

CC-1

Operations With Rational and Irrational Numbers

 **Content Standard**

N.RN.3 Explain why the sum or product of two rational numbers is rational; that the sum of a rational number and an irrational number is irrational ...

For each sum, determine whether the result is a rational number or an irrational number.

1. $\frac{5}{8} + \frac{3}{5}$

2. $-\frac{1}{4} + \frac{2}{5}$

3. $-\frac{1}{2} + \sqrt{2}$

4. $\sqrt{5} + \left(-\frac{3}{11}\right)$

5. $\frac{1}{4} + \sqrt{12}$

6. $-\frac{3}{11} + \left(-\frac{1}{3}\right)$

For each product, determine whether the result is a rational number or an irrational number.

7. $\frac{1}{2} \cdot \frac{2}{15}$

8. $\sqrt{2} \cdot \frac{2}{5}$

9. $-\frac{3}{5} \cdot \frac{4}{9}$

10. $\frac{5}{8} \cdot \sqrt{7}$

11. $-\frac{3}{4} \cdot \frac{2}{9}$

12. $-\frac{4}{9} \cdot -\sqrt{5}$

For Exercises 13–16, predict whether the sum or product will be a rational or irrational number. Explain.

13. The sum of two rational numbers.
14. The product of a nonzero rational number and an irrational number.
15. The product of two rational numbers.
16. The sum of a rational number and an irrational number.
17. Can the sum of two irrational numbers be rational? If so, give an example. If not, explain why not.
18. Can the product of two irrational numbers be rational? If so, give an example. If not, explain why not.

Answers

1. rational
2. rational
3. irrational

16. Irrational; check students' explanations.

17. yes; sample answer: $\sqrt{2} + (-\sqrt{2}) = 0$

18. yes; sample answer: $\sqrt{2} \times \sqrt{2} = 2$