What Do Sea Monsters Eat?

Complete each statement below with one of the answers at the bottom of the page. Write the letter of each statement above its correct answer.

S — A number that can be written as a fraction $\frac{a}{b}$, where a and b are integers and $b \neq 0$, is a _____.

I — A fraction can be changed to a decimal by dividing the _____.

A — When a fraction is changed to a decimal and the remainder is zero, the decimal is called a _____.

D — When a fraction is changed to a decimal and the remainder is NOT zero, a digit or block of digits will eventually start to repeat. Such a decimal is called a _____.

S — Thus, since a rational number is a number that can be written as a fraction, every rational number can be expressed as either a _____ decimal.

H — The reverse is also true. Every terminating or repeating decimal represents a rational number and can be changed to a _____.

F — A number that CANNOT be expressed as a fraction $\frac{a}{b}$, where a and b are integers, is an _____.

H — Terminating and repeating decimals represent rational numbers. Therefore, the decimals for irrational numbers neither terminate nor _____.

I — Instead, the decimal for an irrational number is an endless string of digits that never repeats and never _____.

N — An example of an irrational number is _____.

P — The union of the set of rational numbers and the set of irrational numbers is called the set of _____.

S — Every decimal represents a real number, and every real number can be represented as a _____.

| irrational number | terminates | rational number | fraction | 0.1212121212 . . . | terminating decimal | 0.1212212221 . . . | repeating decimal | integer | decimal | repeat | numerator by the denominator | real numbers | terminating or repeating |

OBJECTIVE 3–c: To demonstrate understanding of basic concepts and vocabulary related to the set of real numbers.

Why Aren't Elephants Allowed On The Beach?

Circle the letter of the correct choice. Write this letter in each box at the bottom of the page that contains the number of the exercise.

① If the square root of a number is an integer, the number is called a *perfect square*. One example of a perfect square is
(V) 50   (S) 81

② The square root of a perfect square is an
(U) integer   (B) irrational number

③ Which of the following lists includes only perfect squares?
(I) 49, 144, 16, 1, 64   (L) 81, 49, 100, 2, 9

④ Since 2 is not a perfect square, $\sqrt{2}$ is not an integer. The square root of 2 is a number which, when squared, equals exactly
(R) 4   (H) 2

⑤ Let's try to find $\sqrt{2}$. It must be between
(A) 1 and 2   (M) 2 and 3

⑥ FACT: $(1.4)^2 = 1.96$ and $(1.5)^2 = 2.25$. Therefore, $\sqrt{2}$ is
(E) between 1.4 and 1.5   (O) not between 1.4 and 1.5

⑦ FACT: $(1.41)^2 = 1.9881$ and $(1.42)^2 = 2.0164$. Therefore, $\sqrt{2}$ is
(C) between 1.41 and 1.42   (W) not between 1.41 and 1.42

⑧ FACT: $(1.414)^2 = 1.999396$ and $(1.415)^2 = 2.002225$. Therefore, $\sqrt{2}$ is
(T) exactly equal to 1.414   (Y) between 1.414 and 1.415

⑨ It can be proved that there is no terminating decimal that, when squared, equals exactly 2. So the decimal for $\sqrt{2}$ in a square root table, when squared, equals
(F) exactly 2   (R) approximately 2

⑩ REMEMBER: Every *rational number* can be represented either by a terminating decimal or by a
(K) repeating decimal   (D) nonrepeating decimal

⑪ There is no terminating decimal that, when squared, equals 2. It can also be proved that there is no repeating decimal that, when squared, equals 2. Therefore, $\sqrt{2}$ is
(N) a rational number   (P) not a rational number

⑫ A decimal that never terminates, and never repeats, represents an *irrational number*. The decimal for $\sqrt{2}$ never terminates or repeats. Therefore, $\sqrt{2}$ is a(n)
(M) rational number   (N) irrational number

⑬ It can be proved that the square root of *every* whole number is an irrational number unless the number is
(T) a perfect square   (S) not a perfect square

13	4	6	8	7	5	12	13	10	6	6	11	13	4	6	3	9	13	9	2	12	10	1	2	11