Squares and Square Roots

Learning Targets

- Find Square Roots
- Evaluate Expressions with Squares and Square Roots
- Use Area Formulas

Square Root

$$\sqrt{25} = \sqrt{5 * 5} = 5$$

is a number that when multiplied
by itself, equals the given number.

Every positive number has a positive
and a negative square root

$$\sqrt{25} = \sqrt{-5 * -5} = -5$$

$\sqrt{-25}$

$5 \cdot 5 = 25$

$-5 \cdot (-5) = 25$

$\sqrt{-25} = -5i$

$5i$

Finding Square Roots

Find the two square roots of 49.

7 and -7

± 7

$\pm$

Finding Square Roots of Ratios

$\sqrt{\frac{25}{81}}$

$\frac{\sqrt{25}}{\sqrt{81}}$

$\frac{5}{9}$

$\sqrt{\frac{16}{49}}$

$\frac{\sqrt{16}}{\sqrt{49}}$

$\frac{4}{7}$

$\sqrt{\frac{45}{5}}$

$\sqrt{9}$

3

The symbol $\sqrt{}$ is called a **radical sign**. The number under the radical sign is called the **radicand**.

Positive Square Root,	Negative Square Root,	Both Square Roots,
$\sqrt{16} = 4$	$-\sqrt{16} = -4$	$\pm\sqrt{16} = 4 \text{ and } -4$

± 4

Find the Square Roots

$\sqrt{36}$	$-\sqrt{\frac{9}{16}}$	$\pm\sqrt{49}$
6	$-\frac{3}{4}$	± 7
Positive	Negative	Both

Don't Forget Order of Operations!

Evaluating Expressions

1. $5\sqrt{36} + 7$

PEMDAS

↑ Roots

$5 \cdot 6 + 7$

$30 + 7$

37

2. $\frac{1}{4} + \sqrt{\frac{18}{2}}$

$\frac{1}{4} + \sqrt{9}$

$\frac{1}{4} + 3$

$3\frac{1}{4}$

Evaluating Expressions

3. $\left(\sqrt{81}\right)^2 - 5$

$81 - 5$

76

4. $\sqrt{\frac{28}{7}} + 2.4$

$\sqrt{4} + 2.4$

$2 + 2.4$

4.4

Using Area Formulas

7 ft

The area of a crop circle is 49π square feet. What is the radius of the crop circle?

$A = \pi r^2$

$\frac{49\pi}{\pi} = \frac{\pi r^2}{\pi}$

$\sqrt{49} = \sqrt{r^2}$

$7 = r$

Homework

Complete Perfect Squares and Square Root Sheet

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Use