

Reflection of Today's Lesson

9.1 Square Roots

8.NS
8.EE

- SWBAT find and approximate square roots of numbers.
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- Calculators: No

Homework

pg. 456 #16-32 evens,
42-52 evens, 60-64 evens