7.1 Squares and Square Roots

Investigation: How many square tiles do you need to make a square?

Area	Sides	Area	Sides
1	1 x 1	81	9 x 9
4	2 x 2	100	10 x 10
9	3 x 3	121	11 x 11
16	4 x 4	144	12 x 12
25	5 x 5	169	13 x 13
36	6 x 6	196	14 x 14
49	7 x 7	225	15 x 15
64	8 x 8	256	16 x 16

We call these numbers ____square numbers or perfect squares _____

Because _____they have two identical factors_____

Can a negative number be a perfect square?

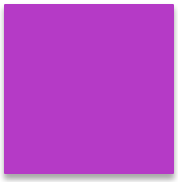
No, the negative number can not be a perfect square.
(Positive x Positive = Positive, Negative x Negative = Positive)

Using Prime factorization to identify perfect squares.

$24 = 2^3 \times 3$ $576 = 2^6 \times 3^2$ $324 = 2^2 \times 3^4$

To be a perfect square, each prime factor in the prime factorization must occur an ___even_____ number of times.
To be a perfect cube, each prime factor in the prime factorization must occur a ___multiples of 3_____ number of times.

Determine the area of a square with side length 12m.



12m

$A = s \times s = s^2 = 12^2 = 144\ m^2$

Determine the side length of a square with area $121m^2$.

$S = \sqrt{A} = \sqrt{121} = 11m$

What is the perimeter of a square with area $529m^2$?

$S = \sqrt{A} = \sqrt{529} = 23m$

$P = 23 \times 4 = 92m$

In general, a square root means to extract one of the two equal parts.

For example ___6_____ is the square root of 36 because _____6 x 6_____ = 36

What is the difference between squaring a number and taking the square root of a number? How are the two operations related?

The two operations are opposite

Assignment p.85 #8, 9, 11, 13, 15, 19, 20, 21, 24-27