

extra credit
women's
basketball
1:30 - 7pm.
natural number

• NOTATION

- " \in " : an element of.

e.g. $2 \in \mathbb{N}$ (2 is an element of the set \mathbb{N})

- " \notin " : not an element of

e.g. $12.5 \notin \mathbb{Z}$ (12.5 is not an element of the set \mathbb{Z})

- " \subset " : a subset of

e.g. $\mathbb{N} \subset \mathbb{Z}$ (\mathbb{N} is a subset of \mathbb{Z})

- " $\not\subset$ " : not a subset of

e.g. $\mathbb{W} \not\subset \mathbb{N}$ (\mathbb{W} is not a subset of \mathbb{N})

• RATIONAL NUMBER.

- TWO WAYS TO PROVE A NUMBER IS RATIONAL:

(1) make it a fraction of two integers

e.g. $0.7 = \frac{7}{10}$ ✓

$32 = \frac{32}{1}$ ✓

(2) the decimal repeats or terminates

e.g. $0.4\overline{141}$ → repeats

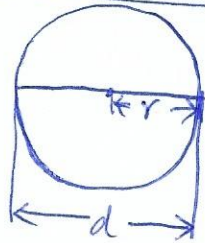
0.7 → terminates

• IRRATIONAL NUMBER (I) e.g. $\pi \approx 3.14159265\dots$

definition: the set of all decimal numbers that neither repeat nor terminate.

e.g. any roots that doesn't come out even.

$$\frac{\text{circumference}}{\text{diameter}} = \pi.$$



• REAL NUMBERS: set of all decimal numbers.

$$\mathbb{R} = \mathbb{Q} + \mathbb{I}$$

\downarrow national real numbers \downarrow irrational numbers.

(anything that shows on your scientific calculator).

• INFINITE SETS

- 3 ways to indicate infinite sets

e.g. I. to say anything greater than 7

">"	greater than
"≥"	greater than or equal to
"<"	less than
"≤"	less than or equal to

(1) set builder notation (statement of inequality)

$$\{x \mid x \in \mathbb{R}, x > 7\}$$

\downarrow
 "such that"

(the set of number x such that x is an element of real number and x is greater ~~that~~ than 7)

(2) number line graph.



"(", "O"	→ DO NOT INCLUDE
"[", "●"	→ DO INCLUDE

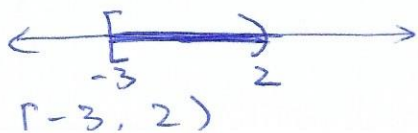
(3) interval notation.

$$(7, \infty)$$

* Always use $\{ \dots, \infty \}$ or $\{ -\infty, \dots \}$ parenthesis w/ infinity

e.g. II. to say anything between -3 and 2 including -3 but not including 2

$$\{x \mid x \in \mathbb{R}, -3 \leq x < 2\}$$



→ always go from smaller number to larger number when possible.
 → smaller number always on the left!

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[]	
(]	
[)	