

Lesson 6.13: Scale the Recipe and Cost It From the Circular

Unit: Unit 6, From Farm to Table (Food Systems and Production) **Topic:** 6.3 Feed the Class project **Grade:** 6 to 8 (written at grade 7; see Differentiation for the grade 6 support and grade 8 stretch) **Days:** 2 class periods of 40 minutes **Room:** Either (classroom or FACS lab; no cooking either day)

Standards

- NYS module line: NYS FSP 1. Basic Culinary Skills d) Demonstrate accurate measuring of dry/solid, liquid, and small quantity ingredients
- NYS module line: NYS FSP 5. Consumer Resources and Finance c) Apply consumer skills to selecting and purchasing of food items
- NYS module line: NYS FSP 5. Consumer Resources and Finance a) Demonstrate management of individual and family resources to select and purchase food
- CTE theme line: CTE FCL 4. Buying Goods and Services g) Compare local, national, and global resources for obtaining goods and services
- CTE theme line: CTE FCL 4. Buying Goods and Services f) Apply a decision-making model to maximize consumer satisfaction when purchasing goods and services
- NYS FACS Learning Standard 3 (Intermediate), Key Idea: Students will understand and be able to manage personal resources of talent, time, energy, and money and make effective decisions in order to balance their obligations to work, family, and self.; Performance Indicator: Students are able to budget their time and money.
- CDOS Standard 2 Integrated Learning: Students will demonstrate how academic knowledge and skills are applied in the workplace and other settings.
- CDOS Standard 3a Universal Foundation Skills: Basic Skills. Students listen to and read the ideas of others and analyze what they hear and read; acquire and use information from a variety of sources; and apply a combination of mathematical operations to solve problems in oral or written form.
- National FCS 3.0: 8.5.3 Show portion control and correct scaling and measuring. (Confirmed in the 3.0 text; cited in the crosswalk's FSP 1. d) row.)
- National FCS 3.0: 8.4.7 Use measurement, portion control, conversions, food costing, menu terms, and pricing when planning a menu. (Confirmed in the 3.0 text in 02 Standards/STANDARDS SOURCES - web research.md, Area 8; not printed in the FSP block, so it is a secondary citation.)
- National FCS 3.0: 2.1.3 Examine the decisions behind providing food that is safe and nourishing for individuals and families.

Enduring understanding and essential question

Big idea: A recipe is written for four people. Feeding a room means multiplying everything, then rounding up to what the store will actually sell you, then checking that the answer still feeds everybody. The store does not sell three quarters of a box. **Essential question:** How

do you turn a recipe for four into a plan for twenty-eight without running out and without wasting money?

Objectives

By the end of this lesson, students will be able to:

1. (Low, Day 1) Given a recipe for 4 servings and a target of 28 portions, compute the scale factor and multiply every ingredient amount correctly.
2. (Mid, Day 1 and Day 2) Given scaled amounts and real package sizes, convert between cups, fluid ounces, and ounces where needed, round each ingredient up to the number of packages the store sells, and run a yield check that shows the plan feeds at least 30.
3. (High, Day 2) Given this week's circular, cost the whole scaled recipe line by line with a running total, and when the total is over the station budget, revise it with a named swap and state in writing what the swap saved and what it cost in quality.

Vocabulary

Tier 2 (general academic): scale, convert, round up, revise, running total Tier 3 (FACS): yield, portion, per serving, unit price, food cost, store brand, purchasable unit. See the unit vocabulary list for Turkish, Portuguese, and Spanish.

Materials and setup

- Handout, one per student: Handout 06.13 - Scaling Worksheet and Costing Sheet.md (the base recipe for each of the five options, the scaling table, the unit conversion strip, the yield check, the costing sheet with a running total, and the swap log)
- One real supermarket circular per student, this week's, same store for the whole class. *[Sal: get a stack from the store's front door or print the digital circular. Same store for everybody, or the peer check in Step 4 does not work.]*
- A calculator per student. Everyone gets one; this is not a mental math lesson.
- One dry measuring cup set, one liquid measuring cup, and one real package of each of these on the front table for the conversion demo: a 1 lb box of pasta, a 24 oz jar of sauce, an 8 oz bag of shredded cheese, a 32 oz box of broth or stock
- A kitchen scale if the room has one, for the ounces-by-weight versus fluid-ounces demo
- Four large "running total" sheets, one per station, taped up so every team can see every other team's total
- Slides: Slides 06.13 - Scale the Recipe and Cost It From the Circular (outline in 05 Materials; the site renders it as a deck)
- Setup notes: put the four packages and the two measuring cups on the front table before the bell. Write the station budget (\$20.00) and the class total (\$80.00) on the board and leave them there both days. No food is eaten; the demo packages go back on the shelf unopened.

