

The Sale Price Scam

Ratios, Rates & Percents: Convert between fractions, decimals, and percents; understand unit rates; make tables of equivalent ratios; and solve real-world rate and ratio problems using tables, tape diagrams, double number lines, and equations.

Learning target: I can use ratios, unit rates, and percents to solve real-world problems.

Success looks like: Students use the vocabulary correctly, complete the mystery case, and score 80% or higher on the evidence-based exit ticket.

Materials: Student devices, the printed lesson worksheet (one per student), projector for the mini-lesson presenter.

LESSON AT A GLANCE

60 minutes

Time	Part	Teacher does	Students do
0:00-0:08	Warm-up	Project the warm-up. Circulate, then call on 2-3 students. Save question 3 for the debrief.	Answer Part 2 of the lesson worksheet; share with a partner.
0:08-0:20	Mini-lesson	Teach with the 4-step presenter. Run each quick check with the whole class.	Complete worksheet Parts 4-11 as each slide appears; answer checks with fingers.
0:20-0:48	Mystery Case	Launch The Sale Price Scam. Assign mission levels; circulate with the answer key.	Play solo or in pairs; record code pieces; complete any written evidence task.
0:48-0:52	Debrief	Ask 2 debrief questions and revisit warm-up question 3.	Finish worksheet Part 13 (prediction check + one thing learned).
0:52-1:00	Exit ticket	Hand out the exit ticket. Collect and sort with the mastery guide.	Answer with evidence independently.

Key vocabulary

Word	Student-friendly definition
Ratio	A comparison of two quantities (3 to 2, 3:2, $\frac{3}{2}$).
Rate	A ratio comparing quantities with different units (miles per hour).
Unit rate	A rate per 1 unit (\$2 per pound).
Equivalent ratios	Ratios that make the same comparison ($2:3 = 4:6$).
Percent	A ratio out of 100 ($45\% = 45/100$).

1. WARM-UP

0:00–0:08 · 8 min

Warm-up expectations (post these): Answer in Part 2 of the lesson worksheet (or on this sheet). Number each answer to match the question. Answer in complete sentences. For math, show your work. Work silently for 5 minutes, then share with a partner for 2 minutes. Be ready to share one answer with the class.

#	Question	Look for
1	There are 12 boys and 15 girls in a class. Write the ratio of boys to girls.	12:15, or 4:5.
2	Which is the better buy: 3 pencils for \$1.50 or 5 pencils for \$2.00? Show work.	5 for \$2.00 (\$0.40 each vs. \$0.50 each).
3	What is 10% of 80?	8.

2. MINI-LESSON

0:08–0:20 · 12 min

Project the Lesson presenter from the room page. It runs the whole hour: target and agenda, warm-up with timer, hook vote, 4 teaching steps (key idea, interactive tool, turn and talk, check for understanding), I do / we do / you do, a work-time screen with a timer and expectations, debrief, and the exit ticket. Press N for teacher notes, T to pause the timer, and P to pick a student.

Hook (1 min): A 12-pack of juice costs \$6. A 20-pack costs \$9. Which is the better deal? Class vote: 12-pack / 20-pack / Same price per juice

Step 1 (3 min): Ratios compare

Teach	A ratio compares two quantities: 3 to 2, 3:2, or $\frac{3}{2}$. Order matters: dogs to cats is 3:2, cats to dogs is 2:3.
Interactive tool	Visual: 3 cups strawberries for every 2 cups yogurt
Students do	Write two ratios from the tape diagram (strawberries to yogurt, yogurt to strawberries).
Turn and talk	Why does 3:2 mean something different from 2:3?
Worksheet Part 5A	A RATIO compares two quantities. ORDER matters.
Check for understanding	What is the ratio of yogurt to strawberries? Answer: (C) 2:3

Step 2 (3 min): Equivalent ratios

Teach	Multiply or divide both parts by the same number. Tables and double number lines help.
Interactive tool	Visual: A double number line
Students do	Finish the double number line: 12 strawberries → ? yogurt.

Turn and talk	How can a double number line help you check a ratio?
Worksheet Part 6A	To make an EQUIVALENT RATIO, multiply or divide BOTH parts by the same number.
Check for understanding	Strawberries 12 cups: how many cups of yogurt? Answer: 8

Step 3 (3 min): Unit rates

Teach	A unit rate is the amount for 1. Divide: $\$6 \div 12 \text{ juices} = \$0.50 \text{ per juice}$.
Interactive tool	Board and notes
Students do	Find the price per item: 3 pens for \$2.40 and 5 pens for \$3.50.
Turn and talk	Why is the unit rate the fairest way to compare two deals?
Worksheet Part 7A	A UNIT RATE is the amount for ONE. To find it, divide.
Check for understanding	4 smoothies cost \$18. Price per smoothie? Answer: 4.50

Step 4 (3 min): Percents

Teach	Percent means per hundred. $20\% \text{ of } 60 = 20/100 \times 60 = 12$. Or 10% of 60 is 6, so 20% is 12.
Interactive tool	Visual: $35\% = 35 \text{ out of } 100$
Students do	Find 35% of 200 using 10% first.
Turn and talk	How can knowing 10% help you find 15% or 35% in your head?
Worksheet Part 8A	Percent means per HUNDRED. 10% of a number is that number divided by 10.
Check for understanding	What is 25% of 80? Answer: 20

I do: worked example (shown one step at a time)

1. Problem: 12 for \$6 or 20 for \$9?
2. Step 1: Unit rate for the 12-pack: $\$6 \div 12 = \$0.50 \text{ per juice}$.
3. Step 2: Unit rate for the 20-pack: $\$9 \div 20 = \$0.45 \text{ per juice}$.
4. Step 3: Compare: $\$0.45 < \$0.50$.
5. Answer: the 20-pack is the better deal, by 5 cents a juice.

