Number Systems Practice

Use the following information to answer the first question.

Consider the following 4 numbers.	
A	$\frac{3}{5}$
B	21
C	$-\sqrt{18}$
D	-2.78

1. Which number is both an integer and a rational number?

   A) A B) B C) C D) D

2. Which of the following numbers is **not** irrational?

   A) $\sqrt{24}$ B) π C) 2.55… D) 1.242526…

3. Which is the smallest whole number?

   A) -1 B) $\frac{1}{2}$ C) 1 D) 0

Use the following information to answer the next question.

Consider the following 4 numbers.	
I	$\sqrt[3]{2}$
II	25 000
III	$1\frac{1}{9}$
IV	12

4. Which number is a rational number, but **not** an integer?

   A) I B) II C) III D) IV

5. When choosing from the following number systems, N, W, I, Q, and $\overline{Q}$, which number below belongs to exactly 3 of these systems?

A) π B) $-\frac{6}{7}$ C) 0 D) 2

Use the following information to answer the next question.

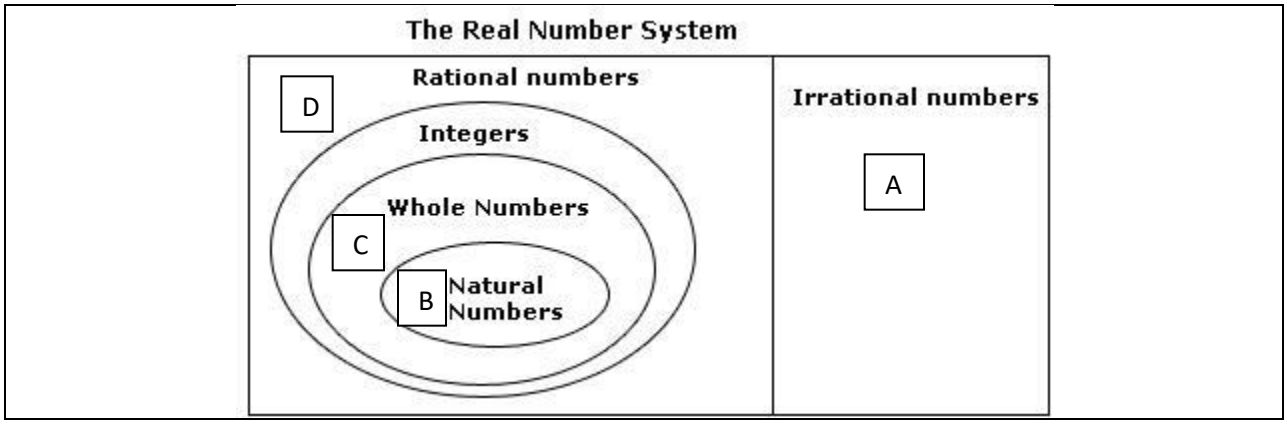
Consider the following statements.	
Statement 1	A number can be both rational and irrational.
Statement 2	A number can be both an integer and a natural number.
Statement 3	An imperfect square root is a rational number.
Statement 4	The number 33.626262… is rational.

6. The correct statements are

A) 1 and 2 B) 3 and 4 C) 1 and 3 D) 2 and 4

7. On the number line, the closest natural number to $-\frac{10}{5}$ is ___.

Use the following information to answer the next question.



8. Place an appropriate number in each of the boxes, A, B, C, and D above.

Use the following information to answer the next question.

Consider the numbers in the chart below.

A	$-3\sqrt{2}$	**F**	-1
B	0	**G**	$-5\frac{1}{4}$
C	$\frac{1}{2}$	**H**	-π
D	-1.85	**I**	$\sqrt[3]{18}$
E	-9	**J**	$-\sqrt{4}$

9. If the domain of a function is $\{x \mid x \leq -2, x \in R\}$, use the letters A-J to state which numbers are elements of the domain.

Number Systems PracticeSolutions

Use the following information to answer the first question.

Consider the following 4 numbers.	
A	$\frac{3}{5}$
B	21
C	$-\sqrt{18}$
D	-2.78

1. Which number is both an integer and a rational number?

   A) A B) B C) C D) D

Solution

Option A, $\frac{3}{5}$, is a rational number, but not an integer.

Option B, 21, is an integer and a rational number. It is a rational number because it can be written in the form, $\frac{a}{b}$, where *a* and *b* are integers, and b ≠ 0. [21 = $\frac{21}{1}$]

Option C, $-\sqrt{18}$, is an imperfect square root. It is an irrational number.

Option D, -2.78, is a rational number, but not an integer.

The correct answer is B.

2. Which of the following numbers is **not** irrational?

   A) $\sqrt{24}$ B) π C) 2.55… D) 1.242526…

Solution

The correct answer is C. It is a repeating decimal, but it has a period of 5. Option D is also a repeating decimal, but it does not have a period; there is no specific portion that consistently repeats.

3. Which is the smallest whole number?

A) -1 B) $\frac{1}{2}$ C) 1 D) 0

Solution

Whole numbers are considered to be positive, having no decimals or fractions attached to them, and beginning with zero. W = {0, 1, 2, 3, …}. The smallest whole number is 0.