Pre-assessment

Lesson 1.7 (Reading a Recipe) taught doubling and halving and Lesson 1.16 taught unit price. The do now on Day 1 is a one-item read on whether doubling survived the winter: “A recipe for 4 needs 1 1/2 cups of sauce. How much for 8?” If more than a third of the room misses it, run the two-minute reteach in the Day 1 teacher notes before Step 1.

Do now and hook

Day 1 (Time: 4 min). On the board: “A recipe for 4 people needs 1 1/2 cups of sauce. How much sauce for 8 people? For 28 people? Write both answers. You may use a calculator for the second one.”

Debrief: take the answer for 8 (3 cups) from one student and the answer for 28 (10 1/2 cups) from another, then ask the hook question and do not answer it: “The store does not sell 10 1/2 cups of sauce. It sells jars. How many jars?” Leave it on the board.

Day 2 (Time: 4 min). On the board, with the circular already at every seat: “Find the cheapest shredded mozzarella in this circular. Write the brand, the size in ounces, and the price. Then write the price for one ounce.”

Debrief: two answers on the board, one name brand and one store brand, with the price per ounce next to each. Then the hook: “Same cheese, same amount, different number. Today every line on your sheet gets that number, and the total has to come in under twenty dollars.”

Procedure

Day 1: scaling and the yield check

Step	Teacher will	Students will	Time
1. Direct instruction: the scale factor	Show the three-step rule on one slide: (1) divide the target by the recipe's yield to get the scale factor, (2) multiply every ingredient by that factor, (3) round each one up to what the store sells. Work the pasta line in front of the class: 28 portions divided by 4 servings equals 7; 8 oz dry pasta times 7 equals 56 oz; 56 oz	Copy the three steps and the worked pasta line into the top of the scaling worksheet.	8 min

	divided by 16 oz per pound equals 3.5 lb; the store sells 1 lb boxes, so buy 4. Say the rule out loud: always round up, never down, because running out at minute 30 is the one mistake you cannot fix.		
2. Learning activity: scale every line	Teams find their own recipe on the handout and fill the scaling table: ingredient, recipe amount for 4, scale factor, scaled amount, the unit the store sells in, packages to buy. Circulate. Do not give answers; ask “what unit is that in, and what unit does the store use?”	Fill the scaling table for every ingredient in their own recipe. Scale Lead reads each line aloud to the team before it is written.	12 min
3. Demo and practice: watch the units	Hold up the 32 oz box and the liquid cup. Ask: a recipe wants 3 cups, the store sells a 32 ounce box, is one box enough? Walk it: 1 cup equals 8 fluid ounces, 3 cups equals 24 fluid ounces, the box holds 32 fluid ounces, so one box is enough with 1 cup left over. Then hold up the 8 oz bag of shredded cheese and the dry cup and say the hard part: 8	Fill the conversion strip. Do the two practice conversions on the worksheet. Fix any line in the scaling table where cups and ounces got mixed.	9 min

	ounces on that bag is weight, not volume, and 8 ounces of shredded cheese is about 2 cups, not 1. The conversion strip on the handout has the four conversions this project needs. Give two practice conversions on the board.		
4. The yield check	Give the yield rule: count the portions your plan actually makes and compare it to 30 (28 students, me, and one spare). Model it: 4 lb of dry pasta at 2 oz dry per portion equals 32 portions, which clears 30 with 2 spare. Any station under 30 raises a hand and adds a package.	Run the yield check on the worksheet. Write the number of portions the plan makes and the words “clears 30” or “add ____.”	5 min

Day 1 total: $4 + 8 + 12 + 9 + 5 = 38$, plus a 2-minute closure.

Day 2: costing it from the circular

Step	Teacher will	Students will	Time
1. Direct instruction: unit price and the two questions	Put the two questions on the slide: “What does the whole package cost?” and “What does one ounce cost?” Show that the answer to the first one is what you pay and the answer to the second one is how you choose.	Copy the two questions and the worked line onto the costing sheet.	7 min

	Work one line: Food Club shredded mozzarella, 8 oz, \$1.99, so \$1.99 divided by 8 equals about \$0.25 per ounce; the name brand at 8 oz for \$2.99 is about \$0.37 per ounce. Remind them of the Unit 1 rule: you pay for the whole package, not the spoonful you use.		
2. Practice: cost every line	Teams cost every line of their scaled plan from the circular: item, brand, size, price, packages, line cost, and a running total down the right side. Cost Lead owns the running total; a second teammate checks each line before it is written. Circulate with the clipboard.	Fill the costing sheet. Write the running total after every line, not at the end.	13 min
3. The reveal and the revision	At minute 24 call time and have each station write its total on its taped-up sheet. Read the four totals out loud. Any station over \$20.00 now has a problem to solve, and so does the class if the four totals are over \$80.00. Teach the three legal swaps: store brand for name brand, a	Revise. Fill the swap log: what we swapped, what it saved, what we gave up. Rewrite the total.	10 min

