Focus and Coherence

Leadership I - High School - Day 1
Paul C. Gorski and Katy Swalwell

I feel like a visitor in my own school—that hasn’t changed,” Samantha said, confusion and despair in her voice. We were at the tail end of a focus group discussion with African American students at Green Hills High, a predominantly white, economically diverse school. We had been invited to conduct an equity assessment, examining the extent to which Green Hills was an equitable learning environment for all. We had asked Samantha and a small group of her classmates how they would characterize their school’s two-year-old Multicultural Curriculum Initiative, touted by school administrators as a comprehensive effort to infuse a multicultural perspective into all aspects of school life.

“I’m invisible,” Sean added, “but also hypervisible. Maybe twice a year there’s a program about somebody’s food or music, but that’s about it. I don’t see the purpose.”

Then Cynthia, who had remained quiet through most of the hourlong discussion, slammed her fist on the table, exclaiming, “That multicultural initiative means nothing. There’s racism at this school, and nobody’s doing anything about it!”

We found ourselves only a few moments later in our next scheduled focus group, surrounded by the school’s power brokers: the principal, assistant principals, deans, and department chairs. Still taken—maybe even a little shaken—by what we had heard from the young women and men who felt fairly powerless at Green Hills, we asked the administrators about the purpose of the Multicultural Curriculum Initiative.

After a brief silence, Jonathan, the principal, leaned back in his chair. We had observed him over the past few days interacting with students, and it was clear he cared deeply about them. The Multicultural Curriculum Initiative was his brainchild, his baby. Jonathan decorated his office door with quotes about diversity and his office walls with artwork depicting diverse groups of youth. “We see diversity as our greatest asset. That’s what this initiative is all about. What we aim to do here,” he explained with measured intensity, “is to celebrate the joys of diversity.” When we shared with Jonathan the concerns raised by the African American students, he appeared confused and genuinely concerned. “They said that?” he asked, before interrupting a member of his leadership team who had begun to defend the initiative. “Maybe it’s time to rethink this.”

Beyond Artwork and Celebrations

If we’ve learned anything working with schools across the United States, it’s this: When it comes to education equity, the trouble is not a lack of...
multicultural programs or diversity initiatives in schools. Nor is it necessarily a lack of educators who, like Jonathan, appreciate and even champion diversity. In virtually every school we visit, we see attempts at multiculturalism: corridors lined with flags, student-designed posters representing the national or ethnic origins of families in the community, anti-bullying programs, or faculty positions like “Diversity Director.”

The trouble lies in how so many diversity initiatives avoid or whitewash serious equity issues. It lies in the space between what marginalized students like Cynthia say their schools need to do to help them feel less marginalized and what many of the adults in those schools are comfortable doing in the name of multiculturalism.

To better grasp this, put yourself in Cynthia’s shoes. Imagine a world in which, as a result of something over which you have no control—say, your racial identity, sexual orientation, or home language—you’re made to feel alienated or invisible at school. Imagine that when you occasionally see little shimmers of yourself reflected in the curriculum, your identity or culture is reduced to a stereotype—to a sari, taco, or polka. Imagine the
glimmer of excitement you might feel about the possibility that, when the teacher mentions Martin Luther King Jr., a real conversation about racism or poverty might ensue, only to find that even he has been sanitized down to I have a dream. Imagine experiencing racism, sexism, or class inequality in the present while hearing about it in school only in the past tense.

What would it feel like, given those circumstances, to be pressed into par-

At the heart of a curriculum that is meaningfully multicultural lie principles of equity and social justice.

illusions of multicultural learning even as they guarantee a lack of sophisticated multicultural learning.

What we are suggesting is that at the heart of a curriculum that is meaningfully multicultural lie principles of equity and social justice— purposeful attention to issues like racism, homophobia, sexism, and economic inequality. Without this core, what we do in the name of multiculturalism can border on exploitative: asking students and families who experience these inequalities to allow students and families who don’t experience them to grow their knowledge, while the inequalities themselves go unaddressed. There’s racism at this school, and nobody’s doing anything about it!

Overcoming the “Culture” Fetish
In her article, “It’s Not the Culture of Poverty, It’s the Poverty of Culture,” Gloria Ladson-Billings (2006) explains how culture fetishism undermines education equity. “Culture,” she explains, “is randomly and regularly used to explain everything” (p. 104). It’s used, in effect, as a stand-in for race, class, language, and other issues that aren’t as comfortably discussed as broad, vague “cultures.”

Many of the most popular frameworks for creating more inclusive classrooms and curriculums continue this culture fetish. In addition to multiculturalism, we have intercultural and cross-cultural education, cultural competence and cultural proficiency, culturally relevant pedagogy, and culturally responsive teaching. And despite the fact that social scientists debunked the concept in the early 1970s, the “culture of poverty” remains the dominant framework in U.S. education circles for understanding the lives of low-income students.

