

Integers, real and rational numbers

1 Match the type of number to its description.

integers	numbers that cannot be written in the form $\frac{a}{b}$, where a and b are integers
real numbers	whole numbers that can be positive or negative
rational numbers	numbers that can be written in the form $\frac{a}{b}$, where a and b are integers
irrational numbers	all positive and negative numbers, including decimals and fractions

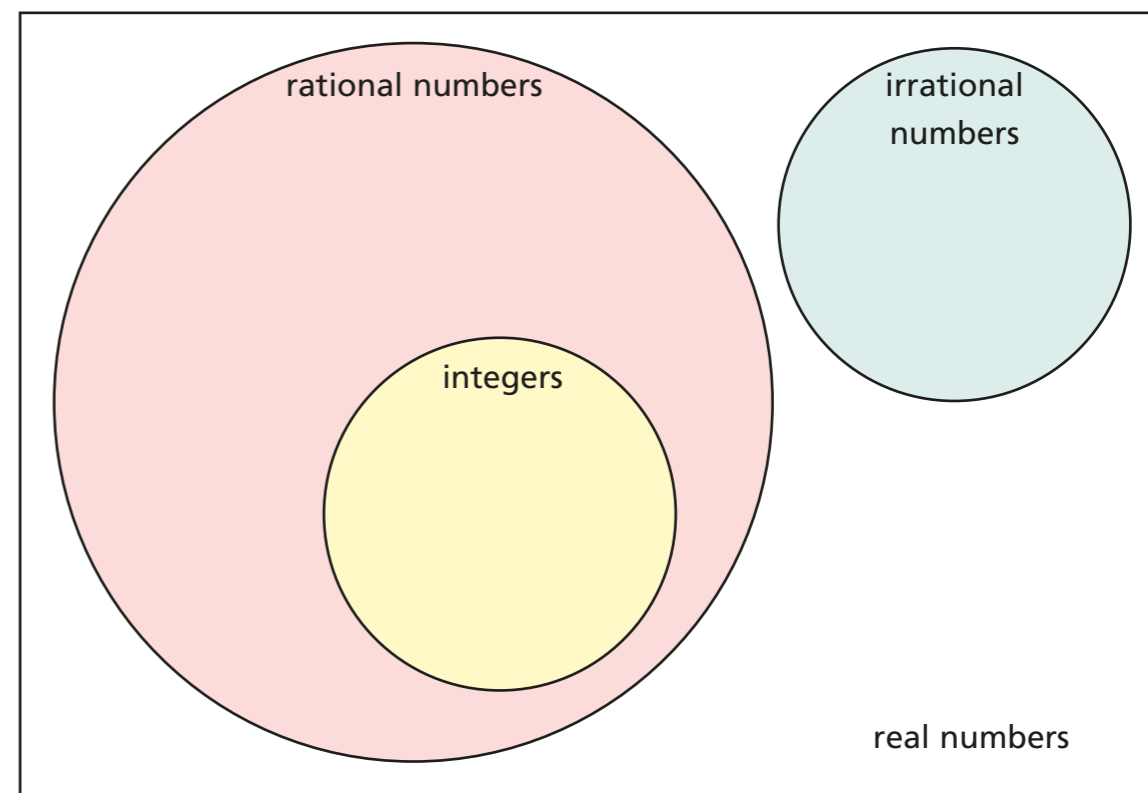
2 a) Tick the correct column or columns for each number.

Number	Integer	Rational	Irrational	Real
5				
π				
7.2				
9.5				
-7				
$\frac{2}{3}$				
$\sqrt{2}$				
0				

b) Give three examples of each type of number.

Integers	
Rational numbers	
Irrational numbers	
Real numbers	

3 The Venn diagram shows where different types of numbers sit in the real number system.



a) Write the values in the correct place on the Venn diagram.

0 143 -7.2 4×10^9 3×10^{-2} $\sqrt{7}$ -1,000

b) Add at least two values in each circle.

c) Why are there no values in the Venn diagram outside the circles?

d) What can you tell by looking at the Venn diagram?



4 Decide whether the statements are true or false. Explain your answers.

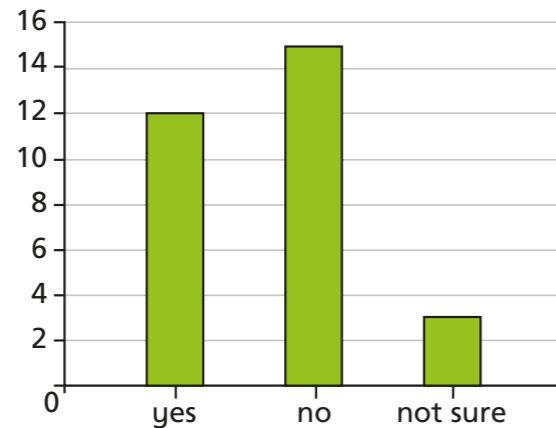
a) All integers are rational numbers. _____

b) All rational numbers are integers. _____

c) An irrational number can be an integer. _____

5 Class 9a students were asked whether they thought $\frac{15}{3}$ was an integer.

The chart shows the results.



a) How many students said that it was not an integer?

Explain why they might think this.

b) How many students said that it was an integer?

Explain why they might think this.

6 a) Tick the fractions that can be written as integers.

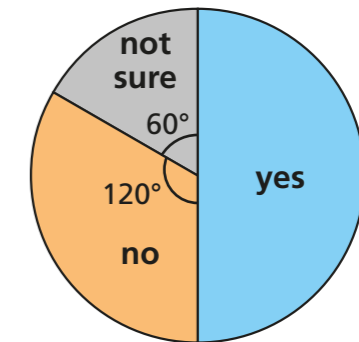
- $\frac{17}{2}$
 $\frac{19}{4}$
 $\frac{25}{5}$
 $\frac{10}{100}$
 $\frac{100}{10}$
 $\frac{49}{7}$

b) Explain when a fraction can be written as an integer.

7 Class 9b students were asked whether they thought $\sqrt{9}$ was an integer.

The results are shown in the pie chart.

There are 30 students in the class.



a) How many students said it was not an integer?

Explain why they might think this.

b) How many students said it was an integer?

Explain why they might think this.

8 Decide whether each statement is true or false.

a) There is an infinite number of integers. _____

b) There is an infinite number of real numbers. _____

c) There is an infinite number of rational numbers. _____

d) There is an infinite number of irrational numbers. _____

Discuss your answers with a partner.

