

## WEEK #2: Simplifying Radicals

### Geometry Warm up

Name \_\_\_\_\_  
Date \_\_\_\_\_ Period \_\_\_\_\_

Complete the following problems without a calculator.

$1^2 = \underline{1}$

$\sqrt{1} = 1$

$11^2 = 121$

$\sqrt{121} = 11$

$2^2 = \underline{\quad}$

$\sqrt{\quad} =$

$12^2 = \underline{\quad}$

$\sqrt{\quad} =$

$3^2 = \underline{\quad}$

$\sqrt{\quad} =$

$13^2 = \underline{\quad}$

$\sqrt{\quad} =$

$4^2 = \underline{\quad}$

$\sqrt{\quad} =$

$14^2 = \underline{\quad}$

$\sqrt{\quad} =$

$5^2 = \underline{\quad}$

$\sqrt{\quad} =$

$15^2 = \underline{\quad}$

$\sqrt{\quad} =$

$6^2 = \underline{\quad}$

$\sqrt{\quad} =$

$16^2 = \underline{\quad}$

$\sqrt{\quad} =$

$7^2 = \underline{\quad}$

$\sqrt{\quad} =$

$17^2 = \underline{\quad}$

$\sqrt{\quad} =$

$8^2 = \underline{\quad}$

$\sqrt{\quad} =$

$18^2 = \underline{\quad}$

$\sqrt{\quad} =$

$9^2 = \underline{\quad}$

$\sqrt{\quad} =$

$19^2 = \underline{\quad}$

$\sqrt{\quad} =$

$10^2 = \underline{\quad}$

$\sqrt{\quad} =$

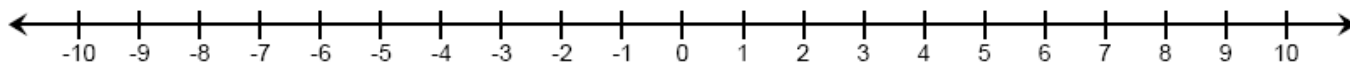
$20^2 = \underline{\quad}$

$\sqrt{\quad} =$

A rational number is \_\_\_\_\_.

An irrational number is \_\_\_\_\_.

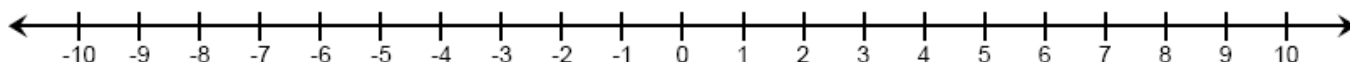
### Rational or Irrational



Graph the following points:

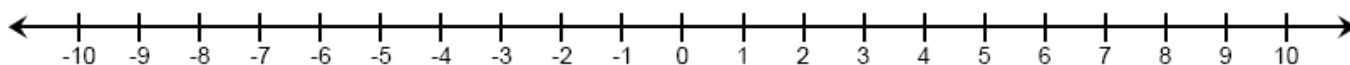
- |                                 |   |
|---------------------------------|---|
| 1. A if its coordinate is 2.    | 3. C if its coordinate is $\sqrt{12}$ . |
| 2. B if its coordinate is -1.6. | 4. D if its coordinate is $\pi$ .       |

Graph each with a point on the number line. Write R =rational or I =irrational in the blank below each.



- |                    |               |                        |                      |                         |                               |
|--------------------|---------------|------------------------|----------------------|-------------------------|-------------------------------|
| 1. A at 7          | 2. B at -9    | 3. C at $5\frac{2}{3}$ | 4. D at 9.2          | 5. E at $-5\frac{1}{2}$ | 6. F at -8.37                 |
| _____              | _____         | _____                  | _____                | _____                   | _____                         |
| 7. G at $\sqrt{4}$ | 8. H at $\pi$ | 9. I at $\sqrt{2}$     | 10. J at $\sqrt{40}$ | 11. K at $\sqrt{92}$    | 12. L at $\sqrt{\frac{1}{9}}$ |
| _____              | _____         | _____                  | _____                | _____                   | _____                         |

Graph each with a point on the number line. Write R =rational or I =irrational in the blank below each.



