Section 1.1: cont'd

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2:29 PM

named sets:

$\mathbb{N} = \{1, 2, 3, \ldots\}$

↑ the set of natural numbers

(or also known as the counting numbers)

$\mathbb{Z} = \{\ldots -3, -2, -1, 0, 1, 2, 3, \ldots\}$

↑ the set of integers

$\emptyset = \{\}$

↑ the empty set / the null set

warning: do not write ~~$\{\emptyset\}$~~

set-builder notation:

"such that"

$A = \{x \mid x \text{ is an even natural number}\}$

"the set A" — "the set of all x" — condition or statement about the allowed values of x

example: write the set $\{4,5\}$ in set-builder notation

(note: answers may vary)

$\{4,5\} = \{ y \mid y$ is a natural number bigger than 3 and less than 6 $\}$

$= \{ q \mid q$ is equal to 4 or 5 $\}$

$= \{ \text{☺} \mid \text{☺} \in \mathbb{N}$ and $3 < \text{☺} < 6 \}$

$= \{ w \mid w$ is a single-digit natural number which begins with the letter "f" $\}$