Grade 6 Mathematics: Measurement

Free sample lesson

Ontario curriculum: Mathematics (2020), Strand E: Spatial Sense, E2 Measurement (Grade 6). 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: Choosing metric units

1 day · about 60 minutes · E2.1

Learning goal

- We are learning to choose a sensible metric unit for length, area, mass and capacity, and to use prefixes to see how units are related.

Success criteria

- I can match an attribute (length, area, mass, capacity) to a unit.
- I can explain what kilo-, centi- and milli- tell me.
- I can estimate with benchmarks, such as a doorway being about 2 m high.

Materials

- Metre stick, ruler, 1 L jug, 1 kg bag of rice (or a litre of milk), paper clips
- Chart paper for a class prefix chart

Minds On (10 min)

1. Show a paper clip, a desk and the school gym. Ask: "Which unit would you use to describe how long each one is, and why?"
2. Take answers in mm, cm, m and km and record them on a chart. Point out that the best unit depends on how big the thing is and how exact we need to be.

Action (35 min)

1. Build a prefix chart together: kilo (1000 times the base unit), hecto, deca, base unit, deci, centi (one hundredth), milli (one thousandth). Connect it to the place-value chart.
2. Benchmarks: students find an object about 1 mm thick, 1 cm wide, 1 m long, 1 g, 1 kg, 1 mL and 1 L in the room and share them.
3. Students complete the worksheet in pairs, saying out loud why they chose each unit.

Consolidation (15 min)

1. Discuss worksheet question 6: why does measuring in cm give a bigger number than measuring in m?
2. Exit: "Name one object you would measure in kilograms and one you would measure in grams, and say why."

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Questions to ask

- What are you measuring: how long, how much space it covers, how heavy, or how much it holds?
- How exact does the measurement need to be?
- What object do you know that is about that size?

Watch for

- Students think a bigger unit gives a bigger number. Measure the same desk in cm and in m and compare the counts.
- Students mix up mass and capacity. Ask whether you are weighing it or pouring it.

Differentiation

Support	Extend
Give a benchmark card with pictures (1 mm = the thickness of a dime, 1 cm = a fingernail width, 1 m = a big step, 1 kg = a bag of flour). Limit the prefix chart to kilo, centi and milli at first.	Research why a hectare is used for land and what a megalitre could be used for.

Answer key: Choosing units

1. Choose the best unit (mm, cm, m or km) for each: (a) the thickness of a dime, (b) the length of a school hallway, (c) the distance a bus drives in one day, (d) the width of a notebook.

   > **Answer:** (a) mm, (b) m, (c) km, (d) cm.

2. Choose the best unit (mg, g, kg or t) for the mass of each: (a) a grain of rice, (b) a slice of bread, (c) a Grade 6 student, (d) a loaded transport truck.

   > **Answer:** (a) mg, (b) g, (c) kg, (d) t.

3. Choose the best unit (mL, L or kL) for the capacity of each: (a) a teaspoon, (b) a bathtub, (c) a backyard swimming pool.

   > **Answer:** (a) mL, (b) L, (c) kL.

4. Choose the best unit (cm², m² or km²) for the area of each: (a) a postage stamp, (b) a classroom floor, (c) the whole province of Nova Scotia.

   > **Answer:** (a) cm², (b) m², (c) km².

5. How many metres are in 1 kilometre? How many millimetres are in 1 metre?

   > **Answer:** 1 km = 1000 m and 1 m = 1000 mm.

6. You measure the same hallway in metres and then in centimetres. Which measurement is the bigger number? Explain.

> **Answer:** The measurement in centimetres. A centimetre is smaller than a metre, so it takes more of them: 1 m = 100 cm.

7. Put these lengths in order from shortest to longest: 0.0025 km, 240 cm, 2600 mm.

> **Answer:** 240 cm < 0.0025 km < 2600 mm (in metres: 2.4, 2.5, 2.6).

8. A large jug of milk is labelled 4 mL, 4 L or 4 kL. Which is reasonable? How do you know?

> **Answer:** 4 L. A litre is about a big water bottle, so a large jug holds a few litres. 4 mL is less than a spoonful and 4 kL is a small swimming pool.

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Student worksheet: Choosing units

Success criteria

- I can match an attribute (length, area, mass, capacity) to a unit.
- I can explain what kilo-, centi- and milli- tell me.
- I can estimate with benchmarks, such as a doorway being about 2 m high.

Show your thinking in words. Use a benchmark to help you.

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2. Choose the best unit (mg, g, kg or t) for the mass of each: (a) a grain of rice, (b) a slice of bread, (c) a Grade 6 student, (d) a loaded transport truck.

3. Choose the best unit (mL, L or kL) for the capacity of each: (a) a teaspoon, (b) a bathtub, (c) a backyard swimming pool.

4. Choose the best unit (cm², m² or km²) for the area of each: (a) a postage stamp, (b) a classroom floor, (c) the whole province of Nova Scotia.

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