

# Sets and Functions

Click on a question number to see how your answers were marked and, where available, full solutions.

Question Number	Score
<b>Sets</b>	
Question 1	3 / 3
<b>Functions</b>	
Question 2	3 / 3
Question 3	3 / 3
Question 4	1.8 / 3
<b>Total</b>	<b>10.8 / 12 (90%)</b>

Congratulations, you passed this quiz with a sufficient score. You may include this attempt as part of your self-assessment evidence.

Make sure that you click on "Print this results summary" and save to pdf, so that everything can be read clearly. Do not navigate away from this page before you have saved your result.

## Performance Summary

<b>Exam Name:</b>	Sets and Functions
<b>Session ID:</b>	18700288416
<b>Exam Start:</b>	Thu Apr 04 2024 20:31:11
<b>Exam Stop:</b>	Thu Apr 04 2024 21:01:48
<b>Time Spent:</b>	0:30:36

# Question 1

Compute the following set operations, given the sets:

$$U = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20\}$$

$$A = \{1, 4, 6, 10, 11, 13, 14, 16, 17\}$$

$$B = \{x \in U : x \text{ is a multiple of } 4\}$$

$$C = \{x \in U : x > 15\}$$

Please enter all the sets below using the set enumeration method. To enter a set, please enter it using the notation `set( [list of elements] )`, for example `set(1,2,3,4)`. To enter the empty set, enter `set()`.

a)

$$(A \setminus C) \cup \overline{B} =$$

`set(1,2,3,4,5,6,7,9,10,11,13,14,15,17,18,19)`

`{1, 2, 3, 4, 5, 6, 7, 9, 10, 11, 13, 14, 15, 17, 18, 19}` ✓

Expected answer: `set(1,4,6,10,11,13,14,2,3,5,7,9,15,17,18,19)`

`{1, 4, 6, 10, 11, 13, 14, 2, 3, 5, 7, 9, 15, 17, 18, 19}`

✓ Your answer is numerically correct. You were awarded 1 mark.

You scored 1 mark for this part.

Score: 1/1 ✓

b)

$$B \setminus (C \cap \overline{B}) =$$

`set(4,8,12,16,20)` {4, 8, 12, 16, 20} ✓

Expected answer: set(4,8,12,16,20) {4, 8, 12, 16, 20}

✓ Your answer is numerically correct. You were awarded 1 mark.  
You scored 1 mark for this part.

Score: 1/1 ✓

c)

$$(C \setminus A) \cap \overline{C} =$$

`set()` {} ✓

Expected answer: set() {}

✓ Your answer is numerically correct. You were awarded 1 mark.  
You scored 1 mark for this part.

Score: 1/1 ✓

## Question 2

What are the properties of the relation with the domain  $\{1, 2, 3, 4, 5, 6\}$  and codomain  $\{1, 5, 6, 9, 10, 12\}$  given by:

x	y
1	5
2	10
3	1
4	9
5	6
6	12

What are the properties of this relation? (Check all that applies).

- ☐ Not a function   
 ☒ A function   
 ☒ A surjective function  
☒ An injective function   
 ☒ A bijective function



Expected answer:

- ☐ Not a function   
 ☒ A function   
 ☒ A surjective function  
☒ An injective function   
 ☒ A bijective function

Your answer is correct. You were awarded **3** marks.  
 You scored **3** marks for this part.

Score: 3/3

## Question 3

What are the properties of the relation with the domain  $\{1, 2, 3, 4, 5, 6\}$  and codomain  $\{2, 4, 5, 6, 11, 12\}$  given by:

x	y
1	5
2	2
3	6
4	12
5	4
6	11

What are the properties of this relation? (Check all that applies).

- ☐ Not a function   
 ☒ A function   
 ☒ A surjective function

☒ An injective function☒ A bijective function

### Expected answer:

- ☐ Not a function   
 ☒ A function   
 ☒ A surjective function  
☒ An injective function   
 ☒ A bijective function

✓ Your answer is correct. You were awarded **3** marks.  
 You scored **3** marks for this part.

Score: 3/3 ✓

## Question 4

What are the properties of the relation with the domain  $\{1, 2, 3, 4, 5, 6\}$  and codomain  $\{1, 2, 3, 4, 8, 9, 11\}$  given by:

x	y
1	9
2	3
3	4
4	1
5	11
6	2

What are the properties of this relation? (Check all that applies).

- ☐ Not a function   
 ☒ A function   
 ☒ A surjective function  
☒ An injective function   
 ☒ A bijective function



## Expected answer:

- ☐ Not a function    ☒ A function    ☐ A surjective function
- ☒ An injective function    ☐ A bijective function

✓ Your answer is partially correct. You were awarded **1.8** marks.  
You scored **1.8** marks for this part.

**Score: 1.8/3** ✓

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