

30-Minute Lesson Plan — Percentages (Grade 6)

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Overview

Purpose: Teach students to interpret and compute percentages of quantities using concrete -> pictorial -> symbolic representations so they can solve authentic problems (e.g., discounts, tax, portions). Classical structure: I-do (modeling), We-do (guided practice), You-do (independent application). Anchor on mastery threads: unit reasoning, quantity relationships, equivalence, and composition/decomposition.

Standards Alignment

- CCSS 6.RP.3 (use ratio reasoning to solve percent problems such as “What is 30% of 200?”) — applicable to typical US Grade 6 expectations for percent understanding.
- Emphasis on converting between percent, fraction, and decimal; applying to solve problems using unit reasoning and decomposition.

Materials (Low)

- 100-grid handout or draw a 10×10 grid on whiteboard
- Paper and pencil per student
- Optional: small counters or colored pencils for grid shading
- Timer or clock

Time Allocation (30 minutes)

- 0:00–0:05 — Hook & Definitions (I-do)
- 0:05–0:12 — Annotated Worked Examples (I-do continued)
- 0:12–0:20 — Guided Practice (We-do) with Pulse Check 1
- 0:20–0:27 — Independent Practice (You-do) with Pulse Check 2
- 0:27–0:30 — Quick Quiz checkpoints and Metacognition prompts; closure

Learning Objectives (measurable)

Students will be able to:

- Define percent as “parts per 100” and represent it as fraction and decimal.
- Use unit reasoning and composition/decomposition to compute a percent of a quantity in at least 2 of 3 authentic tasks.
- Convert between percent, fraction, and decimal for common values (e.g., 50%, 25%, 10%) and

use these to solve problems.

Success criteria:

- Correctly compute percent-of problems in 4 out of 5 independent tasks.
- Explain the chosen representation (grid, fraction, or decimal) and why it helps solve a real-world percent problem in a short written reflection.

Sequencing representations (concrete -> pictorial -> symbolic) and rationale

- Concrete: counters or shading a 100-grid – anchors "percent = parts per 100" and supports unit reasoning (one unit = 1%).
- Pictorial: labeled 100-grid or bar model – shows quantity relationships and equivalence (e.g., $25\% = 25/100 = 1/4$).
- Symbolic: fraction ($25/100$), decimal (0.25), and multiplication ($0.25 \times \text{whole}$) – efficient computation and generalization to unfamiliar percentages.
Narration: Each move preserves the unit ($1\% = 1/100$ of the whole). Concrete makes the unit visible; pictorial maps quantity relationships; symbolic compresses the reasoning into operations for efficiency while retaining equivalence to the concrete model.

Lesson Sequence (Classical I-do / We-do / You-do)

I-do (0:00–0:12) – Direct instruction, modeled examples

1. Definition and anchor (1 minute)

- State: "Percent means parts per 100. $1\% = 1/100$ of the whole."
- Show a 10×10 grid and shade 1 square to show 1%.

2. Annotated Worked Example A (25% of 120) (5 minutes)

- Concrete/pictorial: Shade 25 of 100 on grid; annotate " $25/100$ ".
- Equivalence: Write $25/100 = 1/4$ (unit reasoning: dividing both numerator and denominator by 25).
- Composition/decomposition: $1/4$ of 120 = $120 \div 4 = 30$.
- Symbolic alternative: $25\% = 0.25 \rightarrow 0.25 \times 120 = 30$.
- Annotation points: show correspondence between shaded grid, fraction, and multiplication; label units (percent unit = $1/100$ of the whole).
- Explicit success statement: "We created a chain showing how a concrete 25 shaded squares equals 0.25 of the whole, so multiplying gives the answer."

3. Annotated Worked Example B (40% of 75) (6 minutes)

- Pictorial: Use a bar split into ten 10% chunks, label each chunk = 7.5 (since 10% of 75 = 7.5).
- Decompose: $40\% = 4 \times 10\% \rightarrow 4 \times 7.5 = 30$.
- Symbolic: $0.40 \times 75 = 30$.
- Emphasize composition/decomposition (use 10% repeatedly) and quantity relationships (10% as unit increment).
- Annotate why this approach reduces computation load and preserves equivalence.

Pulse Check 1 (during I-do -> at 0:12)

- Task: Verbally explain (one sentence) how to find 25% of a number using the grid or decimal method.
- Success criteria: Student provides an explanation that includes either
 - "Shade 25/100 on the grid -> reduce to fraction or multiply by 0.25," OR
 - "Convert percent to decimal (divide by 100) and multiply by the whole."
- Strategy for teacher: quick cold-calls or thumbs-up/thumbs-down for whole-class check; note who meets criteria.

We-do (Guided Practice 0:12–0:20)

Teacher leads two problems with students contributing steps and reasoning.

1. Problem 1 (guided): Find 15% of 200

- Teacher prompts: "What is 10% of 200? 5%? Combine."
- Students compute: $10\% = 20$; $5\% = 10$; $15\% = 30$.
- Annotate decomposition: show $15\% = 10\% + 5\%$.

