

Lesson 5.13: Cost Per Wear and Quality Checks

Unit: Unit 5, Make It, Mend It, Wear It (Apparel and Textile Production and Design) **Topic:** 5.3 Smart Apparel Consumers **Grade:** 6 to 8 (written at grade 7; see Differentiation for the grade 6 support and grade 8 stretch) **Days:** 1 class period of 40 minutes (day 133) **Room:** classroom or FACS lab; no sewing today

Standards

- NYS module line: NYS ATPD 4. Consumer Resources and Finance a) Compare and contrast the cost of constructing an apparel item versus purchasing one or repurposing one
- NYS module line: NYS ATPD 1. Selection d) Inventory personal wardrobe, noting condition and appropriateness of apparel items
- NYS module line: NYS ATPD 3. Maintenance a) Identify care procedures which may extend the wear of an apparel item
- 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
- CTE theme line: CTE SUS 1. Resources f) Research the personal, environmental, and financial costs and benefits of sustainability-conscious decisions to individuals, families, schools, workplaces and communities
- 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 3a Universal Foundation Skills: Basic Skills
- National FCS 3.0: 16.2.7 Judge the construction quality and fit of textiles, fashion, and apparel.
- National FCS 3.0: 16.5.2 Examine what it costs to construct, manufacture, distribute, alter, repair, or recycle textiles, fashion, and apparel.

The ATPD module's Standards Addressed block lists NYS Learning Standard 2 only, so Standard 2 (Intermediate), PI "Students use age-appropriate techniques to select and maintain clothing." is also met here; Standard 3 is cited first because this lesson is division and money (see the crosswalk, Part E.3).

Enduring understanding and essential question

Big idea: Price is what you pay once. Cost per wear is what the item actually costs you. A \$15 shirt you wear five times costs more per wear than a \$60 pair of jeans you wear two hundred times. **Essential question:** Is the cheaper item always the cheaper item?

Objectives

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

1. (Low) Given a price and a number of wears, compute cost per wear by division and state the unit as dollars per wear.
2. (Mid) Given four garments in hand, apply a five-point quality inspection (fiber content, seam type, stitches per inch, reinforcement at stress points, buttons and closures) and rank the four from most likely to last to least likely, with a reason for each rank.
3. (High) Given two garments at different prices, evaluate which is the better buy for a named person and justify the answer with cost per wear and at least two quality findings.

Vocabulary

Tier 2 (general academic): compute, unit rate, trade-off, justify, inspect Tier 3 (FACS): cost per wear, stress point, bar tack, flat felled seam, serged edge, stitches per inch, pilling, reinforcement, shank (of a button). See Vocabulary 05.md for Turkish, Portuguese, and Spanish.

Materials and setup

- Four garments for inspection, labeled 1 to 4, at least one clearly well made and one clearly not. Suggested set: a heavy cotton sweatshirt (double-needle seams, bar tacks at the pocket), a thin promotional t-shirt (single-needle, 7 stitches per inch, printed graphic already cracking), a pair of jeans (flat felled side seam, bar tacks at the pockets, a shank button), and a fast-fashion blouse with a loose button and a serged seam already fraying. Two of these are the sweatshirts from Lesson 5.12. *[Sal: your closet, the lost and found with permission, or a thrift run. The bad one teaches more than the good one.]*
- Three inspection kits, one per station of about seven students: a ruler with quarter-inch marks, a magnifier or a phone camera on zoom (school policy permitting), a flashlight, white index cards to put behind fabric
- Handout 05.13 - Cost Per Wear Worksheet and Quality Inspection Checklist.md, one per student
- Calculators, one per student
- Slides: Slides 05.13 - Cost Per Wear and Quality Checks
- One spare button and a piece of thread to show a well-sewn button against a loose one, held up, not sewn today
- Setup notes: label the four garments 1 to 4 with masking tape and hang or lay them at the three station tables. Write the three worked cost-per-wear problems on the board before the bell so the do now can start without a slide. No needles out today; the tins stay closed and the count-out routine is not needed.

