MATHEMATICS · GRADES 10-12

Discrete random variables

Difficulty level: Advanced

Mathematics: Grades 10-12

This document was made by AI and there may be mistakes. If a question or answer looks wrong, use the Flag a mistake button to let Brett know so he can fix it.

Overview of the concept

This is how you describe chance when the outcomes can be counted. The number of goals in a soccer game or the number of heads in ten coin flips can only be whole numbers, so you can list every possible result. Listing them lets you work out the chance of each one and the average over many games or flips. It is how bookmakers, game designers, and statisticians put numbers on luck.



© 2026 Brett Robbins. All Rights Reserved.

Worked examples

EXAMPLE 1

Q Is the number of heads in 3 coin tosses discrete?

SOLUTION

The possible values are 0, 1, 2, 3

They are separate values you can list.

Yes, discrete.

EXAMPLE 2

Q Is the exact height of a person discrete?

SOLUTION

Height can be any value in a range, with no gaps.

It cannot be listed value by value.

No, it is continuous, not discrete.

© 2026 Brett Robbins. All Rights Reserved.

Practice questions

1 Is the number of cars in a parking lot discrete?

- A Yes
- B No

Understand It with Pulse | Flag a mistake

2 Is the time to run a race discrete?

- A Yes
- B No, it is continuous

Understand It with Pulse | Flag a mistake

© 2026 Brett Robbins. All Rights Reserved.

3 What is a random variable?

- **A** A variable whose value depends on the outcome of a random process
- **B** A fixed number that never changes
- **C** A list of all the possible outcomes
- **D** A graph showing how often each value occurs

Understand It with Pulse | Flag a mistake

4 How many possible values can the number of heads in 5 coin tosses take?

Understand It with Pulse | Flag a mistake

© 2026 Brett Robbins. All Rights Reserved.

5 Give an example of a continuous random variable.

- A The number of goals in a game
- B The exact height of a person
- C The number of students in a class
- D The number of heads in 5 tosses

Understand It with Pulse | Flag a mistake

6 Give an example of a discrete random variable.

- A The number of heads in 5 tosses
- B The exact height of a person
- C The time to run a race
- D The weight of a bag

Understand It with Pulse | Flag a mistake

© 2026 Brett Robbins. All Rights Reserved.

7 What values can a discrete random variable take?

- **A** Separate, listable values
- **B** Any value in a continuous range
- **C** Only the numbers 0 to 10
- **D** Values that cannot be listed

Understand It with Pulse | Flag a mistake

8 A die is rolled once. The random variable is the number shown. List all the possible values.

Understand It with Pulse | Flag a mistake

© 2026 Brett Robbins. All Rights Reserved.

9 A variable whose values cannot be listed one by one is called what?

- A Continuous
- B Discrete
- C A fixed number
- D A list of outcomes

Understand It with Pulse | Flag a mistake

10 What is the difference between discrete and continuous?

- A Discrete values can be listed; continuous values fill a range
- B Discrete values fill a range; continuous values can be listed
- C Discrete and continuous values are the same thing
- D Discrete values are always whole numbers

Understand It with Pulse | Flag a mistake

© 2026 Brett Robbins. All Rights Reserved.

ANSWER KEY

1. Yes

2. No, it is continuous

3. A variable whose value depends on the outcome of a random process

4. 6

5. The exact height of a person

6. The number of heads in 5 tosses

7. Separate, listable values

8. 1, 2, 3, 4, 5, 6

9. Continuous

10. Discrete values can be listed; continuous values fill a range

© 2026 Brett Robbins. All Rights Reserved.