Of course, some focus on culture is warranted. Culture is an important aspect of student experience to consider in efforts to create a meaningfully multicultural curriculum and a more equitable school. Moreover, some of these frameworks, including cultural relevance and cultural responsiveness, are rooted in principles of equity (Ladson-Billings, 1995). The challenge is to retain principles of equity as central aspects of a multicultural curriculum that is truly meaningful, even if—especially if—it feels easier or safer to home in on more simplistic notions of culture.

Embracing Equity Literacy
In our own teaching, as well as in our work with schools and school districts, we embrace a framework for both multicultural curriculum development and bigger efforts to create equitable classrooms and schools. We call this framework equity literacy. Its central tenet is that any meaningful approach to diversity or multiculturalism relies more on teachers’ understandings of equity and inequity and of justice and injustice than on their understanding of this or that culture (Gorski, 2013). It relies, as well, on teachers’ abilities to cultivate in students a robust understanding about how people are treated by one another and by institutions, in addition to a general appreciation of diversity (Swalwell, 2011). The idea is to place equity, rather than culture, at the center of the diversity conversation.

Key to developing equity literacy for educators and students is cultivating
four abilities (Gorski, 2013). These include the ability to

- **Recognize** even subtle forms of bias, discrimination, and inequity.
- **Respond to** bias, discrimination, and inequity in a thoughtful and equitable manner.
- **Redress** bias, discrimination, and inequity, not only by responding to interpersonal bias, but also by studying the ways in which bigger social change happens.
- **Cultivate and sustain** bias-free and discrimination-free communities, which requires an understanding that doing so is a basic responsibility for everyone in a civil society.

Part of the difficulty with implementing a curriculum that grows these abilities in young people is that we educators must first grow them in ourselves. We might start by ensuring that professional development related to multiculturalism focuses not only on cultural competence or diversity awareness, but also on recognizing sexism and ableism, for example; not on a mythical “culture of poverty,” but on responding to economic inequality; and not on how to help marginalized students fit into school cultures they experience as alienating, but on how to redress the alienation by making changes in our own practices and policies.

We recognize this is a daunting task, and we understand the pressure of feeling here’s one more thing I need to squeeze into an already packed workday. But then we remember Cynthia’s exhortation: “There’s racism at this school, and nobody’s doing anything about it!” We don’t have control over everything, but to the extent that we do influence the curriculum, we feel an urgency to avoid the kind of well-intended complacency we found at Green Hills High.

The good news is that there are many powerful models for what a curriculum oriented around equity literacy looks like in practice (see “Great Equity Literacy Resources,” p. 39). Teacher-led organizations around the United States have developed rich databases of curriculums that can (and should) be modified for local contexts. Nobody needs to start from scratch.

**Five Guiding Principles**

It can be difficult to paint a precise picture of what an equity literacy curriculum looks like because, like all curriculums, it will look different depending on contextual factors. What we can say is that, rather than a list of facts or historical figures that everyone should know (as in E. D. Hirsch’s “cultural literacy” lists), an equity literacy curriculum focuses on essential questions like these: What makes something equitable or inequitable? What (local, regional, global) inequities exist? How have they changed over time, and why? What individual and collective responsibilities do we have to address them? These questions require both evidence and ethics to debate. They fit well with the inquiry approach to education promoted by recent curriculum frameworks, such as the College, Career, and Civic Life (C3) framework.

As we plan curriculum for our students and work to develop our own skills and knowledge related to equity literacy, it’s useful to keep the following five principles in mind.

**Principle 1. Equity literacy is important in every subject area.**

When we teach with and for equity literacy, we’re not abandoning content. Rather, we’re teaching content (when feasible) through an equity lens. One of our favorite resources for teaching through an equity literacy lens is Eric Gutstein and Bob Peterson’s *Rethinking Mathematics* (Rethinking Schools, 2013). In it, these educators provide multiple examples of teaching math in a way that develops students’ mathematical abilities while also helping them see math as a powerful analytical tool for addressing social problems.

For instance, students can develop formulas for how best to calculate a living wage, examine historical trends in wealth and poverty, or map income data in their own communities. Their
findings can become fertile ground for rich discussions, deliberations, and debates about the nature of economic inequality.

**Principle 2. The most effective equity literacy approach is integrative and interdisciplinary.**

It’s easy to see how equity literacy naturally favors interdisciplinary inquiry. As we see in the math example above, students would also engage with reading, writing, speaking, history, and civics. Science, technology, engineering, and the arts similarly could be tapped as students grapple with real-world equity issues in their communities. Sánchez (2014) describes an interdisciplinary project in which teams of students at a high-poverty school examined challenges in their racially segregated and economically strained community. One group, the Park Fixers, was frustrated “with having insufficient and unsafe equipment for students to play on during recess” (p. 185). Group members were also concerned that the children who lived in an adjacent low-income housing project had no place to play.

