

# powersets, subsets, elements

January 28, 2018

## Element or Subset or Neither?

In each row, you must decide if Thing 1 is (element / subset / neither / both) of Thing 2.

Circle the letter in the correct column.

Hint: If confused, write down the cardinality of Thing 2 (if defined). That sometimes helps.

Thing 1	$\in$	$\subseteq$	neither	both	Thing 2
0	T	H	E	R	{1, 2, 3}
1	S	O	A	S	{1, 2, 3}
2	R	L	P	I	{1, 2, 3}
{1}	S	E	V	H	{1, 2, 3}
{1, 2, 3}	L	V	M	S	{1, 2, 3}
$\emptyset$	U	I	O	N	{1, 2, 3}
{}	B	N	W	C	{1, 2, 3}
{ $\emptyset$ }	O	I	U	Y	{1, 2, 3}
$\mathbb{Z}$	W	E	S	A	$\mathbb{Q}$
$\mathbb{N}$	S	R	H	A	{ $\mathbb{Z}$ }
$\mathbb{Z}$	L	T	D	F	$\mathbb{R}$
$\mathbb{R}$	S	O	E	G	$\mathbb{Z}$
1	H	U	L	P	1
{1}	B	M	S	U	{1, {1}}
{{1}}	Q	R	V	G	{1, {1}}
{{{1}}}	U	A	S	D	{1, {1}}
{1, 2, 3}	R	V	I	K	{{1}, {1, 2}, {1, 2, 3}}
{{1, 2, 3}}	L	E	F	T	{{1}, {1, 2}, {1, 2, 3}}
1	C	E	B	D	{{1}, {1, 2}, {1, 2, 3}}
1	M	O	R	E	{{1}, {1, 2}, 1, 2, 3}
{1}	T	F	I	U	{{1}, {1, 2}, 1, 2, 3}
{1}	W	N	E	G	{{1, 2}, 1, 2, 3}

## Powersets

Write the powerset of  $A$ .

Hint: use circle, heart and triangle to box the three elements of the later sets, as a visual aid

1.  $A = \{\circ, \heartsuit, \triangle\}$
  
2.  $A = \{\{1\}, \emptyset, \{2, 3\}\}$
  
3.  $A = \{\{\emptyset\}, \{1\}, 2\}$