Pre-assessment

The do now is the pre-assessment: the \$60 jeans problem. Watch for two things, whether students divide in the right order (price divided by wears, not wears divided by price) and whether they write the unit. The number who write “\$0.30 per wear” with the unit tells you

how much of Step 1 is review. Also check the optional index cards from Lesson 5.12's homework; students who brought one already have a fiber content to read at Step 3.

Do now and hook (Time: 5 min)

On the board: "A pair of jeans costs \$60 [update]. You wear them 200 times before they wear out. How much did each wearing cost you? Show the division."

Two minutes of work, then take the answer and the division out loud (\$60 divided by 200 wears = \$0.30 per wear). Insist on the unit: dollars per wear.

Hook: "Now a \$15 shirt [update] that you wore five times and then stopped wearing. Do that division in your head and tell me which one was expensive."

Procedure

Step	Teacher will	Students will	Time
1. Direct instruction: cost per wear, three ways	Slides 2 to 5. Work all three on the board with the class, one at a time, always price divided by wears. (a) \$60 jeans, 200 wears, \$0.30 per wear. (b) \$15 shirt, 5 wears, \$3.00 per wear. (c) \$90 coat worn 3 winters: ask the class how many wears a winter coat gets in one winter, settle on about 60 school days of cold weather, then 3 times $60 = 180$ wears, \$90 divided by $180 = \$0.50$ per wear. Name what the third one teaches: you have to estimate the wears, and the estimate is the argument. State the rule on the slide: "Cost per wear = price divided by the	Work each one on the worksheet. Write the unit on every answer. On (c), write their own estimate of wears per winter and the cost per wear it produces.	8 min

	number of times worn." All dollar figures marked [update].		
2. Direct instruction: what makes a garment last	Slides 6 to 10, one per factor, each with what to look for and what a fail looks like. Fiber (cotton is comfortable and shrinks, polyester resists wrinkles and holds odor, a cotton-poly blend lasts longer through washing than either alone, wool is warm even damp, elastane gives stretch and dies first). Seam type (single-needle is one row of stitching and opens first; double-needle has two rows and holds; a flat felled seam wraps the raw edge inside and is the strongest of the three; a serged edge alone is a finish, not a seam). Stitches per inch (count with the ruler; 8 is low, 10 to 12 holds, more stitches means more thread holding the same inch). Reinforcement at stress points (bar tacks at pocket corners and belt loops, a gusset under the arm, a double layer at the	Fill the five-row factor table on the handout: factor, what a good one looks like, what a fail looks like.	9 min

	knee; stress points are where the body pulls). Buttons and closures (a button sewn with enough thread and a shank so the buttonhole has room, a zipper that runs without catching). Post the five on the wall as the inspection list.		
3. Quality inspection at three stations	Slide 11 (the checklist blown up). Rotate the three stations every three minutes with a bell; each station has garments 1 to 4 passed between them, or two garments per station with one swap. Circulate with the clipboard checklist. Refuse to say whether a garment is “good”; the checklist decides.	At each station, run the five-point inspection on the garment, record on the checklist, and write one sentence on whether this garment is likely to last. Then rank all four, 1 to 4, most likely to last to least.	10 min
4. The trade-off: price now against cost over time	Slide 12. Put two garments side by side on the board with prices: garment 2 (the thin t-shirt, \$8 [update]) and garment 1 (the heavy sweatshirt, \$44 [update]). Give the person: a student who walks to school and will wear it four days a week for two winters. Ask for the	Compute both cost-per-wear numbers for both people on the last section of the worksheet. Write the one-sentence verdict for each person.	5 min

	wears estimate and the two cost-per-wear numbers, then the verdict. Then flip it: give a person who needs a shirt for one concert. Ask again. Name the point out loud: cost per wear only answers the question once you know who is wearing it and how often.		
Closure	Slide 13. Closure task below.	Write the exit card. Three students read one line.	3 min

Day total: 5 (the do now) plus 8 plus 9 plus 10 plus 5 plus 3 = 40 minutes.