With guidance from teachers, the Park Fixers applied a wide variety of skills and an impressive depth of knowledge to address this community challenge they had identified. The students used video and still photography to document the conditions of the park. They used language arts and math skills to craft community surveys, distribute them, and analyze the results. They practiced communication skills by composing and sending letters to several key community members. They even worked with an urban design specialist who helped them capture their vision for a new park in blueprints. Finally, they delivered both oral and written reports to their teachers that incorporated all the material they had gathered.

Teachers considering similar approaches shouldn't feel discouraged if students don’t see the fruits of their efforts within the school year. As Schultz (2008) notes, “spectacular things happen along the way” when students are engaged in this kind of work; the process is just as important—if not more important—than the actual outcome of their efforts.

By engaging students in this way, the teachers modeled equity literacy. They acknowledged what the students knew all along—that they were targets of bias and inequity. What was happening to their park wasn’t happening to the parks in wealthier neighborhoods. The teachers also helped strengthen students’ equity literacy by integrating lessons about math, writing, and other subjects with an opportunity to apply academic skills to redress this inequity. Cultivating equity literacy is most effective when it’s integrated into the broader curriculum rather than segregated into disconnected activities and when it’s a schoolwide commitment rather than isolated in one or two teachers’ classrooms.

**Principle 3. Students of all ages are primed for equity literacy.**

Did we mention that the Park Fixers were 3rd graders? The most common rebuke we hear when we talk about equity literacy goes something like this: My students are too young to talk about that stuff. If you’re thinking the same thing, consider this: Even preschool-age children have been exposed to socializing messages about themselves and one another—often even at school. Many students already knowingly experience bias and discrimination, and those who don’t often learn that it’s impolite to mention any distinctions. For example, researchers have found that children as young as three or four already differentiate racial categories—they’re not, as we may want to believe, “color-blind” (Olson, 2013; Winkler, 2009).

So when we say or think that students are “too young” to talk about issues like racism, it’s important that we stop and reflect on whom, exactly, we’re trying to protect. Are we protecting the students who are experiencing racial bias by sidestepping conversations about race, even as we ask them to celebrate diversity?

In our experience, the younger we start, the better. By integrating issues of equity into the content at young ages, we help all students develop the skills and language they need to explore complex and controversial issues in a community of people who may disagree about what’s going on or what should be done about it. Equally important, we demonstrate to students who are the targets of bias and inequity that their experiences matter, and we offer them an opportunity to challenge their peers’ misperceptions. As a result, they may experience the more celebratory, surface-level multicultural initiatives as safer and more legitimate. Meanwhile, students who enjoy more privileged identities become better able to interpret the
stereotypes and biases that feed any misperceptions they might have about the more marginalized people in their communities.

**Principle 4. Students from all backgrounds need equity literacy.**

Many of the common examples of equity literacy in action come from high-poverty schools serving large percentages of students of color and nonnative speakers of English. Unfortunately, this can lead some people to believe that white and wealthy students wouldn’t benefit from a curriculum informed by equity literacy. In fact, these students may have the steepest learning curves when it comes to learning about bias, discrimination, and inequity. Traditional forms of multicultural education that focus on celebrating diversity rather than equity can reinforce their misunderstandings by feeding the assumption that celebrating diversity is enough—that everybody is starting on a level playing field.

A growing body of research provides helpful examples of how to engage more privileged students in an equity literacy curriculum (Swalwell, 2013). In one elite K–8 private school, teachers meet regularly in professional development study groups focused on race, gender, and social class to design curriculum and share their work. While the 8th grade teachers have asked their students to examine real-world historical and contemporary wealth gap data, the 4th grade teachers are inviting their students to share, in journal entries, what they know about being rich and poor, and the kindergarten teacher is designing a simple simulation of unequal distribution of resources.

The teachers are also compiling a list of formal and informal ways that class advantage goes unchecked at their school—for example, how morning meeting questions can sometimes invite students to brag about their material possessions. The teachers’ ultimate goal is to help students do more than simply “be nice” to people with less privilege; they want their students to understand the issues involved and commit to working toward a society with less economic inequality.

**Great Equity Literacy Resources**

Here are some of our favorite—and free—resources for an equity literacy curriculum:

- EdChange (www.edchange.org/multicultural/teachers.html)
- Education for Liberation Lab (www.edliberation.org/resources/lab)
- GLSEN (http://glsen.org/educate/resources/curriculum)
- New York Collective of Radical Educators (www.nycore.org/curricula)
- SoJust (www.sojust.net)
- Teachers for Social Justice (www.teachersforjustice.org/search/label/all%20curriculum)
- Teaching Economics As If People Mattered (www.teachingeconomics.org)
- Teaching for Change (www.teachingforchange.org)
- Teaching Tolerance (www.tolerance.org/classroom-resources)
- Zinn Education Project (http://zinnedproject.org)

**Principle 5. Teaching for equity literacy is a political act—but not more so than not teaching for equity literacy.**

Another common rebuke we hear is that teaching for equity literacy introduces views about social justice into the curriculum that don’t belong in school. But is teaching about poverty or sexism more political than pretending that poverty and sexism don’t exist by omitting them from the curriculum? How might we explain the politics of not teaching about these issues when many of our students are experiencing them, even within school? How can we prepare youth to be active participants in a democracy without teaching them about the most formidable barriers to an authentic democracy?

