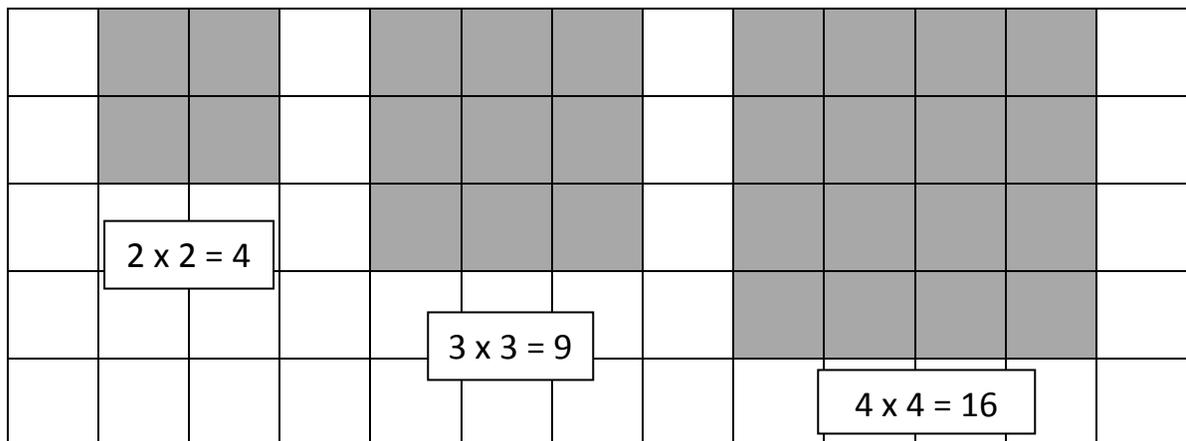


Squares, Square Roots and Perfect Squares

Term	Definition
Square	The product of a number and itself (the product of 6 and 6 is 36) Ex: $6 \times 6 = 6^2 = 36$
Square Root	One of two EQUAL factors of a number Ex: The square root of 9 is 3 ($\sqrt{9} = 3$) because $3 \times 3 = 9$
Radical Sign	$\sqrt{\quad}$: the symbol used to indicate the square root of a number
Perfect Square	A number whose square root is a whole number Ex: 16 is a perfect square because $\sqrt{16} = 4$ 4 is a whole number (not a decimal/fraction)!

Perfect Squares



Are the shaded portions squares? _____ Why? _____

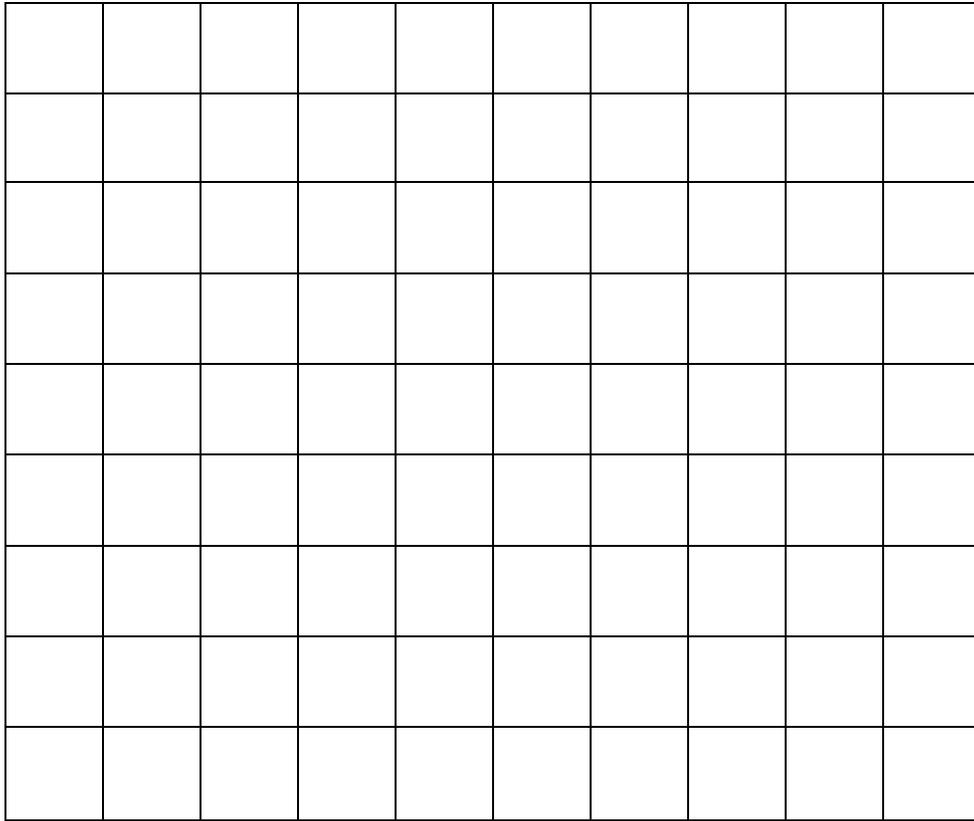
Examples of Perfect Squares:

1) 4 is a perfect square because $2 \times 2 = \underline{\quad}$

2) 9 is a perfect square because $3 \times \underline{\quad} = 9$

3) 16 is a perfect square because $\underline{\quad} \times \underline{\quad} = 16$

Using this grid, color a perfect square larger than 16.



Why is your drawing a perfect square? Why?

