

Grade

8

Number System Worksheets

Number System – 8.NS.1

1. Mark the correct boxes to which the following numbers

Number	Nat	Int	Rat	Irrat
.0345				
$2 + \sqrt{7}$				
$\sqrt{49}$				
$\frac{5}{3}$				
$\frac{8}{4} + \sqrt{16}$				
π				
$\sqrt{30}$				

6. Fill out the graph set that meet the

Number System – 8.NS.2

Determine if the following numbers are

- $\sqrt{25}$ Rational Irrational
- $4.\overline{31}$ Rational Irrational
- $\frac{3}{4}$ Rational Irrational
- $\sqrt{18}$ Rational Irrational
- 7 Rational Irrational

Convert the following fractions into decimals

- $\frac{2}{3}$
- $\frac{1}{5}$
- $\frac{7}{10}$

Convert the following decimals into fractions

- 0.5
- $0.\overline{27}$
- $0.\overline{4}$

23. If a number is not classified as rational then it is

Number System – 8.NS.2

Each square root is between two consecutive integers. Name the integers. Explain your answer.

- $\sqrt{11}$
- $\sqrt{45}$
- $\sqrt{72}$
- $\sqrt{24}$
- $\sqrt{92}$

Approximate each irrational number using a calculator and using the number line.

- $\sqrt{45}$

8. $\sqrt{13}$

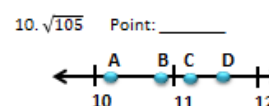
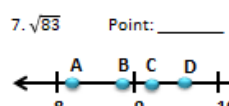
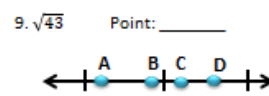
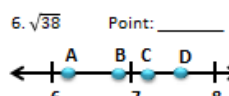
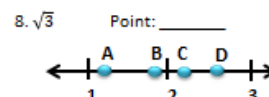
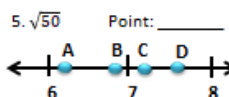
10. $\sqrt{7}$

Number System – 8.NS.2

Order the numbers from least to greatest

- $\sqrt{22}, 5, \sqrt{7}$
- $\sqrt{8}, 3, \sqrt{10}$
- $\pi, \sqrt{9}, 2.5$
- $\sqrt{10}, \pi, 3.5$

Determine which points on the number line best represent the given number:



By: Math in the Midwest

Name: _____ Date: _____ Hour: _____

Number System – 8.NS.1

1. Mark the correct boxes to which the following numbers belong to.

Number	Natural	Whole	Integer	Rational	Irrational	Real
.0345						
$2 + \sqrt{7}$						
$\sqrt{49}$						
$\frac{5}{3}$						
$\frac{8}{4} + \sqrt{16}$						
π						
$\sqrt{30}$						

6. Fill out the graphic organizer with the correct labels and add two values to each set that meet the requirements of that set.

Real Number System Graphic Organizer

The diagram consists of a large outer rectangle. Inside it, on the left side, are three nested rectangles, each smaller than the one it contains. To the right of these nested rectangles, within the same large outer rectangle, is a single vertical rectangle. This layout is intended for students to place numbers into the appropriate sets based on their classification.

Name: _____ Date: _____ Hour: _____

Number System – 8.NS.1

Determine if the following numbers are rational or irrational.

1. $\sqrt{25}$	Rational	Irrational	6. π	Rational	Irrational
2. $4.\overline{31}$	Rational	Irrational	7. $\sqrt{50}$	Rational	Irrational
3. $\frac{3}{4}$	Rational	Irrational	8. -5	Rational	Irrational
4. $\sqrt{18}$	Rational	Irrational	9. $\frac{1}{3}$	Rational	Irrational
5. 7	Rational	Irrational	10. 0	Rational	Irrational

Convert the following fractions into decimals:

11. $\frac{2}{3}$	14. $\frac{7}{8}$
12. $\frac{1}{5}$	15. $\frac{5}{6}$
13. $\frac{7}{10}$	16. $\frac{8}{15}$

Convert the following decimals into fractions:

17. 0.5	20. $0.\overline{431}$
18. $0.\overline{27}$	21. $0.\overline{3}$
19. $0.\overline{4}$	22. $0.\overline{8}$

23. If a number is not classified as rational than it is _____.

Name: _____ Date: _____ Hour: _____

Number System – 8.NS.2

Each square root is between two consecutive integers. Name the integers. Explain your answer.