According to Hess and McAvoy (2014), there’s no silver bullet for engaging students in discussions about important and often controversial issues, but rather a series of factors that teachers must weigh to introduce these issues ethically and responsibly. It’s important for teachers to consider when to withhold or disclose their personal views and how to frame issues in relation to their students, the subject matter they’re teaching, and the community.

Ultimately, Hess and McAvoy conclude, classrooms should directly engage students in answering the question, How should we live together? It’s a nonpartisan question like its empirical cousin, How do we live together? but a deeply political one that’s essential in a diverse society based on democratic principles and committed to equity.

**A More Meaningful Investment**

As Cynthia taught us (“There’s racism at this school, and no one’s doing anything about it!”), students who feel marginalized in our schools may experience what we thought to be meaningful multicultural curriculums...
as a purposeful avoidance of a more serious reality. When we invest our multicultural energies in surface-level cultural exchanges, fantasies of color-blindness, or celebrations of white-washed heroes while ignoring the actual inequities many of our students face, we demonstrate an implicit complicity with those inequities.

We can avoid these pitfalls by building our multicultural curriculum efforts, not around cultural awareness or cultural diversity, but around the cultivation of equity literacy in both ourselves and our students.

References

Paul C. Gorski (gorski@edchange.org) is associate professor of Integrative Studies at George Mason University, Fairfax, Virginia, and founder of EdChange (www.edchange.org). His most recent book, coauthored with Seema Pothini, is *Case Studies on Diversity and Social Justice Education* (Routledge, 2014). Katy Swalwell (swalwell@iastate.edu) is an assistant professor in the School of Education at Iowa State University. She is the author of *Educating Activist Allies: Social Justice Pedagogy with the Suburban and Urban Elite* (Routledge, 2013).
Content from CCSSM Widely Applicable as Prerequisites for a Range of College Majors, Postsecondary Programs and Careers*

This table lists clusters and standards with relatively wide applicability across a range of postsecondary work. Table 1 is a subset of the material students must study to be college and career ready (CCSSM, pp. 57, 84). Curricular materials, instruction, and assessment must give especially careful treatment to the domains, clusters, and standards in Table 1, including their interconnections and their applications—amounting to a majority of students’ time.

<table>
<thead>
<tr>
<th>Number and Quantity</th>
<th>Algebra</th>
<th>Functions</th>
<th>Geometry</th>
<th>Statistics and Probability</th>
<th>Applying Key Takeaways from Grades 6–8**</th>
</tr>
</thead>
<tbody>
<tr>
<td>N-RN, Real Numbers:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Solving problems at a level of sophistication appropriate to high school by:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Applying ratios and proportional relationships.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Applying percentages and unit conversions, e.g., in the context of complicated measurement problems involving quantities with derived or compound units (such as mg/mL, kg/m$^3$, acre-feet, etc.).</td>
</tr>
<tr>
<td>N-Q*, Quantities:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Applying basic function concepts, e.g., by interpreting the features of a graph in the context of an applied problem.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Applying concepts and skills of geometric measurement e.g., when analyzing a diagram or schematic.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Applying concepts and skills of basic statistics and probability (see 6–8.SP).</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Performing rational number arithmetic fluently.</td>
</tr>
</tbody>
</table>

Every domain in this category contains widely applicable prerequisites. Note, this domain is especially important in the high school content standards overall as a widely applicable prerequisite.

The following standards and clusters are relatively important within this category as widely applicable prerequisites:

- N-RN.1
- N-RN.2
- N-RN.3
- N-Q.A
- N-Q.B

Additionally, standards F-BF.1 and F-BF.1 are relatively important within this category as widely applicable prerequisites.

The following standards are relatively important within this category as widely applicable prerequisites:

- G.CO.1
- G.CO.9
- G.CO.10
- G.SRT.B
- G.SRT.C

Note, the above standards in turn have learning prerequisites. The Geometry category, including:

- G.CO.A
- G.CO.B
- G.SRT.A

Note, the above standards in turn have learning prerequisites within 6-8.SP.

A note about the codes: Letter codes (A, B, C) are used to denote cluster headings. For example, G-SRT.B refers to the second cluster heading in the domain G-SRT, “Prove theorems using similarity” (pp. 77 of CCSSM).

** See CCSSM, p. 84: “…some of the highest priority content for college and career readiness comes from Grades 6-8. This body of material includes powerfully useful proficiencies such as applying ratio reasoning in real-world and mathematical problems, computing fluently with positive and negative fractions and decimals, and solving real-world and mathematical problems involving angle measure, area, surface area, and volume.”

