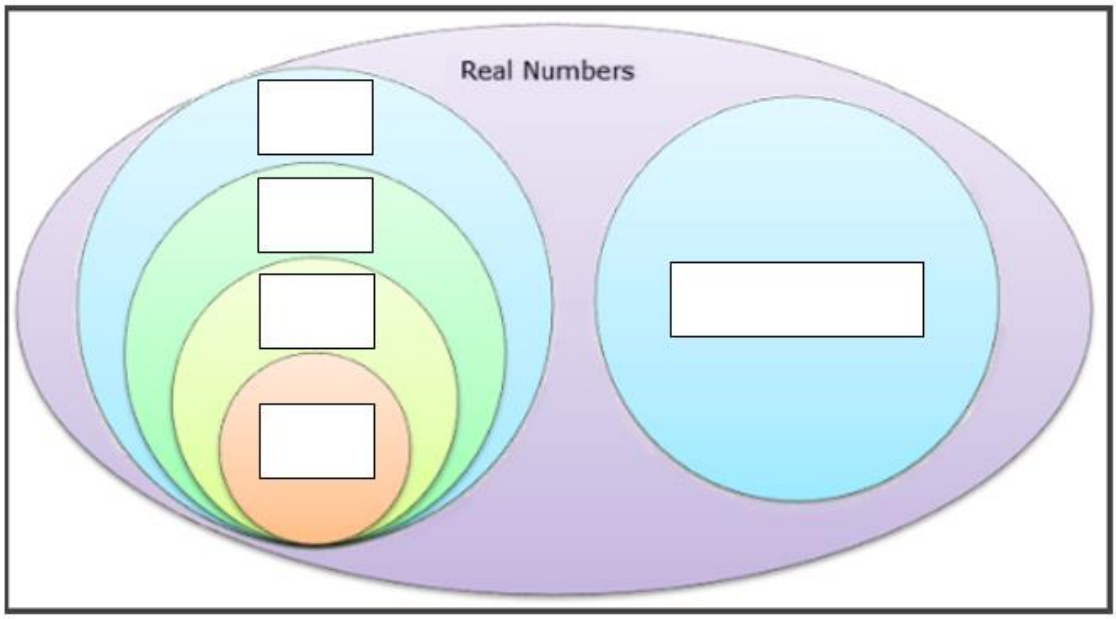
2016 Mathematics Standards of Learning
Algebra Readiness Formative Assessment

8.2

1. Write the following labels in the appropriate box to best represent the subsets of the real number system.

Rational Numbers | Whole Numbers | Irrational Numbers | Natural Numbers | Integers



2. Fill in the blanks to make a true statement about $0.3\overline{3}...$ (choose from the choices below)

This [ ] is a(n) [ ] since it can be expressed as $\frac{1}{3}$.

repeating decimal

terminating decimal

irrational number

rational number

3. Sort the following list of numbers into rational and irrational numbers.

$0.21953 \quad \sqrt{12} \quad 0 \quad 4.285\ldots \quad -\sqrt{87} \quad -4\frac{2}{3} \quad 9.1313\overline{13}... \quad \pi$

Rational Numbers	Irrational Numbers

4. Write the letter of each definition next to the corresponding subgroup of the real number system.

____Natural Numbers — A. the set of whole numbers and their opposites $\{...-2,-1,0,1,2...\}$

____Whole Numbers — B. the set of counting numbers and zero $\{0,1,2,3...\}$

____Integers — C. the set of all nonrepeating, nonterminating decimals $\{\pi, 1.23233, \sqrt{2}\}$

____Rational Numbers — D. the set of counting numbers $\{1,2,3,4...\}$

____Irrational Numbers — E. the set of all numbers that can be expressed as fraction in form $\frac{a}{b}$, where a and b are integers and b does not equal zero $\left\{2.44\overline{4}..., 75\%, \frac{3}{7}, \sqrt{49}\right\}$

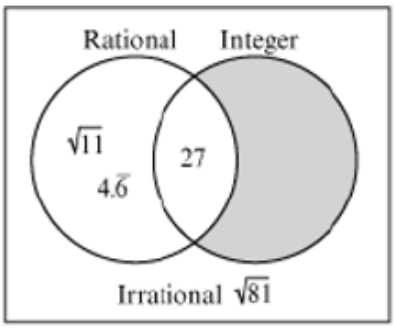
5. Identify which statement is false.

The product of two rational numbers is rational.
The sum of a rational number and an irrational number is irrational.
The sum of a rational number and an irrational number is rational.
The product of a nonzero rational number and an irrational number is irrational.

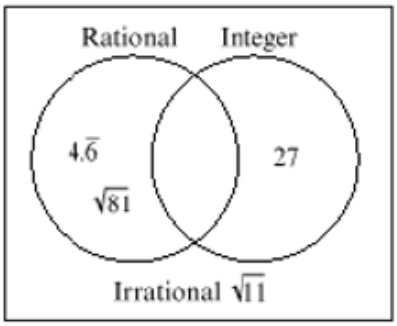
6. Which Venn diagram best represents the following sets of numbers?

$\sqrt{81}$, 27, $4.\overline{6}$, $\sqrt{11}$

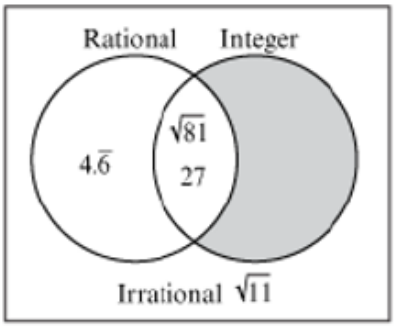
A.



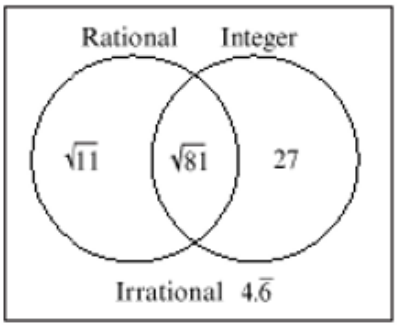
B.



C.



D.



7. Which of the following can be defined as an integer, but not a whole number?

A. $-\frac{1}{3}$ B. $-\sqrt{20}$ C. $-\frac{20}{5}$ D. -13.1

8. The number 3.7 is best described as –

A. a rational number
B. an integer
C. a whole number
D. an irrational number

9. Which is a true statement concerning the rational number $\frac{2}{3}$?

A. This number can be expressed in the form $\frac{a}{b}$, where a and b are integers and $b \neq 0$.

B. This number cannot be expressed in the form $\frac{a}{b}$, where a and b are integers and $b \neq 0$.

C. This number can be expressed in the form $\frac{a}{b}$, where a and b are integers and $b = 0$.

D. This number cannot be expressed in the form $\frac{a}{b}$, where a and b are integers and $b = 0$.

10. Which of these is a rational number?

A. $\sqrt{2}$
B. $0.414114\ldots$
C. $\sqrt{5}$
D. -6.060606