	bigger package when the price per ounce drops, and cutting a line that is not on the plate (an optional topping, a second cheese). Teams revise and log each swap with what it saved.		
4. Peer check and sign off	Trade sheets with the station next door. The checking team verifies three things with a checkmark: every line has a size and a unit, the running total adds up, and the total is at or under \$20.00. Then you sign the sheet. An unsigned sheet does not get shipped in Lesson 6.15.	Check another station's sheet, initial the three boxes, return it, fix anything flagged, bring it to the teacher to sign.	6 min

Day 2 total: $4 + 7 + 13 + 10 + 6 = 40$, with the 2-minute closure inside Step 4. If the period is tight, Step 4's peer check moves to the first 6 minutes of Lesson 6.14 and Step 3 gets the time, because the revision is the part that teaches.

Questions to ask

Monitor understanding:

- What is your scale factor, and where did the two numbers come from?
- That line says 3.5 boxes. How many boxes do you buy, and why not three?
- Is that 8 ounces weight or 8 fluid ounces? How do you know from the package?
- Your running total is at \$17.40 and you have two lines left. Are you going to make it?
- What is the price per ounce on that item? Now do the store brand. Which one goes on the list?

Deepen learning:

- Why does the store brand cost less for the same amount? What are you actually paying for on the other label?

- You rounded up on five lines. Add up the extra you are buying. Is that waste, or is it insurance? Which one would a restaurant call it?
- A restaurant calls the cost of the food in a dish its food cost, and the price on the menu is usually about three times that. What would your dish sell for? Does that number surprise you?
- Your swap saved eighty cents and made the dish a little worse. When is that a good trade and when is it not?
- If the class grew to 56, which line on your sheet would stop being a good deal, and why?

Check for understanding

Day 1: clipboard walk during Step 2, a yes or no per station on “the scale factor is right” and “at least one line is correctly rounded up to a package.” Day 2: the four taped-up running totals at minute 24 are the whole-class check, visible to everybody at once. The exit card each day names the one number the station is least sure about, which tells you exactly where to stand tomorrow.

Closure

Day 1 (Time: 2 min). One line on an exit card: “Our plan makes ___ portions, and the ingredient I am least sure we scaled right is ___.” Sort the cards into “clears 30” and “does not” before Day 2 and start Day 2 with the stations that do not.

Day 2 (Time: 2 min, inside Step 4’s time). Each station reads two numbers out loud: its final total and its cost per person (total divided by 28). Write the four costs per person on the board and add them for the class number. Ask one question and let it sit: “Could a family eat for that?” The signed costing sheet is page 2 of the project folder.

Differentiation and supports

- ELL: the conversion strip is pictures of the four packages with the numbers on them, not sentences; the costing sheet’s column headings have the Turkish, Portuguese, and Spanish word under the English (see Vocabulary 06.md); the swap log has a sentence frame in all four languages; a circular is a picture document, which is one reason this lesson works well for a newcomer.
- IEP and 504 (general): a calculator for everyone; the scaling table can be filled with the scale factor pre-printed for any student who needs it (page 3 of the handout has a version with the factor already entered); the running total column has the first two rows worked as an example; extended time carries into the start of Lesson 6.14; a student who finds the circular visually overwhelming gets the four-page excerpt on page 5 of the handout with only the items this project needs.
- Grade 6 support: the recipe is given already scaled to 28 and the task is the rounding, the yield check, and the costing (Objectives 2 and 3 only). Or keep the scaling and use a scale factor of 7 with whole-number amounts only, which the handout’s grade 6 recipe version does.

- Grade 8 stretch: compute the cost per portion to the tenth of a cent, then compute what the dish would have to sell for at a food cost of 30 percent, and compare that to a real menu price the student finds online for the same dish. A second stretch: recompute the plan for 28 portions at a serving size 25 percent larger and say which lines change.
- UDL checkpoint used: multiple means of representation (the conversion taught with a real package in hand, a picture on the strip, and a number sentence on the board) and multiple means of action and expression (the running total can be written, typed, or kept on a calculator tape taped to the sheet).
- No-kitchen alternative: not needed; no cooking either day. The demo packages can be borrowed from any classroom or brought from home if the room has no pantry.

Allergy line

No food is handled or tasted. The demo packages stay sealed and go home with the teacher. Every station rechecks its plan against the posted allergy list during Day 2 Step 3, because a swap can introduce an allergen (a cheaper cheese blend with a different milk source, a store-brand cookie made on shared equipment), and the swap log has a box for it.