* Modeling star (present in CCSSM)

Only the standards without a (+) sign are being cited here.

---

1 This table is excerpted from the *High School Publishers Criteria for the Common Core State Standards for Mathematics.*
Algebra I Overview

Numerals in parentheses designate individual content standards that are eligible for assessment in whole or in part. Underlined numerals (e.g., 1) indicate standards eligible for assessment on two or more end-of-course assessments. For more information, see Tables 1 and 2. Course emphases are indicated by: ■ Major Content; □ Supporting Content; ○ Additional Content. Not all CCSSM content standards in a listed domain or cluster are assessed.

### The Real Number System (N-RN)
- B. Use properties of rational and irrational numbers (3)

### Quantities ★ (N-Q)
- A. Reason quantitatively and use units to solve problems (1, 2, 3)

### Seeing Structure in Expressions (A-SSE)
- A. Interpret the structure of expressions (1, 2)
- B. Write expressions in equivalent forms to solve problems (3)

### Arithmetic with Polynomials and Rational Expressions (A-APR)
- A. Perform arithmetic operations on polynomials (1)
- B. Understand the relationship between zeros and factors of polynomials (3)

### Creating Equations ★ (A-CED)
- A. Create equations that describe numbers or relationships (1, 2, 3, 4)

### Reasoning with Equations and Inequalities (A-REI)
- A. Understand solving equations as a process of reasoning and explain the reasoning (1)
- B. Solve equations and inequalities in one variable (3, 4)
- C. Solve systems of equations (5, 6)
- D. Represent and solve equations and inequalities graphically (10, 11, 12)

### Interpreting Functions (F-IF)
- A. Understand the concept of a function and use function notation (1, 2, 3)
- B. Interpret functions that arise in applications in terms of the context (4, 5, 6)
- C. Analyze functions using different representations (7, 8, 9)

### Building Functions (F-BF)
- A. Build a function that models a relationship between two quantities (1)
- B. Build new functions from existing functions (3)

### Linear, Quadratic, and Exponential Models ★ (F-LE)
- A. Construct and compare linear, quadratic, and exponential models and solve problems (1, 2, 3)
- B. Interpret expressions for functions in terms of the situation they model (5)

### Interpreting categorical and quantitative data (S-ID)
- A. Summarize, represent, and interpret data on a single count or measurement variable (1, 2, 3)
- B. Summarize, represent, and interpret data on two categorical and quantitative variables (5, 6)
- C. Interpret linear models (7, 8, 9)

Mathematical Practices
1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.
Geometry Overview

Numerals in parentheses designate individual content standards that are eligible for assessment in whole or in part. Underlined numerals (e.g., 1) indicate standards eligible for assessment on two or more end-of-course assessments. For more information, see Tables 1 and 2. Course emphases are indicated by: □ Major Content; ▪ Supporting Content; ○ Additional Content. Not all CCSSM content standards in a listed domain or cluster are assessed.

### Congruence (G-CO)
- □ A. Experiment with transformations in the plane (1, 2, 3, 4, 5)
- ▪ B. Understand congruence in terms of rigid motions (6, 7, 8)
- ▪ C. Prove geometric theorems (9, 10, 11)
- □ D. Make geometric constructions (12, 13)

### Similarity, Right Triangles, and Trigonometry (G-SRT)
- □ A. Understand similarity in terms of similarity transformations (1, 2, 3)
- □ B. Prove theorems involving similarity (4, 5)
- ▪ C. Define trigonometric ratios and solve problems involving right triangles (6, 7, 8)

### Circles (G-C)
- □ A. Understand and apply theorems about circles (1, 2, 3)
- ▪ B. Find arc lengths and areas of sectors of circles (5)

### Expressing Geometric Properties with Equations (G-GPE)
- □ A. Translate between the geometric description and the equation for a conic section (1)
- ▪ B. Use coordinates to prove simple geometric theorems algebraically (4, 5, 6, 7)

### Geometric measurement and dimension (G-GMD)
- □ A. Explain volume formulas and use them to solve problems (1, 3)
- ▪ B. Visualize relationships between two-dimensional and three-dimensional objects (4)

### Modeling with Geometry (G-MG)
- □ A. Apply geometric concepts in modeling situations (1, 2, 3)

#### Mathematical Practices

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.
Algebra II Overview

Numerals in parentheses designate individual content standards that are eligible for assessment in whole or in part. Underlined numerals (e.g., 1) indicate standards eligible for assessment on two or more end-of-course assessments. For more information, see Tables 1 and 2. Course emphases are indicated by: ■ Major Content; □ Supporting Content; ○ Additional Content. Not all CCSSM content standards in a listed domain or cluster are assessed.