1. $\sqrt{11}$ _____
2. $\sqrt{45}$ _____
3. $\sqrt{72}$ _____
4. $\sqrt{24}$ _____
5. $\sqrt{92}$ _____

Approximate each irrational number to the nearest hundredth without using a calculator and using the number lines below:

6. $\sqrt{45}$



7. $\sqrt{28}$



8. $\sqrt{13}$



9. $\sqrt{60}$



10. $\sqrt{7}$



11. $\sqrt{79}$



Name: _____ Date: _____ Hour: _____

Number System – 8.NS.2

Order the numbers from least to greatest

1. $\sqrt{22}$, 5, $\sqrt{7}$ _____

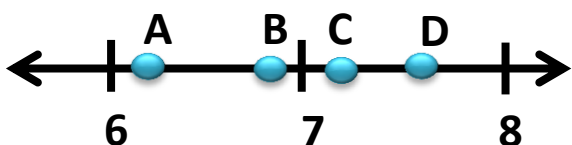
2. $\sqrt{8}$, 3, $\sqrt{10}$ _____

3. π , $\sqrt{9}$, 2.5 _____

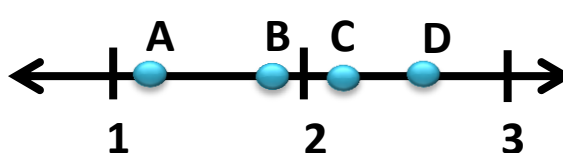
4. $\sqrt{10}$, π , 3.5 _____

Determine which points on the number line best represent the given number:

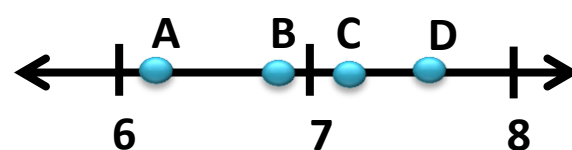
5. $\sqrt{50}$ Point: _____



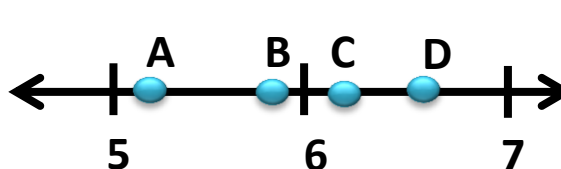
8. $\sqrt{3}$ Point: _____



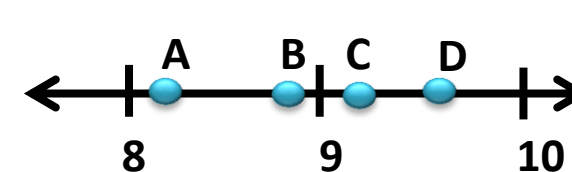
6. $\sqrt{38}$ Point: _____



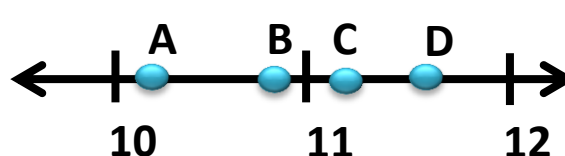
9. $\sqrt{43}$ Point: _____



7. $\sqrt{83}$ Point: _____



10. $\sqrt{105}$ Point: _____



Name: _____ Date: _____ Hour: _____

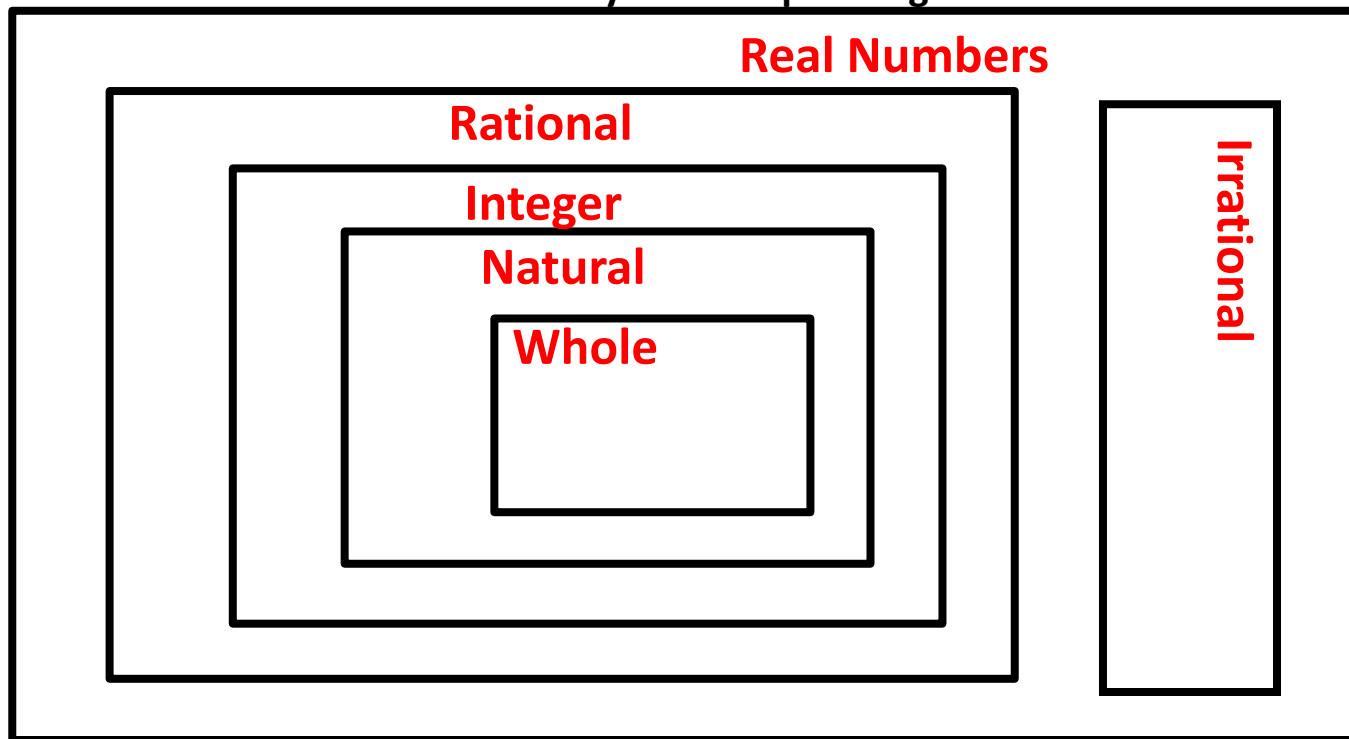
Number System – 8.NS.1

1. Mark the correct boxes to which the following numbers belong to.

Number	Natural	Whole	Integer	Rational	Irrational	Real
.0345				X		x
$2 + \sqrt{7}$					X	X
$\sqrt{49}$	X	X	X	X		X
$\frac{5}{3}$				X		X
$\frac{8}{4} + \sqrt{16}$	X	X	X	X		X
π					X	X
$\sqrt{30}$					X	x

6. Fill out the graphic organizer with the correct labels and add two values to each set that meet the requirements of that set.

Real Number System Graphic Organizer



Name: _____ Date: _____ Hour: _____

Number System – 8.NS.1

Determine if the following numbers are rational or irrational.

1. $\sqrt{25}$	Rational	Irrational	6. π	Rational	Irrational
2. $4.\overline{31}$	Rational	Irrational	7. $\sqrt{50}$	Rational	Irrational
3. $\frac{3}{4}$	Rational	Irrational	8. -5	Rational	Irrational
4. $\sqrt{18}$	Rational	Irrational	9. $\frac{1}{3}$	Rational	Irrational
5. 7	Rational	Irrational	10. 0	Rational	Irrational

Convert the following fractions into decimals:

11. $\frac{2}{3}$	$0.\overline{6}$	14. $\frac{7}{8}$	0.875
12. $\frac{1}{5}$	0.2	15. $\frac{5}{6}$	$0.8\overline{3}$
13. $\frac{7}{10}$	0.7	16. $\frac{8}{15}$	$0.5\overline{3}$

Convert the following decimals into fractions:

17. 0.5	$\frac{1}{2}$	20. $0.\overline{431}$	$\frac{431}{999}$
18. $0.\overline{27}$	$\frac{27}{99} = \frac{3}{11}$	21. $0.\overline{3}$	$\frac{1}{3}$
19. $0.\overline{4}$	$\frac{4}{9}$	22. $0.\overline{8}$	$\frac{8}{9}$

23. If a number is not classified as rational than it is ***Irrational***.

Name: _____ Date: _____ Hour: _____

Number System – 8.NS.2

Each square root is between two consecutive integers. Name the integers. Explain your answer.

