



*Integers, Rational and
Irrational Numbers*

The set of real numbers can be divided into two sets:

RATIONAL NUMBERS



and

IRRATIONAL NUMBERS



***Numbers that can be written
in the form $\frac{a}{b}$***

***Numbers that cannot be written
in the form $\frac{a}{b}$***

Rational Numbers Include:

✓ ***all fractions***

eg $\frac{3}{5}$

✓ ***all integers***

eg $8 = \frac{8}{1}$

✓ ***all mixed numbers***

eg $2\frac{4}{5} = \frac{14}{5}$

✓ ***all terminating decimals***

eg $0.23 = \frac{23}{100}$

✓ ***some square roots***

eg $\sqrt{25} = 5 = \frac{5}{1}$

✓ ***some cube roots***

eg $\sqrt[3]{-8} = -2 = \frac{-2}{1}$

Irrational Numbers Include:

✓ π

✓ *some square roots*

eg $\sqrt{3}$

✓ *some cube roots*

eg $\sqrt[3]{5}$

✓ *some trigonometric ratios*

eg $\sin 20^\circ$

which are of the following are integers, rationals or irrational numbers

2.1 $\cos 40^\circ$ $\sqrt{33}$ $5\frac{1}{4}$ $\sin 30^\circ$ π

Integers *none of them*

Rational 2.1 $5\frac{1}{4}$ $\sin 30^\circ$

Irrational $\cos 40^\circ$ $\sqrt{33}$ π

which are of the following are integers,rationals or irrational numbers

$$\frac{4}{9}$$

$$\sqrt{36}$$

$$\sqrt{\frac{2}{3}}$$

$$\sqrt{\frac{4}{9}}$$

4.9

π

Integers

$$\sqrt{36}$$

Rational

$$\frac{4}{9}$$

$$\sqrt{\frac{4}{9}}$$

4.9

Irrational

$$\sqrt{\frac{2}{3}}$$

π

Past Papers

3

$$\sqrt{35} \quad \sqrt{36} \quad 36 \quad \frac{36}{37} \quad 37 \quad \frac{37}{36} \quad 3.7$$

From this list of numbers, write down

(a) a prime number,

37

(b) a square number,

36

(c) an irrational number.

$\sqrt{35}$

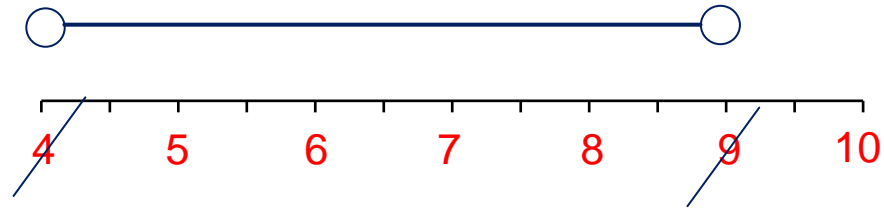
Write down one possible value of x that satisfies each inequality.

(i) $2 < \sqrt{x} < 3$

$$2 < \sqrt{x} < 3$$

$$(2)^2 < (\sqrt{x})^2 < (3)^2$$

$$4 < x < 9$$



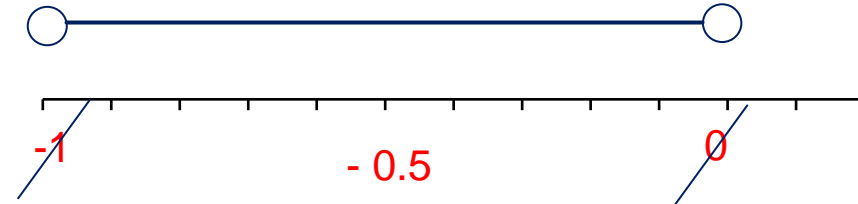
$$x = 6$$

(ii) $-1 < x^3 < 0$

$-1 < x^3 < 0$

$\sqrt[3]{-1} < x < \sqrt[3]{0}$

$-1 < x < 0$



$x = -0.5$

- (b) $\sqrt{131}$ lies between two consecutive integers.
Complete the inequality below with these integers.

$$\dots\dots < \sqrt{131} < \dots\dots$$

$$\dots\dots 11 < \sqrt{131} < 12 \dots\dots$$

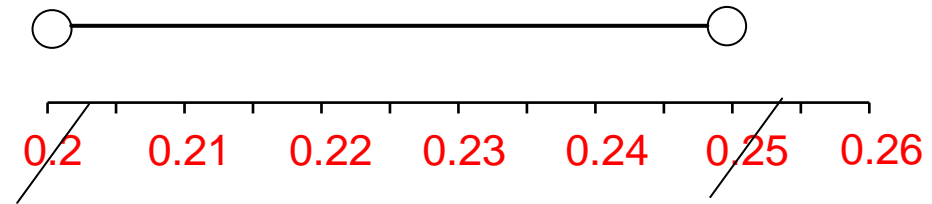
$$\sqrt{131} = 11.4$$

(a) It is given that $\frac{1}{5} < n < \frac{1}{4}$.

Write down a decimal value of n that satisfies this inequality.

$$\frac{1}{5} < n < \frac{1}{4}$$

$$0.2 < n < 0.25$$



$$n = 0.22$$