<table>
<thead>
<tr>
<th>The Real Number System (N-RN)</th>
</tr>
</thead>
<tbody>
<tr>
<td>■ A. Extend the properties of exponents to rational exponents (1, 2)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Quantities (N-Q)</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ A. Reason quantitatively and use units to solve problems (2)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>The Complex Number System (N-CN)</th>
</tr>
</thead>
<tbody>
<tr>
<td>○ A. Perform arithmetic operations with complex numbers (1, 2)</td>
</tr>
<tr>
<td>○ C. Use complex numbers in polynomial identities and equations (7)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Seeing Structure in Expressions (A-SSE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ A. Interpret the structure of expressions (2)</td>
</tr>
<tr>
<td>□ B. Write expressions in equivalent forms to solve problems (3, 4)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Arithmetic with Polynomials and Rational Expressions (A-APR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ B. Understand the relationship between zeros and factors of polynomials (2, 3)</td>
</tr>
<tr>
<td>□ C. Use polynomial identities to solve problems (4)</td>
</tr>
<tr>
<td>□ D. Rewrite rational expressions (6)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Creating Equations (A-CED)</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ A. Create equations that describe numbers or relationships (1)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Reasoning with Equations and Inequalities (A-REI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ A. Understand solving equations as a process of reasoning and explain the reasoning (1, 2)</td>
</tr>
<tr>
<td>□ B. Solve equations and inequalities in one variable (4)</td>
</tr>
<tr>
<td>□ C. Solve systems of equations (6, 7)</td>
</tr>
<tr>
<td>□ D. Represent and solve equations and inequalities graphically (11)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Interpreting Functions (F-IF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ A. Understand the concept of a function and use function notation (3)</td>
</tr>
<tr>
<td>□ B. Interpret functions that arise in applications in terms of the context (4, 6)</td>
</tr>
<tr>
<td>□ C. Analyze functions using different representations (7, 8, 9)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Building Functions (F-BF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ A. Build a function that models a relationship between two quantities (1, 2)</td>
</tr>
<tr>
<td>□ B. Build new functions from existing functions (3, 4a)</td>
</tr>
</tbody>
</table>

Mathematical Practices

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.
Examples of Key Advances from Previous Grades or Courses

- In Algebra I, students added, subtracted, and multiplied polynomials. In Algebra II, students divide polynomials with remainder, leading to the factor and remainder theorems. This is the underpinning for much of advanced algebra, including the algebra of rational expressions.

- Themes from middle school algebra continue and deepen during high school. As early as grade 6, students began thinking about solving equations as a process of reasoning (6.EE.B.5). This perspective continues throughout Algebra I and Algebra II (A-REI). 27 “Reasoned solving” plays a role in Algebra II because the equations students encounter can have extraneous solutions (A-REI.A.2).

- In Algebra II, they extend the real numbers to complex numbers, and one effect is that they now have a complete theory of quadratic equations: Every quadratic equation with complex coefficients has (counting multiplicities) two roots in the complex numbers.

- In grade 8, students learned the Pythagorean theorem and used it to determine distances in a coordinate system (8.G.B.6–8). In Geometry, students proved theorems using coordinates (G-GPE.B.4–7). In Algebra II, students will build on their understanding of distance in coordinate systems and draw on their growing command of algebra to connect equations and graphs of conic sections (e.g., G-GPE.A.1).

- In Geometry, students began trigonometry through a study of right triangles. In Algebra II, they extend the three basic functions to the entire unit circle.

27 See, for example, “Reasoned Solving,” in Focus in High School Mathematics: Reasoning and Sense Making (National Council of Teachers of Mathematics, 2009).
Task #1

Judy is working at a retail store over summer break. A customer buys a $50 shirt that is on sale for 20% off. Judy computes the discount, then adds sales tax of 10%, and tells the customer how much he owes. The customer insists that Judy first add the sales tax and then apply the discount. He is convinced that this way he will save more money because the discount amount will be larger.

a) Is the customer right?

b) Does your answer to part (a) depend on the numbers used, or would it work for any percentage discount and any sales tax percentage? Find a convincing argument using algebraic expressions and/or diagrams for this more general scenario.
Observing for Standards and Shifts
An Observation Protocol for Instructional Video

Step One - Before Viewing the Lesson
Team calibrates understanding of intended standards and match to instruction by answering
the questions, “What should we see if teacher was addressing the standard correctly?”

Step Two – While Viewing the Lesson
Observe and capture evidence about what the teacher is saying and doing – script teacher
directions and explanations; notice anchor charts, white board/chalk board lesson descriptions
and directions, etc.

Observe and capture evidence about what the students are saying and doing. Make note of
points of struggle or developing misconceptions. Pay close attention to the students who are
not actively participating.

Step Three – Post-Observation Debrief
Begin with the standard(s). As a team, calibrate about what standard(s) were observed. Use the Mastery Connect
app to look them up and confirm.

Recreate the student learning experience. Begin with what observers saw first, second, third, etc. Make sure all comments
are evidenced-based.

