Important Questions about Rational Numbers

Page 100 # 1

How can you use what you know about fractions and integers to explain what a rational number is?

When you use two integers to write a fraction, and make sure that the integer in the denominator is not 0, you have written a rational number.

Page 100 # 2

How are positive fractions and their opposites related on a number line?

A positive fraction and its opposite are the same distance from 0 on a number line. In other words, if you drew a line between any number and its opposite, 0 would be at the midpoint of that line.

Page 100 # 3

In the definition of a rational number as $\frac{m}{n}$, where *m* and *n* are integers, why is it important that $n \neq 0$?

A fraction bar indicates division. We cannot divide by 0, so n cannot be zero in the fraction $\frac{m}{n}$. Example 1) 4 x 3 = 12 so 12 ÷ 3 = 4

Example 2) 9 x 0 = 0 so 0 ÷ 0 = 9 It is obvious that 0 ÷ 0 ≠ 9 so that is one example why we cannot divide by 0.

Page 100 # 4

Describe the numbers are that rational, but are not positive fractions or integers.

Negative fractions and their corresponding decimals are rational numbers that are neither positive fractions nor integers. For example: − $3\frac{2}{5}$, − 0.6 , $\frac{-4}{5}$.

Page 103 – Reflect

What is a rational number? List 3 rational numbers in decimal form and 3 rational numbers in fraction form.

A rational number is any number that can be written as a fraction with an integer numerator and a non-zero integer denominator. This includes positive and negative numbers, including terminating and repeating decimals.

3 Rational Numbers in decimal form: −5.26 , 0.84, 4.7

3 Rational number in fraction form: $\frac{-6}{7}$, − $\frac{3}{4}$, $8\frac{10}{11}$

Page 111 # 2

How can you use what you know about adding integers and adding fractions to add 2 rational numbers in fraction form?

To add 2 rational numbers in fraction form with different denominators, I use equivalent fractions to determine a common denominator, then use a strategy for adding integers to add the numerators.

Page 119 # 2

How can you use what you know about subtracting integers and subtracting fractions to subtract 2 rational numbers in fraction form?

Find a common denominator. Then use integer subtraction to determine the difference of the numerators.

Page 120 – Reflect

How is subtracting two rational numbers similar to adding two rational numbers? How is it different? Include examples of rational numbers in your explanation.

Subtracting two rational numbers is similar to adding two rational numbers in that I use the same strategies I used for integers.

Subtracting two rational numbers is different from adding two rational numbers in that I add the opposite to subtract.

Example: $\dfrac{4}{5} - (-\dfrac{2}{3}) = \dfrac{4}{5} + \dfrac{2}{3}$

$= \dfrac{12}{15} + \dfrac{10}{15} = \dfrac{22}{15} = 1\dfrac{7}{15}$

Example: (–0.5) – (–0.3) = –0.5 + 0.3 = –0.2

Page 127 # 1

Why does it help to predict the sign of a product before you multiply 2 rational numbers?

It helps predict the sign of a product before you multiply 2 rational numbers because it simplifies the calculation. It allows you to multiply only positive numbers, then include the appropriate sign at the end.

Page 134 # 1

How can you use what you know about dividing integers and dividing fractions to divide 2 rational numbers in fraction form?

I can use what I know about dividing integers to predict the sign of the quotient of rational numbers. If the numbers have the same sign, the quotient is positive. If the numbers have different signs, the quotient is negative.

Page 134 # 2

How can you use what you know about dividing integers and dividing decimals to divide 2 rational numbers in decimal form?

I can use what I know about dividing integers to predict the sign of the quotient of rational numbers. To find the numerical value of the quotient, I can divide whole numbers and estimate to place the decimal point, as I would when I divide decimals.