1. $\sqrt{11}$ 3 and 4 because $\sqrt{11}$ is between the $\sqrt{9}$ and the $\sqrt{16}$
2. $\sqrt{45}$ 6 and 7 because $\sqrt{45}$ is between the $\sqrt{36}$ and the $\sqrt{49}$
3. $\sqrt{72}$ 8 and 9 because $\sqrt{72}$ is between the $\sqrt{64}$ and the $\sqrt{81}$
4. $\sqrt{24}$ 4 and 5 because $\sqrt{24}$ is between the $\sqrt{16}$ and the $\sqrt{25}$
5. $\sqrt{92}$ 9 and 10 because $\sqrt{92}$ is between the $\sqrt{81}$ and the $\sqrt{100}$

Approximate each irrational number to the nearest hundredth without using a calculator and using the number lines below:

6. $\sqrt{45}$ **6.71**



7. $\sqrt{28}$ **5.29**



8. $\sqrt{13}$ **3.61**



9. $\sqrt{60}$ **6.71**



10. $\sqrt{7}$ **2.65**



11. $\sqrt{79}$ **8.89**



Name: _____ Date: _____ Hour: _____

Number System – 8.NS.2

Order the numbers from least to greatest

1. $\sqrt{22}, 5, \sqrt{7}$ $\sqrt{7}, \sqrt{22}, 5$

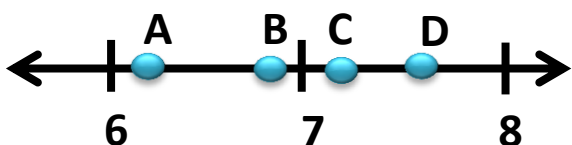
2. $\sqrt{8}, 3, \sqrt{10}$ $\sqrt{8}, 3, \sqrt{10}$

3. $\pi, \sqrt{9}, 2.5$ $2.5, \sqrt{9}, \pi$

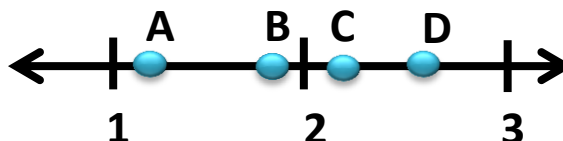
4. $\sqrt{10}, \pi, 3.5$ $\pi, \sqrt{10}, 3.5$

Determine which points on the number line best represent the given number:

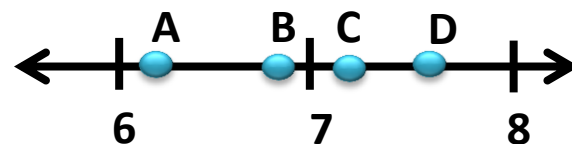
5. $\sqrt{50}$ Point: **C**



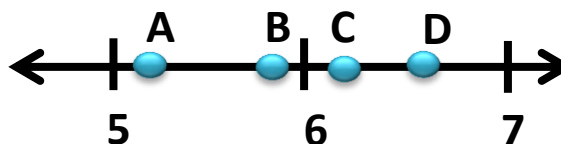
8. $\sqrt{3}$ Point: **B**



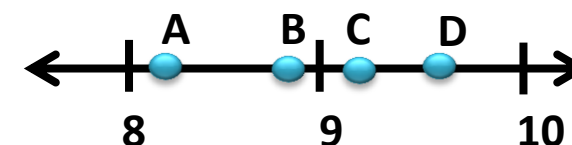
6. $\sqrt{38}$ Point: **A**



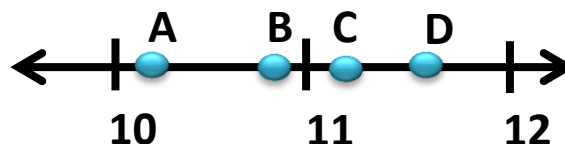
9. $\sqrt{43}$ Point: **D**



7. $\sqrt{83}$ Point: **C**



10. $\sqrt{105}$ Point: **A**



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~Math in the Midwest

