Grade 6 Mathematics: Data and Probability

Free sample lesson

Ontario curriculum: Mathematics (2020), Strand D: Data (Data Literacy; Probability). 17 days.

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This is Lesson 1 of 12 from the full unit, exactly as it appears in the Teacher Guide, followed by the student worksheet. The full unit is at unitplans.ca.

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Lesson 1: Discrete and continuous data

1 day · about 60 minutes · D1.1

Learning goal

- We are learning to tell discrete data from continuous data and to give examples of each.

Success criteria

- I can say that discrete data is counted in whole numbers.
- I can say that continuous data is measured and can fall between whole numbers.
- I can give my own example of each kind.

Materials

- Rulers and a stopwatch
- Sticky notes
- Chart paper

Minds On (10 min)

1. Show two questions: "How many pencils are in your pencil case?" and "How long is your pencil?" Ask: "Could the answer to each question be 12.5? Explain why or why not."
2. Students share with a partner, then three students share with the class.

Action (35 min)

1. Name the terms: a variable is anything we count or measure. Discrete data is counted (whole numbers only). Continuous data is measured (any value in a range, including decimals).
2. Sort a class set of variables on the board into two columns. Measure two things as a class (a pencil length and a hop time) to show decimals.
3. Introduce qualitative data (words or categories, such as favourite colour) so students can tell it apart from quantitative data (numbers).
4. Students complete the worksheet in pairs.

Consolidation (15 min)

1. Discuss question 4: why a measurement that is "about 3 hours" is still continuous.
2. Students add one new example to each column of the class chart.

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3. Exit: "Write one example of discrete data and one example of continuous data about your school day."

Questions to ask

- Can you count it, or do you have to measure it?
- Could the value be a decimal? Would it make sense?
- Is the answer a word or a number?

Watch for

- Students often say a number that is rounded is discrete. If a measurement was rounded, the variable is still continuous. Ask what was being measured.
- Students may think money is continuous. Prices in cents can only take certain values, so most teachers treat counted dollars and cents as discrete.

Differentiation

Support	Extend
Use the test: count it, or measure it? Provide a sorting mat with the two headings.	Find a variable that could be treated either way, such as age in whole years, and explain the choice.

Answer key: Discrete or continuous?

1. Here are 11 variables: the number of pets in a family; the height of a sunflower; the number of desks in a room; the time it takes to run 100 m; the mass of a backpack; the goals scored in a hockey game; the temperature outside; the number of books on a shelf; the length of a pencil; the number of words in a sentence; the distance a student walks to school. How many of them are continuous?

   > **Answer:** 6
   > Continuous: the height of a sunflower; the time it takes to run 100 m; the mass of a backpack; the temperature outside; the length of a pencil; the distance a student walks to school.

2. How many of the same variables are discrete?

   > **Answer:** 5
   > 11 − 6 = 5.

3. Is "favourite colour" discrete data, continuous data, or neither? Explain.

   > **Answer:** Neither. Colour is qualitative data (words or categories), not numbers that we count or measure.

4. A runner says her time was "about 14 seconds". Is time discrete or continuous? Explain.

> **Answer:** Continuous. Time is measured and can be any value, such as 14.37 s, even if we round it.

5. Write one new example of discrete data and one new example of continuous data from your own life.

> **Answer:** Answers vary. Discrete: a counted amount, such as siblings. Continuous: a measured amount, such as height.

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Student worksheet: Discrete or continuous?

Success criteria

- I can say that discrete data is counted in whole numbers.
- I can say that continuous data is measured and can fall between whole numbers.
- I can give my own example of each kind.

Show your thinking.

1. Here are 11 variables: the number of pets in a family; the height of a sunflower; the number of desks in a room; the time it takes to run 100 m; the mass of a backpack; the goals scored in a hockey game; the temperature outside; the number of books on a shelf; the length of a pencil; the number of words in a sentence; the distance a student walks to school. How many of them are continuous?

2. How many of the same variables are discrete?

3. Is "favourite colour" discrete data, continuous data, or neither? Explain.

4. A runner says her time was "about 14 seconds". Is time discrete or continuous? Explain.

5. Write one new example of discrete data and one new example of continuous data from your own life.

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