Step Three – Drawing Conclusions
Begin to draw conclusions from the observation by discussing the following:

● What standard(s) were being attempted? Were those the intended standard(s)? If not,
to what grade and standard is the task aligned?
● What are the knowledge and skills required to be successful on this task?
● Were the following a good match to the intended standard(s):
  o Instruction given by the teacher?
  o Standards knowledge of the teacher?
  o Content knowledge of the teacher?
  o Student materials and tasks?

Step Four - Make a Plan for Providing Feedback
Content Coaching: Unbound
A Tool to Deepen Understanding of Standards, Shifts and Content

So what do you do when you see that students aren’t “getting it”? These content-specific questions are intended to be used by teachers, leaders and coaches for job-embedded development of Math and ELA content knowledge, post-lesson debriefing, coaching and lesson planning. The questions should be used to probe and push the thinking behind instructional practices, and to guide informed and actionable decisions on the changes needed for students to engage in grade-level, standards-aligned learning.

This tool is to be used in conjunction with the Instructional Practice Guide suite of tools from Student Achievement Partners. The Instructional Practice Guides are an important first step for diagnosing where and when Common Core instruction is taking place. Because every Core Action and every Shift cannot be observable in every lesson, Beyond the Lesson Discussion Guides offer questions for teachers and coaches to consider in order to ensure effective CCSS implementation over the course of the year. Content Coaching: UnboundEd provides an even more granular layer of instructional analysis and recommended next steps focused on application of content related to standards in the classroom.

### MATH

<table>
<thead>
<tr>
<th>Shift</th>
<th>Questions that Develop Understanding of Math Standards, Shifts and Content</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Leading the Conversation:</strong></td>
<td></td>
</tr>
<tr>
<td>• What are the knowledge and skills required to be successful on this task?</td>
<td></td>
</tr>
<tr>
<td>• To what grade and standard is the task aligned?</td>
<td></td>
</tr>
<tr>
<td><strong>Focus</strong></td>
<td><strong>If not grade-level standards:</strong></td>
</tr>
<tr>
<td></td>
<td>• Why was instruction not addressing grade-level standards?</td>
</tr>
<tr>
<td></td>
<td>• What data or other work supports the decision to teach non-grade-level standards?</td>
</tr>
<tr>
<td></td>
<td>• Is this part of the major work of that grade?</td>
</tr>
<tr>
<td><strong>If not major work of the grade:</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• How will this chosen standard authentically lead students back to working with math content that is emphasized in this grade?</td>
</tr>
<tr>
<td></td>
<td>• How does this task connect to the major work in the grades above and below?</td>
</tr>
<tr>
<td><strong>Coherence</strong></td>
<td><strong>Across Grade Coherence</strong></td>
</tr>
<tr>
<td></td>
<td>• Does the instruction carefully connect learning across grades so that students can build new understanding onto foundations</td>
</tr>
<tr>
<td><strong>Within Grade Coherence</strong></td>
<td>• Is the instruction leveraging how the standards within a grade were built to reinforce a major topic by utilizing supporting,</td>
</tr>
<tr>
<td>Rigor</td>
<td>Procedural Skill and Fluency</td>
</tr>
<tr>
<td>-------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td><strong>If fluency opportunities are not present:</strong></td>
<td><strong>If conceptual understanding opportunities are not present:</strong></td>
</tr>
<tr>
<td>- Where is/will fluency practice be built in upcoming lessons?</td>
<td>- How can more opportunities be worked into what the students are thinking when working with math concepts?</td>
</tr>
<tr>
<td><strong>If students show fluency as a limiter in their math work:</strong></td>
<td><strong>If students show conceptual understanding as a limiter in their math work:</strong></td>
</tr>
<tr>
<td>- How will students’ lack of fluency be addressed?</td>
<td>- Consider gaps: re-ask questions in Coherence activities</td>
</tr>
<tr>
<td>- Consider curriculum: fluency activities from high-quality lessons for the area that is limiting students</td>
<td>- Consider curriculum: study complementary topics?</td>
</tr>
<tr>
<td><strong>If students are still not making connections:</strong></td>
<td></td>
</tr>
<tr>
<td>Shift</td>
<td>Questions that Develop Understanding of ELA Standards, Shifts and Content</td>
</tr>
<tr>
<td>-------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| Leading the Conversation: | • What are the knowledge and skills required to be successful on this task?  
• To what grade and standard is the task aligned?  
• How are texts selected for units/lessons? How are texts selected for a sequence across the school year? How are texts selected for independent/guided reading?  
• (FOR P-3 ONLY) Is there a systematic phonics program as part of the literacy block?  
• (FOR SECONDARY ONLY) Is there collaboration between ELA and other content-area teachers around coherently building knowledge and sharing responsibility for students’ literacy development and improvement? |
| Regular practice with complex text and its academic language | • Is a grade-level complex text at the center of instruction?  
• IF NOT – is the focus of the lesson to build knowledge and vocabulary related to a high-leverage topic?  
• IF NOT – are there opportunities for students to engage in rich evidence-based conversations about complex texts and topics that were experienced in previous lessons or via independent/group work?  
• IF NOT – is the focus of the instructional time to build fluency, a volume of reading and/or stamina? Or is the focus on small-group instruction with homogenous groups by reading level?  
• **If the above is true, WHEN and HOW OFTEN do students experience complex text at the center of instruction?**  
• Are students engaging in regular practice with complex texts and academic language?  
• Does instruction focus on students reading grade-level complex texts closely, discerning deep meaning?  
• Do questions and tasks address the text and help build knowledge by attending to its particular structures, concepts, ideas, and details?  
• Does instruction focus on building students’ academic vocabulary in context throughout instruction?
<table>
<thead>
<tr>
<th>Reading, writing, and speaking grounded in evidence from text, both literary and informational</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Do questions and tasks attend to the words, phrases, and sentences within the text?</td>
</tr>
<tr>
<td>• Are students’ reading, writing, and/or speaking grounded in evidence from text?</td>
</tr>
<tr>
<td>• Are text-dependent questions sending students back into the text to answer them? Are they connected to the intended standard(s) of the lesson?</td>
</tr>
<tr>
<td>• If NOT – In cases where the teacher is asking questions that can be answered from students’ personal experience, is this happening AFTER and IN ADDITION TO text-based analysis?</td>
</tr>
<tr>
<td>• Are lessons and tasks designed so that students cite specific evidence from text(s) to support analysis, inferences, and claims, both orally and in writing?</td>
</tr>
<tr>
<td>• Are students using evidence to build on each other’s observations or insights during discussion or collaboration?</td>
</tr>
<tr>
<td>• Does the teacher expect evidence and precision from students and probe responses accordingly?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Intentionally building knowledge through content-rich nonfiction</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Do questions and tasks address the text and help build knowledge by attending to its particular concepts, ideas, and details?</td>
</tr>
<tr>
<td>• Do students read a significant amount of nonfiction?</td>
</tr>
<tr>
<td>• When the anchor text of a unit is fiction, is nonfiction used to supplement the text and help build understanding and knowledge about historical periods, topics and issues explored in the fiction text?</td>
</tr>
<tr>
<td>• Is instruction designed so that nonfiction is systematically used to build domain-specific knowledge and vocabulary on topics?</td>
</tr>
</tbody>
</table>

