

Elementary Algebra Skill

Setting Up and Solving Number Problems Leading to Rational Equations

Set up and solve.

1. The sum of the reciprocal of a number and the reciprocal of 1 more than the number is equal to $\frac{5}{6}$. Find the number(s).
2. The difference of the reciprocal of a number and the reciprocal of three more than the number is $\frac{3}{40}$. Find the number(s).
3. The sum of the reciprocals of two consecutive integers is the same as seven times the reciprocal of the product of the two integers. Find the integers.
4. The difference of the reciprocals of two consecutive even integers is equal to twice the reciprocal of the product of the two integers. Find the integers.
5. A number added to its reciprocal gives $2\frac{1}{6}$. What is (are) the number(s)?
6. A number less its reciprocal equals $\frac{21}{10}$. Find the number(s).
7. The reciprocal of twice a number increased by the reciprocal of three times the difference of the number and 1 gives the reciprocal of the number. Find the number(s).
8. A number added to nine times its reciprocal gives 6. What is the number?
9. The denominator of a certain fraction is 2 more than the numerator. If the numerator is decreased by 1 and the denominator is increased by 1 the new fraction is equivalent to $\frac{1}{3}$. Find the original fraction.
10. The numerator of a certain fraction is 1 less than the denominator. If 3 is added to the numerator and 4 is subtracted from the denominator the resulting fraction is equivalent to 3. Find the original fraction.
11. A number divided by the sum of the number and 3 gives the fraction $\frac{7}{8}$. What is the number?
12. A number divided by the difference of the number and 8 is 2. Find the number.
13. The ratio of the square of an integer and three times the sum of the integer and 3 is $\frac{1}{2}$. Find the integer.
14. The quotient of an integer and 4 more than the integer is the same as the quotient of 15 and 2 more than five times the integer. What is the integer?
15. The quotient of a number less 2 and the number plus 4 is equal to the reciprocal of the number. Find the number.

Answers to Setting Up and Solving Number Problems Leading to Rational Equations

- 1) $-3/5$ or 2
- 2) - 8 or 5
- 3) 3 and 4
- 4) any two consecutive integers will work
- 5) $2/3$ or $3/2$
- 6) $5/2$ or $-2/5$
- 7) 3
- 8) 3
- 9) $3/5$
- 10) $6/7$
- 11) 21
- 12) 16
- 13) 3
- 14) 5
- 15) 4 or - 1