Answers

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# Answers: PMFs, PDFs, and CDFs

Answers to questions relating to the guide on PMFs, PDFs, and CDFs.

*These are the answers to Questions: PMFs, PDFs, and CDFs.*

## **Please attempt the questions before reading these answers!**

## Q1

**1.1**

The given PMF is valid because:

* All
* The sum of all probabilities equals 1:

1. .

**1.2**

The given PMF is valid because:

* All
* The sum of all probabilities equals 1:

**1.3**

The PMF for the biased coin toss is:

|  | Heads | Tails |
| --- | --- | --- |
|  | 0.3 | 0.7 |

This is a valid PMF because:

* Both
* The sum of both probabilities equal 1:

**1.4**

This is not a valid PMF because:

* The sum of the given probabilities does not equal 1:

**1.5**

1. The probability of picking a blue sweet is:
2. The PMF for the scenario is:

|  | Red | Blue | Green |
| --- | --- | --- | --- |
|  | 0.5 | 0.3 | 0.2 |

This is a valid PMF because:

* All
* The sum of all three probabilities equals to 1:

**1.6**

1. For this PMF to be valid, you must have
2. For ,

## Q2

**2.1**

This is a valid PDF because:

**2.2**

This is a valid PDF because:

**2.3**

This is a valid PDF because:

**2.4**

This is not a valid PDF:

* Because it does not meet the honesty condition:
* Calculating the individual integrals:
* And adding them together:

**2.5**

1. For this PDF to be valid, you must have

**2.6**

This is a valid PDF because:

* Calculating the individual integrals:
* And adding them together gives:

## Q3

**3.1**

The given PMF has the following CDF:

|  | 1 | 2 | 3 | 4 |
| --- | --- | --- | --- | --- |
|  | 0.1 | 0.3 | 0.5 | 1 |

**3.2**

1. The CDF for the values 0.5, 1, and 2:

**3.3**

1. The CDF at points 4, 5, and 6:

**3.4**

1. This is not a valid CDF because the CDF should be non-decreasing.