- |                         |                      |                     |                          |                               |                       |
|-------------------------|----------------------|---------------------|--------------------------|-------------------------------|-----------------------|
| 13. M at 1.5            | 14. N at -7          | 15. P at $\sqrt{9}$ | 16. Q at $\sqrt{5}$      | 17. R at $\pi$                | 18. S at $\sqrt{15}$  |
| _____                   | _____                | _____               | _____                    | _____                         | _____                 |
| 19. T at $4\frac{2}{3}$ | 20. U at $\sqrt{70}$ | 21. V at -4.1       | 22. W at $-2\frac{1}{4}$ | 23. X at $\sqrt{\frac{1}{4}}$ | 24. Y at $2\sqrt{16}$ |
| _____                   | _____                | _____               | _____                    | _____                         | _____                 |

Name: \_\_\_\_\_

## Simplifying Radicals

Parts of a radical: Label the radical symbol, radicand and index.

$$\sqrt{21}$$

$$\sqrt[4]{256}$$

PART 1: Examples: Simplify the radical.

A.

$$\sqrt{24}$$

B.

$$\sqrt{32}$$

C.

$$\sqrt{48}$$

D.

$$\sqrt{75}$$

E.

$$\sqrt{500}$$

F.

$$\sqrt{128}$$

PART 2: If there is a coefficient, multiply the whole numbers.

G.

$$3\sqrt{50}$$

H.

$$8\sqrt{98}$$

I.

$$5\sqrt{27}$$

J.

$$3\sqrt{45}$$

Practice:

1.

$$\sqrt{80}$$

2.

$$12\sqrt{90}$$

3.

$$3\sqrt{125}$$

4.

$$2\sqrt{500}$$

5.

$$\sqrt{162}$$

6.

$$13\sqrt{625}$$

7.

$$9\sqrt{32}$$

8.

$$3\sqrt{52}$$

9.

$$4\sqrt{39}$$

10.

$$\sqrt{512}$$

11.

$$9\sqrt{72}$$

12.

$$2\sqrt{600}$$

13.

$$\sqrt{891}$$

14.

$$\sqrt{864}$$

15.

$$\sqrt{363}$$

PART 3:

K. Given the expression:

$$3\sqrt{39x}$$

What value of  $x$  makes the expression equivalent to  $15\sqrt{39}$ ?

Practice:

16. Given the expression:

$$\sqrt{89x}$$

What value of  $x$  makes the expression equivalent to  $18\sqrt{89}$ ?

L.

$$\sqrt{77x}$$

For which value of  $x$  should the expression be further simplified?

a.  $x = 15$

b.  $x = 21$

c.  $x = 39$

d.  $x = 51$

17.

$$\sqrt{203x}$$

For which value of  $x$  should the expression be further simplified?

a.  $x = 82$

b.  $x = 287$

c.  $x = 53$

d.  $x = 2$

18. Given the expression:

$$4\sqrt{89x}$$

What value of  $x$  makes the expression equivalent to  $44\sqrt{89}$ ?

19.

$$\sqrt{205x}$$

For which value of  $x$  should the expression be further simplified?

a.  $x = 38$

b.  $x = 65$

c.  $x = 122$

d.  $x = 13$

20. Given the expression:

$$8\sqrt{23x}$$

What value of  $x$  makes the expression equivalent to  $32\sqrt{23}$ ?

21.

$$\sqrt{85x}$$

For which value of  $x$  should the expression be further simplified?

a.  $x = 59$

b.  $x = 185$

c.  $x = 2$

d.  $x = 74$

22. Given the expression:

$$5\sqrt{79x}$$

What value of  $x$  makes the expression equivalent to  $50\sqrt{79}$ ?

23.

$$\sqrt{215x}$$

For which value of  $x$  should the expression be further simplified?

a.  $x = 122$

b.  $x = 65$

c.  $x = 38$

d.  $x = 13$