2. Problem 2 (guided): Find 12.5% of 64

- Teacher models fraction equivalence: $12.5\% = 12.5/100 = 1/8$.
- Use unit reasoning: $1/8$ of 64 = 8.
- Student contribution: identify fractional equivalence and compute.

Pulse Check 2 (We-do midpoint)

- Task: Solve one of the two guided problems independently on paper and hold up answer.
- Success criteria: Correct numeric answer shown and a one-line justification (e.g., "15% = 10%

+5%, so $20+10=30$ ”).

- Teacher records how many students meet criteria; goal: at least 70% of class success to proceed.

You-do (Independent Practice 0:20–0:27) – Individual application

Students complete 5 short percent-of problems on paper. Success criteria for this block:

- Individual success goal: correctly solve at least 4 out of 5 problems and annotate which representation used (grid, fraction, decimal, or decomposition).

Independent problems (choose low-material approach):

1. 25% of 80
2. 30% of 50
3. 10% of 230
4. 18% of 200 (hint: find 10% and 1%)
5. 5% of 120

Teacher circulates, notes misconceptions, quick corrective mini-demonstrations if >30% struggle.

Pulse Check 3 (during You-do, quick exit check at 0:26)

- Task: On the exit slip, write the answer to problem #3 and one sentence: “Which representation I used and why.”
- Success criteria: Correct answer to problem #3 and a sentence that names a representation (e.g., “I used decimal because it was faster: $0.10 \times 230 = 23$ ”) that matches method.

Quick Quiz-style Checkpoints (10 items with success criteria)

Use these as instant checks, exit tickets, or a short paper quiz. For each item, success criteria = correct numeric answer (tolerate common decimal formatting) and short justification for two select items (see notes).

1. What is 50% of 60?

- Success: 30.

2. What is 25% of 120?

- Success: 30 (justification optional: “ $\frac{1}{4}$ of 120”).

3. Convert 0.4 to a percent.

- Success: 40%.
- Convert 75% to a decimal and fraction in simplest form.
 - Success: 0.75 and $\frac{3}{4}$.
 - Find 10% of 450.
 - Success: 45.
 - Find 40% of 75 (use decomposition or decimal).
 - Success: 30.
 - A \$80 jacket is on sale for 25% off. What is the sale price?
 - Success: Discount = \$20; sale price = \$60. (Student must show subtraction).
 - What percent is 15 out of 60? (express as percent)
 - Success: 25%.
 - Find 12.5% of 56 (best if student shows method).
 - Success: 7 (show $12.5\% = \frac{1}{8}$, $56 \div 8 = 7$).
 - If 30% of a class of 40 students brought lunch from home, how many students is that?
 - Success: 12 (show $0.30 \times 40 = 12$ or $\frac{30}{100} \times 40$).

Use scoring rubric: 1 point each. Mastery benchmark for lesson: $\geq 8/10$ indicates secure performance today.

Metacognition Prompts (embedded)

- After independent practice: "Describe in 2–3 sentences when you would use a grid, fraction, or decimal to find a percent in real life (for example, shopping discounts, recipes, or sports statistics)."

- Exit reflection: “Which method made the problem easiest for you today? Give one real-world example where you would use that method.”
- Short writing success criteria: Student names a context and connects it explicitly to the representation (e.g., “I use decimals for money because prices are dollars and cents”).

Differentiation (brief)

- Support: Provide 100-grid copies, allow students to shade or use counters; offer decomposition prompts (start with 10% then adjust).
- Challenge: Offer problems with non-standard percentages (e.g., 17.5% of 120) and ask students to explain conversion to decimal and compute.

Assessment & Feedback

- Formative checks: Pulse Checks 1–3 and teacher observation during We-do and You-do.
- Summative mini-assessment: 10 quick quiz-style checkpoints; score 8/10 for mastery on this lesson’s objectives.
- Feedback focus: correctness and clarity of representation choice and justification; correct unit reasoning and equivalence steps.

Teacher Notes – Common misconceptions and quick corrections

- Mistake: Interpreting percent as whole number rather than per 100. Correction: Always relate to a 100-grid or “per 100” phrasing and show 1% as one unit.
- Mistake: Multiplying percent value directly instead of converting (e.g., 25×120). Correction: Model conversion to decimal/fraction and show equivalence to grid.
- Mistake: Confusion between percent of vs percent increase/decrease. Correction: Explicitly label tasks as “percent of” for this lesson; reserve increase/decrease for a later lesson.

Closing (0:27–0:30)

- Collect exit slips (Pulse Check 3 responses).
- Announce mastery expectations: students who met success criteria (4/5 independent tasks or 8/10 quiz score) demonstrated expected proficiency in percent-of computations today.
- Metacognitive final prompt (written on board to take home): “Name a real-world situation this skill helps you solve and write one sentence connecting the method you chose to that situation.”