Perfect Squares:

$1^2 =$

$6^2 =$

$11^2 =$

$16^2 =$

$2^2 =$

$7^2 =$

$12^2 =$

$17^2 =$

$3^2 =$

$8^2 =$

$13^2 =$

$18^2 =$

$4^2 =$

$9^2 =$

$14^2 =$

$19^2 =$

$5^2 =$

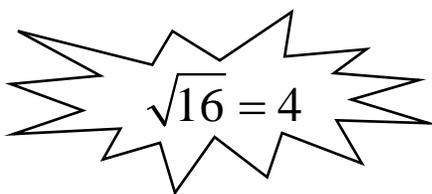
$10^2 =$

$15^2 =$

$20^2 =$

Square Roots

- Square roots are the _____ of perfect squares.
- A square root of a number is one of its two equal factors. (Remember factors??)
- $4 \cdot 4 = 16$, so **4** is the _____ of **16**.


$$\sqrt{16} = 4$$

The symbol $\sqrt{\quad}$, called a _____, is used to show a number's square root.

Examples:

$$\sqrt{4} = 2 \text{ because } \underline{\quad} \times \underline{\quad} = \underline{\quad}$$
$$\sqrt{9} = 3 \text{ because } \underline{\quad} \times \underline{\quad} = \underline{\quad}$$
$$\sqrt{16} = 4 \text{ because } \underline{\quad} \times \underline{\quad} = \underline{\quad}$$
$$\sqrt{25} = 5 \text{ because } \underline{\quad} \times \underline{\quad} = \underline{\quad}$$
$$\sqrt{100} = 10 \text{ because } \underline{\quad} \times \underline{\quad} = \underline{\quad}$$

Find each square root. Think...what times itself gives you 81? ($? \cdot ? = 81$)

$\sqrt{81}$

$\sqrt{196}$

$\sqrt{49}$

$\sqrt{225}$

$\sqrt{121}$

$\sqrt{16}$

$\sqrt{4}$

$\sqrt{36}$

$\sqrt{64}$

Math 6 Practice (6.2)

Evaluate: Find the square of each number

1) 2^2

2) 4^2

3) 2.2^2

4) 6^2

5) 8^2

6) 4.1^2

7) 10^2

8) 12^2

9) 3.5^2

Evaluate: Find the square root of each number

10) $\sqrt{1} =$

11) $\sqrt{9} =$

12) $\sqrt{169} =$

13) $\sqrt{25} =$

14) $\sqrt{64} =$

15) $\sqrt{196} =$

16) $\sqrt{81} =$

16) $\sqrt{100} =$

18) $\sqrt{144} =$

True or False

$\sqrt{36} = 6$	$\sqrt{100} = 10$	$\sqrt{25} = 4$
$\sqrt{121} = 11$	$\sqrt{64} = 7$	$\sqrt{99} = 9$
$\sqrt{25} = 5$	$\sqrt{16} = 4$	$\sqrt{10} = 5$

Circle the number in each row that is NOT a perfect square:

3 25 81 100 121

4 12 9 144 36

1 16 27 49 64

11-1**Study Guide and Intervention****Squares and Square Roots**

The product of a number and itself is the **square** of the number. Numbers like 4, 25, and 2.25 are called **perfect squares** because they are squares of rational numbers. The factors multiplied to form perfect squares are called **square roots**. Both $5 \cdot 5$ and $(-5)(-5)$ equal 25. So, 25 has two square roots, 5 and -5 . A **radical sign**, $\sqrt{\quad}$, is the symbol used to indicate the *positive* square root of a number. So, $\sqrt{25} = 5$.

EXAMPLES

- 1 Find the square of 5.**

$$5 \cdot 5 = 25$$

- 2 Find the square of 16.**

$$16 \quad \boxed{x^2} \quad \boxed{\text{ENTER}} \quad 256$$

- 3 Find $\sqrt{49}$.**

$$7 \cdot 7 = 49, \text{ so } \sqrt{49} = 7.$$

- 4 Find $\sqrt{169}$.**

$$\boxed{2\text{nd}} \quad \boxed{\sqrt{\quad}} \quad 169 \quad \boxed{\text{ENTER}} \quad 13$$

$$\text{So, } \sqrt{169} = 13.$$

- EXAMPLE 5**
- A square tile has an area of 144 square inches. What are the dimensions of the tile?

$$\boxed{2\text{nd}} \quad \boxed{\sqrt{\quad}} \quad 144 \quad \boxed{\text{ENTER}} \quad 12 \quad \text{Find the square root of 144.}$$

So, the tile measures 12 inches by 12 inches.

EXERCISES**Find the square of each number.**

1. 2

2. 9

3. 14

4. 15

5. 21

6. 45

Find each square root.

7. $\sqrt{16}$

8. $\sqrt{36}$

9. $\sqrt{256}$

10. $\sqrt{1,024}$

11. $\sqrt{361}$

12. $\sqrt{484}$

11-1**Practice: Skills*****Squares and Square Roots***

Find the square of each number.

1. 3

2. 22

3. 25

4. 24

5. 35

6. 26

7. 37

8. 50

Find each square root.

9. $\sqrt{25}$

10. $\sqrt{100}$

11. $\sqrt{441}$

12. $\sqrt{900}$

13. $\sqrt{961}$

14. $\sqrt{784}$

15. $\sqrt{3,600}$

16. $\sqrt{1,936}$

17. What is the square of -37 ?

18. Find both square roots of 4,900.

19. Square 7.2.

20. Square 4.5.