

Set Theory Quiz

Quiz

Match the appropriate set operation to the Venn Diagram.

3 $A - B$

2 $A \cup B$

1 $A \cap B$

4 $A \Delta B$

The image shows four Venn diagrams labeled 1, 2, 3, and 4, each with two overlapping circles, A (blue) and B (red).
1: The intersection of A and B is shaded with diagonal lines.
2: The union of A and B is shaded with diagonal lines.
3: The region of A that does not overlap with B is shaded with diagonal lines.
4: Both the region of A that does not overlap with B and the region of B that does not overlap with A are shaded with diagonal lines.
In the center of these diagrams is a small Venn diagram with two circles, A and B, where the intersection is shaded with diagonal lines.

Python Sets

```
3
4
5
6
7
8 fruit = set(['apple', 'orange', 'tomato'])
9 vegetable = set(['broccoli', 'tomato', 'carrot'])
10
11 print fruit | vegetable
12
13 [ ] set(['tomato'])
14
15 [ ] set(['apple', 'orange'])
16
17 [ ] set(['carrot', 'apple', 'orange', 'broccoli'])
18
19 [ ] set(['tomato', 'carrot', 'apple', 'orange', 'broccoli'])
```

Generators

```
5 def sumsquares(n):
6     squares = []
7     for x in range(n+1):
8         squares.append(x*x)
9     return sum(squares)
10
11 print sumsquares(1000000)
12
13 ☒ Messy: it clutters up our program
14
15 ☐ Uses memory unnecessarily
16
17 ☐ Runs too slowly
18
19 ☐ The code doesn't work!
```

Generators 2

```
5 print sum([x*x for x in range(1000001)])
6
7 ☐ Messy: it clutters up our program
8
9 ☒ Uses memory unnecessarily
10
11 ☐ Runs too slowly
12
13 ☐ The code won't work
```

Generators 3

```
1
4
9
16
25
36
49
64
81
100
>>> def gensquares(n):
...     i = 0
...     while i <= n:
...         yield i*i
...         i += 1
...
>>> gensquares
<function gensquares at 0x1004b17d0>
>>> gensquares(11)
<generator object gensquares at 0x1004a7730>
>>> next(gensquares(11))
0
>>> ☐ 0    ☐ 1    ☐ 4    ☐ 121
```

Scope Quiz

```
1 x = 2
2 y = 3
3 def add_nums():
4     y = 6
5     return x + y
6
7 print add_nums()
8
9
10 # what will the output be when I click RUN?
11
12 # ☒ 8
13 #
14 # ☐ 5
15 #
16 # ☐ NameError
```