What to say on every slide is in the presenter script PDF.

We do: guided practice

A recipe uses 2 cups of rice for 5 people. How much rice for 20 people?

1. Ratio: 2 cups : 5 people.
2. 20 people is 4 times as many as 5.
3. Multiply both parts by 4: 8 cups : 20 people.
4. Check with a unit rate: $2 \div 5 = 0.4 \text{ cup per person}$; $0.4 \times 20 = 8$.

Answer: 8 cups

You do: independent check (2 min)

A shirt costs \$40 and is 15% off. How much is the discount?

Answer: 6. Students who miss it: 3-minute reteach at the teacher table, then start the room at the Explorer level.

Misconception: "Ratio order doesn't matter." 3:2 and 2:3 are different comparisons.

Misconception: "Add the same number to both parts to make equivalent ratios." You must multiply or divide.

Misconception: "Percents can never be more than 100." 150% of something is more than the whole.

3. MYSTERY CASE: THE SALE PRICE SCAM

0:20–0:48 · 28 min

Launch: project the start screen, read the story aloud, and assign mission levels (Explorer = extra support, Agent = on level, Legend = challenge). Students can open Supports any time for read-aloud, bigger text, a word bank, and a scratch pad.

- Evidence files can be opened in any order. Tell students detectives always read the whole file before answering.
- Pairs can be "lead detective" and "note taker." The note taker records the code pieces as they are found.
- For the debrief, ask students which piece of evidence was most convincing and why.

Students turn in: the completion code plus their copied "turn in your work" block (Canvas Text Entry).

4. DEBRIEF

0:48–0:52 · 4 min

1. When is a unit rate more useful than a total price?
2. What strategy did you use most for percents?
3. Where do you see ratios in sports or cooking?

Close the loop: return to warm-up question 3. Answer: 8.

5. EXIT TICKET

0:52–1:00 · 8 min

Print the exit ticket PDF (page 2 is the key and mastery guide). Every item requires evidence: Part A asks students to justify each choice, Part B asks for an explanation, and Part C applies the standard to a new situation using Solve-Show-Explain. Sort results into Mastered, Approaching, and Beginning to plan tomorrow's groups.

LESSON RESOURCES	
Resource	How it fits the lesson
Warm-up worksheet (PDF)	Optional standalone warm-up (also Part 2 of the lesson worksheet), with a key.
Mini-lesson presenter	Projectable, step-by-step interactive lesson with tools and quick checks (room page).

Resource	How it fits the lesson
Lesson worksheet (PDF + key)	One printable packet students complete during the whole lesson: short fill-ins and quick checks in 13 small parts that match the presenter slides.
The Sale Price Scam (.html)	The mystery case for Canvas, with differentiated levels, supports, and a turn-in.
Exit ticket (PDF + key)	Evidence-based check with a rubric and a mastery sorting guide.
Illustrative Mathematics (extra)	Free Grade 6 units on ratios, rates, and percents. https://im.kendallhunt.com/
Khan Academy: 6th Grade Math (extra)	Ratio and percent practice. https://www.khanacademy.org/math/cc-sixth-grade-math
Desmos Classroom (extra)	Free activities on ratio tables and unit rates. https://teacher.desmos.com/
Open Middle (extra)	Ratio and percent puzzles. https://www.openmiddle.com/

ANSWER KEY: THE SALE PRICE SCAM

Evidence File #1: The Jacket (code piece: P)

1. What SHOULD the sale price be at 50% off \$60? -> 30 dollars
2. What percent off is \$40 actually, from an original price of \$60? -> About 33%
3. The sign says the jacket costs \$40. Shade the parts of the \$60 price the shopper actually pays. -> Shade 4/6 of the model

Evidence File #2: The Price Tags (code piece: R)

1. Match each tag to its percent. -> $\frac{3}{4}$ off = 75%; 0.4 off = 40%; $\frac{7}{20}$ off = 35%; $\frac{1}{5}$ off = 20%
2. Which discount is the biggest? -> $\frac{3}{4}$ off
3. A tag says " $\frac{3}{4}$ off." Shade the grid to show the percent off. -> Shade 75% of the 100-square grid

Evidence File #3: The Double Discount (code piece: I)

1. What is 20% of \$35? -> 7 dollars
2. What is the real final price of the sneakers? -> 28 dollars
3. True or false: 30% off followed by 20% off is the same as 50% off. -> False
4. Mark the REAL final price of the sneakers on the number line. -> Point at 28

Evidence File #4: The Receipt (code piece: C)

1. If \$12 is 20% of the original price, what was the original price? -> 60 dollars
2. What is 7% sales tax on \$40? -> 2.80 dollars

Evidence File #5: The Final Report (code piece: E)

1. Is each statement true or false? -> True: 10% of 250 is 25, 50% of 30 is 15, 200% of 8 is 16 | False: 1% of 400 is 40, 25% of 60 is 20
2. What should shoppers do when they see a sale sign? -> Check the math using percents and unit prices
3. Final report: The sign says the \$50 sneakers are "30% off, then an EXTRA 20% off. That's 50% off, only \$25!" What is the real final price? -> Written response (solve, show, explain). Answer: 28 dollars. Model: 30% of 50 = $0.30 \times 50 = 15$, and $50 - 15 = 35$. Then 20% of 35 = $0.20 \times 35 = 7$, and $35 - 7 = 28$. First I found the 30% discount of the original price and subtracted it. The second discount is a percent of the new \$35 price, so it only saves \$7. That means the real price is \$28, which is only 44% off, not 50% off.

Final code: PRICE