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Questions to ask

Monitor understanding:

- Which number goes on top, the price or the wears? Say the division out loud.
- What is the unit on your answer?
- Put your finger on a stress point on garment 3. Is it reinforced?
- How many stitches in one inch? Where did you put the ruler?

Deepen learning (why and how, tied to their lives):

- A \$90 coat at \$0.50 per wear or a \$30 coat at \$0.50 per wear. Same cost per wear. Which do you buy, and what else are you deciding about?
- Cost per wear rewards buying expensive things. When is that answer wrong? (A growing seventh grader, a one-time event, money you do not have this month.)
- You cannot know the number of wears before you buy. So what do you actually do with this formula?
- Which of the five quality factors can you check in a store in ten seconds? Which one can you only find out by washing it five times?

Check for understanding

Clipboard checklist during Step 3: for each student, a yes or no on “counted stitches per inch with the ruler on a seam,” “named the seam type on at least one garment,” and “found

one stress point and said whether it was reinforced.” Three yeses means the student is ready to inspect their own upcycle material in Lesson 5.16. A no on seam type gets a ten-second reteach with garment 4 in hand, where the fraying serged edge makes the point fast.

During Step 1, thumbs on each worked problem. Any thumb sideways on problem (b) means the division order is not solid; stop and redo it as “how many dollars for one wearing.”

Closure (Time: 3 min)

3-2-1 exit card: 3 things you would check on a garment before buying it, 2 cost-per-wear numbers you computed today with their units, 1 item in your own closet you now think was a bad buy or a good buy, and why in six words. Three students read one line. Sort into “got it” and “needs more”; the “needs more” pile decides whether Lesson 5.14 Day 2 opens with a 90-second cost-per-wear review before the Consumer Comparison Task, because that task requires the math.

Differentiation and supports

- ELL: the five quality factors are on the wall with a picture each (two rows of stitching, a bar tack at a pocket corner, a ruler on a seam, a frayed serged edge, a button with a shank); the inspection checklist is a checkbox grid with a picture in each row so no sentence is required to record a result; the worksheet’s division problems are pre-set with the numbers in place so the student fills only the quotient; word bank with the Turkish, Portuguese, and Spanish words for price, seam, thread, button, strong, and wear, per Vocabulary 05.md; sentence frame: “Garment ___ will last longer because ___.”
- IEP and 504 (general): calculator for everyone; the three worked problems are on the handout already set up as long division frames; a student who cannot handle the garments can be the station recorder using the slide photos; extended time to finish the ranking in the first three minutes of Lesson 5.14; a two-garment version of the inspection (the best and the worst) instead of four.
- Grade 6 support: two garments instead of four, and the ranking becomes “which one lasts longer, and give two reasons.” The coat problem is given with the wears already stated as 180 so the student only divides.
- Grade 8 stretch: compute the break-even point. “At what number of wears does the \$44 sweatshirt become cheaper per wear than the \$8 t-shirt?” Then the harder one: “The \$8 t-shirt survives 10 washes and the \$44 sweatshirt survives 100. Compare cost per wear including the fact that you must buy the t-shirt again.” Also compute cost per wear per season for a coat they own.
- UDL checkpoint used: multiple means of representation (the formula in words, the formula as a division frame, and the garment in hand) and multiple means of action and expression (a ranking, a checklist grid, or a spoken verdict all count).
- No-machine alternative: no sewing machine and no needle are used in this lesson. If the four garments cannot be gathered, use the slide photos with printed spec cards;

the cost-per-wear math and the ranking work unchanged, and the teacher's own jacket supplies one real seam to count.