The correct answer is D.

Use the following information to answer the next question.

Consider the following 4 numbers.

I	$\sqrt[3]{2}$
II	25 000
III	$1\frac{1}{9}$
IV	12

4. Which number is a rational number, but **not** an integer?

A) I B) II C) III D) IV

Solution

The number for the first Option I, $\sqrt[3]{2}$, is an imperfect cube root. This is an irrational number.

The number for the second Option II, 25 000, is a rational number, but **also** an integer.

The number for the third Option III, $1\frac{1}{9}$, is a rational number, but **not** an integer.

The number for the fourth Option IV, 12, is a rational number, but **also** an integer.

The correct answer is C.

5. When choosing from the following number systems, N, W, I, Q, and $\overline{Q}$, which number below belongs to exactly 3 of these systems?

A) π B) $-\frac{6}{7}$ C) 0 D) 2

Solution

The first option, π, belongs to only one of these number systems - $\overline{Q}$.

The second option, $-\frac{6}{7}$, belongs to only one of these number systems – Q.

The third option, 0, belongs to W, I, and Q,

The fourth option, 2, belongs to N, W, I and Q.

The correct answer is C.

Use the following information to answer the next question.

Consider the following statements.	
Statement 1	A number can be both rational and irrational.
Statement 2	A number can be both an integer and a natural number.
Statement 3	An imperfect square root is a rational number.
Statement 4	The number 33.626262… is rational.

6. The correct statements are

A) 1 and 2 B) 3 and 4 C) 1 and 3 D) 2 and 4

Solution

Statement 1 is false. A number cannot be both rational and irrational.

Statement 2 is **true**. An example is 3; it is both natural and an integer.

Statement 3 is false. An imperfect square root is an irrational number.

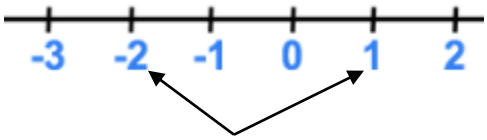
Statement 4 is **true**. The number is a repeating decimal, but it has a period of .62. A period is a number of set of numbers that repeat in a consistent manner.

The correct answer is D.

7. On the number line, the closest natural number to $-\frac{10}{5}$ is _1_.

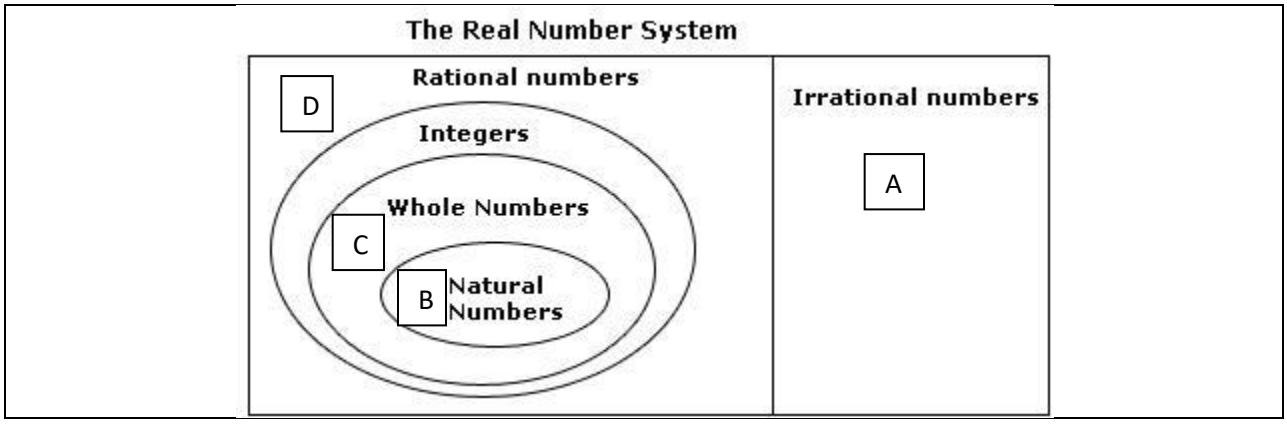
Solution

The equivalent integer for $-\frac{10}{5}$ is -2.



The closest natural number to -2 is 1.

Use the following information to answer the next question.



8. Place an appropriate number in each of the boxes, A, B, C, and D above.

Solution

An example for A is π.

An example for B is 4. It can be any positive complete whole number greater than or equal to 1.

The only possible answer for C is 0.

An example for D is $\frac{1}{2}$. The number needs to be able to be written in the form, $\frac{a}{b}$ where a and b are integers and b ≠ 0. It cannot be any integer, or any irrational number.

Use the following information to answer the next question.

Consider the numbers in the chart below.

A	$-3\sqrt{2}$	**F**	-1
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C	$\frac{1}{2}$	**H**	-π
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E	-9	**J**	$-\sqrt{4}$

9. If the domain of a function is $\{x \mid x \leq -2, x \in R\}$, use the letters A-J to state which numbers are elements of the domain.

Solution

The numbers that are part of the domain are:

A, E, G, H, J