

Lesson 1-2: Understand Irrational Numbers

1. Sample answer: Rational numbers can be written as fractions, irrational numbers cannot. The decimal expansions of rational numbers either terminate or repeat, irrational numbers do not repeat or terminate.
2. Sample answer: If the number underneath the radical symbol is a perfect square, then the square root of that number is rational. If that number is not a perfect square, the square root is irrational.
3. No; Sample answer: Irrational numbers are numbers that cannot be written in fraction form where the denominator is not 0. Rational numbers can be written in this form.
4. Irrational; Sample answer: It is nonterminating and nonrepeating.
5. Rational; Sample answer: $\sqrt{2,500} = 50$ because $50 \times 50 = 50^2 = 2,500$.
6. Rational: $0.375, \frac{13}{1}, 4.2\bar{7}$
Irrational: $0.232342345\dots, \sqrt{62}$
7. Irrational; Sample answer: The decimal is nonterminating and nonrepeating.
8. Irrational; Sample answer: The number 42 is not a perfect square.
9. C, E
10. $\sqrt{15}$
11. a. 26, $-\frac{3}{2}$, 0, 9
b. $5.737737773\dots, \sqrt{45}$
12. No; Sample answer: Deena probably thought that $9.565565556\dots$ shows a pattern. However, the pattern does not repeat. The decimal part shows 56, 556, 5556, which is not a repeating pattern.
13. No; Sample answer: Since 1,815 is not a perfect square, its square root will be irrational.
14. Yes; Sample answer: The decimal form of $\frac{13}{3}$ is $4.\bar{3}$, a repeating decimal, so it must be a rational number.
15. $\sqrt{100}$ ft. ; $\sqrt{100} = 10$, which is a rational number.
16. Sample answer: 2.898898889...
17. 5
18. D
19. (from top to bottom)
Rational
Irrational
Rational
Rational
Irrational
Rational
Irrational