Assessment

Objective	Standards met	Learning task	Assessment (formative or summative; tool)
1. Compute cost per wear with the unit	ATPD 4. a); FCL 4. f); Std 3 PI C; CDOS 3a Basic Skills; National FCS 16.5.2	Worksheet problems (a), (b), (c), Step 1	Formative; worksheet checked for the correct division and the unit on all three
2. Run the five-point inspection and rank four garments	ATPD 1. d); ATPD 3. a); National FCS 16.2.7	Station inspection and ranking, Step 3	Formative; clipboard checklist (stitches counted, seam type named, stress point found) plus the completed checklist grid
3. Evaluate the better buy for a named person and justify it	ATPD 4. a); SUS 1. f); FCL 4. f); Std 3 PI C	The trade-off task, Step 4	Formative; the two one-sentence verdicts, scored complete, partial, or missing for daily work

The topic's formal check is the Consumer Comparison Task in the last 20 minutes of Lesson 5.14 Day 2. Cost per wear is worth two of its ten points, and the Unit 5 Test has a cost-per-wear item with numbers given.

Homework

None required. Optional: pick one thing you wear a lot and one thing you almost never wear. Estimate the price and the number of wears for each and compute both cost-per-wear numbers. Bring the two numbers on an index card. The class with the most honest "almost never" number wins nothing, and everybody learns something.

Connections

Math: division, unit rate, and estimation with a real unit. The grade 7 math standard on unit rates is exactly this lesson. Send the math teacher the worksheet; math gets a context students care about and FACS gets students who already divide cleanly. Inside the building: the health teacher's lesson on advertising pairs with the trade-off step, because the \$8 t-shirt is usually the one that got advertised.

Sources

- NYS Middle Level CTE FACS Content Module 03, Apparel and Textile Production and Design (nyctecenter.org, June 2018), lines 1. d), 3. a), 4. a). Copy in 02 Standards/NYS Module PDFs/.
- NYS Middle Level CTE Theme Modules: Financial and Consumer Literacy 4. f); Sustainability 1. f). Same folder.
- NYS Learning Standards for Health, Physical Education, and Family and Consumer Sciences (1996), Standard 3, Intermediate, and Standard 2 PI on clothing selection. Wording per 02 Standards/STANDARDS SOURCES - web research.md, section 2. *[Sal: confirm against the NYSED PDF.]*
- National Standards for Family and Consumer Sciences Education 3.0 (LEAD FCS Education, 2018), competencies 16.2.7 and 16.5.2, per 02 Standards/STANDARDS SOURCES - web research.md, section 4.16.
- Cost per wear is a common consumer-education calculation, not a standard; the three worked figures on the handout are written for this lesson and marked [update].
- Seam and stitch terms (single-needle, double-needle, flat felled, serged, bar tack, stitches per inch) are standard sewing construction vocabulary taught in Topic 5.2.

Teacher notes

- If the period runs short, cut Step 4 to one person instead of two and assign the second as the exit card. Do not cut Step 3; the garments in hand are the lesson.
- Common mistake: dividing wears by price and getting 3.33 wears per dollar. That number is not wrong, it is a different rate, and a grade 8 student will notice. Say so, then insist on dollars per wear because that is what the buyer compares.
- Second common mistake: students count the stitches on the decorative topstitching instead of the structural seam. Lesson 5.12 already warned them; say it again with garment 4 in hand.
- The coat problem is the one worth spending time on because the number of wears is a judgment. Let two students argue about how many cold days there are. That argument is the standard (SUS 1. f), the cost and benefit of a decision).
- Keep the four inspection garments together in a labeled bin. They come back in Lesson 5.16 when students inspect their own upcycle material, and garment 4 goes in the Unit 5 review game as the “would you buy this” card.
- *[Sal: your Skittles trading game taught transaction fees, and your ClassroomStreet budget work taught money in and money out. Cost per wear is the same idea, the true cost of a thing, applied to a closet. Name the connection out loud; students remember the Skittles.]*
- A student will say a family member buys only the expensive brand and it lasts. That is the lesson working. Ask for the cost per wear.