Want more from UnboundEd? Check out our [ELA Content Guides: Unbound](http://example.com) and other resources to help enhance instruction.
This task is not about computing the final price of the shirt but about using the structure in the computation to make a general argument. The key underlying idea is that multiplication is commutative, which we often just take for granted and don't feel needs any explanation. In this case, the context of the problem makes it not obvious at all that we can switch the order of the two computations, but it becomes quite obvious after observing that the application of both the discount and the sales tax are just instances of multiplication. Since the order in which we multiply is irrelevant, the answer must be the same regardless of which we apply first. The solution presents both an algebraic approach to the general result in part (b), and also a diagram that illustrates the same result graphically.

This task presents a good opportunity for students to construct a viable argument and critique the reasoning of others (MP3).

Solution

a. Judy first takes 20% off which gives a new price of $\$50(0.8)=\$40$. She then adds the 10% sales tax for a final price of $\$40(1.1)=\$44$. The customer first adds 10% for a new price of $\$50(1.1)=\$55$. He then takes 20% off for a final price of $\$55(0.8)=\$44$.

The customer is right to say that the discount amount will be larger, it is $\$11$ opposed to $\$10$ with his method. But the additional $\$1$ just gets subtracted from the tax amount that was added in the first step. So the final price is the same in both cases.

It does not matter in which order the discount and tax are computed.

b. If we don't actually perform the computations but just record them we find the following:

Judy: $50(0.8)(1.1) = 44$

customer: $50(1.1)(0.8) = 44$

We see that it is not surprising that both computations get the same answer, since $(0.8)(1.1) = (1.1)(0.8)$. 
This result will generalize if we replace $50, 20\%, 10\%$ by any other numbers. If we let $P$ stand for the original price, $s$ for the sales percentage and $t$ for the tax percentage, we have $P\left(1−\frac{s}{100}\right)\left(1+\frac{t}{100}\right)=P\left(1+\frac{t}{100}\right)\left(1−\frac{s}{100}\right)$. We see that changing the order in which the sale and the tax are applied does not matter.

We can also visualize this with the following diagram. Yellow represents the action of subtracting 20% and blue represents the action of adding 10%. We see that both paths result in the same final answer. Even though the diagram uses the numbers from the problem, we can see from the structure in the diagram that both paths will result in the same final price even if the yellow and blue areas are altered.

https://www.illustrativemathematics.org/content-standards/tasks/677