

14.9.15

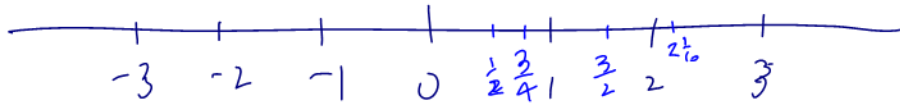
Real Numbers

Number Sets

Decimals and Fractions

A set is a collection of things

The Number Line



Rational Numbers

$$\frac{a}{b}, b \neq 0$$

where a & b are

Integers (eg whole numbers with signs $\pm$)

eg $\frac{5}{7}$, $\frac{6}{-5}$, $3 = \frac{3}{1}$
are all rational

IRRATIONAL NUMBERS cannot be written as fractions
NOT

eg $\sqrt{2}$, π , $\sqrt{5}$

The Real Numbers is the set of
Rationals joined to the set of Irrationals.

Note: Fractions can be written in fraction form ($\frac{a}{b}$, $b \neq 0$) or as decimals

Irrationals can be written with a "symbol" or as decimals.

As Decimals

Rationals	Irrationals
either repeat or stop (terminate)	go on forever (do not stop) no repeating pattern
eg $\frac{1}{2} = 0.5$	eg $\sqrt{2} = 1.414213562\dots$ no repeating
$\frac{1}{3} = 0.\dot{3}$ repeating pattern terminates (stops) repeating period is 1 digit	$\pi = 3.141\dots$
$\frac{14}{99} = 0.14141414\dots$ $= 0.\overline{14}$ 2 digit period	
$\frac{4}{7} = 0.571428571428\dots$ $= 0.\overline{571428}$ 6 digit period	
$\frac{597}{100} = 5.97$ terminates	

Examples

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A

1. State which of the following are rational numbers.

a) $\frac{1}{2}$

b) $\frac{2}{5}$

c) $\frac{-1}{3}$

d) $\frac{-3}{0}$

e) $\frac{-0}{4}$

f) 0

g) -7

h) $\sqrt{5}$

i) π

j) $\frac{-8}{-1}$

k) $\frac{18}{-19}$

l) $\frac{7}{0}$

Express each rational number in an equivalent form.

2. $\frac{-2}{5}$

3. 7

as a decimal

$= -0.4$ | $= \sqrt{49}$ (ex!)
 $= 7.0$

$= \frac{7}{1} = \frac{14}{2} = \frac{21}{3}$

a) $\frac{1}{2}$ is rational
integer over integer

d) $\frac{-3}{0}$ neither rational nor irrational by I DON'T 0!

e) rational $-\frac{0}{4} = 0$

h) irrational

Write each rational number in lowest terms.

10. $\frac{4}{8}$

11. $\frac{-3}{6}$

$= \frac{1}{2}$

$= -\frac{1}{2}$

Write each of the following as the ratio of two integers in lowest terms.

18. $2\frac{3}{4}$

19. $5\frac{1}{3}$

$= \frac{11}{4}$

$= \frac{16}{3}$

$4 \times 2 + 3$

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Express in the form $\frac{a}{b}$ and reduce to lowest terms.

26. 0.5

27. -0.4

28. 1.4

29. 0.8

30. -2.75

31. 1.25

32. -0.36

33. 3.25

34. 1.62

35. -7.4

36. -2.32

37. 3.1

Write each repeating decimal

26) $0.5 = \frac{1}{2}$

27) $-0.4 = -\frac{4}{10} = -\frac{2}{5}$

28) $1.4 = \frac{14}{10} = \frac{7}{5}$

34) $1.62 = \frac{162}{100} = \frac{81}{50}$

$\rightarrow \#30 - 2.75 = -\frac{275}{100} = -\frac{11}{4}$

Hulk

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all of it

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30, 33, 36