Assessment

Objective	Standards met	Learning task	Assessment (formative or summative; tool)
1. Compute the scale factor and multiply every line	FSP 1. d); CDOS 2; CDOS 3a Basic Skills; National FCS 8.5.3	Scaling table, Day 1 Step 2	Formative; clipboard check on the scale factor and one rounded line; the table is scored complete, partial, or missing for daily work
2. Convert units, round to packages, run the yield check	FSP 1. d); FSP 5. a); National FCS 8.5.3, 8.4.7	Conversion strip and yield check, Day 1 Steps 3 and 4	Formative; the exit card's portion count is the check; a station under 30 is fixed before Day 2
3. Cost the plan from the circular and revise it under budget	FSP 5. a), 5. c); FCL 4. f), 4. g); Std 3 PI C; National FCS 2.1.3, 8.4.7	Costing sheet, swap log, peer check, Day 2 Steps 2 to 4	Formative with a graded product; the signed costing sheet is scored on Rubric 06 criterion 2 (the cost and the shopping list against the budget)



Rubric 06 criterion 1 (the scaling math and the yield) is scored from the Day 1 scaling table and the yield check.

Homework

None required. Optional, one line: find one item in your kitchen at home, write its size and its price if you know it, and compute the price per ounce. Bring the number.

Connections

Math: this is ratio, unit rate, and unit conversion doing real work. The scale factor is a ratio, the price per ounce is a unit rate, and the cups to fluid ounces to ounces problem is the conversion the math class teaches abstractly. Give the math teacher the four costing sheets; they are a ready-made unit rate problem set with an answer that matters. FACS gives math a real data set and a reason; math gives FACS the words and the method students already know, and, if the teacher is willing, ten minutes to check the four running totals on Day 2.

[Sal: ask the math teacher in September which grade does unit rate and when, so Unit 6 lands after it.]

Sources

- NYS Middle Level CTE FACS Content Module 06, Food Systems and Production (nyctecenter.org, June 2018), lines 1. d), 5. a), and 5. c). Copy in 02 Standards/NYS Module PDFs/.
- NYS Middle Level CTE Theme Module 03, Financial and Consumer Literacy, lines 4. f) and 4. g). Same folder.
- NYS Learning Standards for Health, Physical Education, and Family and Consumer Sciences (1996), Standard 3, Intermediate. Wording per 02 Standards/STANDARDS CROSSWALK.md, Part A.6. *[Sal: confirm against the NYSED PDF.]*
- CDOS Intermediate Standards 2 and 3a, Basic Skills, per 02 Standards/STANDARDS CROSSWALK.md, Part A.7.
- National Standards for Family and Consumer Sciences Education 3.0 (LEAD FCS Education, 2018), competencies 2.1.3, 8.4.7, and 8.5.3, per 02 Standards/STANDARDS SOURCES - web research.md.
- Sal's own materials:
education_teaching_facs_kingkullen_shoppinglist_2026_03.pdf (eleven items for 112 students across four periods and four kitchens on a \$150 budget, with the store-brand swap list and the savings per swap) is the model for the swap log.
education_teaching_facs_kingkullen_8thgrademenuoptions_2026_03.pdf supplies the base prices. All prices marked *[update from this week's circular]*.

Teacher notes

- Two-minute reteach if the do now goes badly: put $1\frac{1}{2}$ cups on the board, double it to 3 cups by writing $1\frac{1}{2} + 1\frac{1}{2}$, then write $1\frac{1}{2} \times 7$ as $1\frac{1}{2} + 1\frac{1}{2} + \dots$ seven times and let a student count it to $10\frac{1}{2}$. Multiplying a mixed number is where grade 6 stalls, not the idea of scaling.

- The single most common error in two days is mixing ounces by weight with fluid ounces. It shows up on cheese, sauce, and sour cream. Say it on Day 1 with the bag in your hand, and say it again on Day 2 when you see it.
- The second most common error is rounding down to save money. The answer is the yield check: a plan that feeds 26 is not a cheaper plan, it is a failed plan.
- Do not solve the over-budget station's problem for them. Ask one question: "Which line is the biggest number on your sheet?" That is almost always where the swap is.
- Taping the four running totals up where everybody can see them does two things: it makes the class total real, and it makes a station that is way off notice before you tell them.
- *[Sal: your King Kullen swaps saved \$14.40 on cookies, \$6.00 on whipped topping, \$5.99 on butter, and \$3.99 on cups, which is \$30.38 on a \$150 order. Put those four real swaps on the Day 2 slide. It is the most convincing thing in the lesson because you actually did it.]*
- Keep every signed costing sheet. Lesson 6.15 consolidates all four into one shopping list, and Lesson 6.17's reflection compares the planned cost to what the register actually said.