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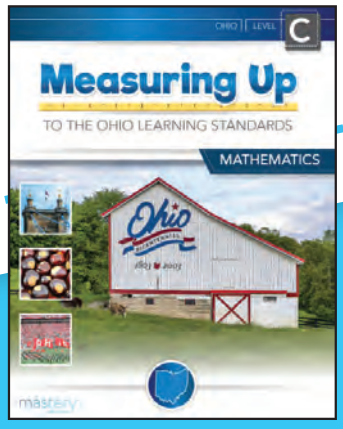

Measuring Up®

Research-Based Pedagogy

of the *Measuring Up*® to the Ohio Learning Standards

English Language Arts and Mathematics
Grades 3–8

Peoples Education Inc. DBA
mastery education

Research-Based Pedagogy of the *Measuring Up*® to the Ohio Learning Standards

INTRODUCTION

Since its inception in 1990, Mastery Education, the creator of *Measuring Up*, has created student learning products based on continual review of scientific research literature. The *Measuring Up* series, available in print and digital formats, is founded on a set of principles derived from the soundest current theory and research on language arts, mathematics, writing, science, social studies, literacy, assessment, and use of digital technology. The content experts who created this series built upon the methodology and best practices from the best-selling *Measuring Up* state-specific resources that have served over 13 million students in the last 17 years. This document aims to provide information about *Measuring Up to the Ohio Learning Standards* (MU) and to explain the research on learning theory on which the series is based.

This document is organized to be useful to educators who are considering the soundness and the practical uses of these materials in their classrooms.

- First, it articulates each principle underpinning the design of the materials.
- Second, it discusses the best-known and most-respected educational research supporting the principle.
- Third, it includes a discussion of the way MU materials embody both the principle and its research-based foundation.
- Finally, this document explains how teachers can use the system to help collect information about their students' strengths and weaknesses and to help their students explore their own understanding of the standards-based information they are likely to encounter on the state test.

PEDAGOGY

Under the Every Student Succeeds Act (ESSA), a revision of the No Child Left Behind Act of 2001, each state must continue to adopt a challenging set of standards in English Language Arts (ELA), Mathematics, and Science. States must continue to assess student achievement in mathematics and ELA standards once a year for grades 3–8, and must continue to assess science once in grades 3–8. These standards must align with higher education "entrance requirements for credit-bearing coursework" and with "relevant state career and technical education standards" (ESSA, 2015). The correlating assessments "must involve multiple measures of student achievement, including measures that assess higher-order thinking skills and understanding . . ." (ESSA, 2015).

Educators, schools, and districts face a daunting challenge: how to raise student achievement while incorporating the increasingly rigorous standards created by Ohio. *MU* was created to help educators understand, navigate, and teach content that covers the Ohio Learning Standards, preparing students for the rigors of the AIR assessment. *MU* provides grade-appropriate lessons that are based on sound, research-based pedagogy to provide an easy-to-use resource in the classroom and to assess student mastery. *MU* instruction is supported with additional digital materials through *Measuring Up Live 2.0*, which diagnoses each student's skill level and standards mastery through Insight, while providing adaptive, differentiated practice with standards-based questions in *MyQuest*.

RESEARCH PRINCIPLE 1:

MEASURING UP TO THE OHIO LEARNING STANDARDS PROVIDES COMPREHENSIVE COVERAGE OF THE OHIO STANDARDS

The Ohio Learning Standards are a clear set of K–12 grade-specific expectations across subject areas. These standards define what it means for students to be college and career ready in the 21st century. Each grade-specific standard is easily identified within the *MU* series. Standards included at each grade level are described at the beginning of each student resource, in both print and digital formats, and in the Teacher Edition. Additionally, each lesson in both resources clearly identifies the standards of study.

RESEARCH BASIS FOR PRINCIPLE 1: Extensive and well-known research about the effects of articulated expectations is addressed by Rhona S. Weinstein (2002) in her book, *Reaching Higher: The Power of Expectations in Schooling*, a landmark study in support of the results that high standards and expectations can produce. Weinstein's book argues, "If . . . we are interested in the development of all children, we must link higher standards to effective teaching strategies for diverse learners. Our assessments of achievement must inform the next steps of instruction, rather than simply hold children accountable for what they may not have been taught." Weinstein's argument about effective use of standards lays the foundation for continual formative assessment as well as for differentiated instruction based on the results of that assessment.

The systematic instruction provided in the student lessons, combined with resources in the teacher edition, is designed to help students master the challenges of the rigorous Texas Essential Knowledge and Skills. Each component of the lesson is purposeful and explicit, providing effective strategy instruction that is clearly explained, used, and applied (Duffy, 2002). Clearly written, teacher-friendly lessons serve as models of effective instruction, building teachers' confidence that they are meeting the rigorous requirements while navigating the changing educational environment.

RESEARCH PRINCIPLE 1 APPLIED: The implication of Weinstein's statement is that assessment should help teachers understand what students know and need to know. *MU* lessons begin with this concept, outlining what students may already know along with what students will learn in the lesson. *MU* includes practice assessments that can be used in diagnostic or benchmarking settings, helping teachers know in advance of instruction and assessment where gaps in their students' understanding lie. Teachers can then begin to think about filling in those gaps for all learners. Prescriptive Answer Guides provide teachers with specific indicators about which standards students need to work on in order to develop their understanding. The Ohio Learning Standards demand high achievement for all learners. *MU* is a first step in aiding student learning toward those goals and is a step toward positive assessment results. In other words, using the *MU* program allows teachers to enact the principle that high standards can result in higher achievement for all students by using the provided assessment materials to inform their next steps of instruction.

In the table of contents and at the beginning of each *MU* lesson the grade-specific Ohio Learning Standards are easily identified to indicate the focus of the lesson.

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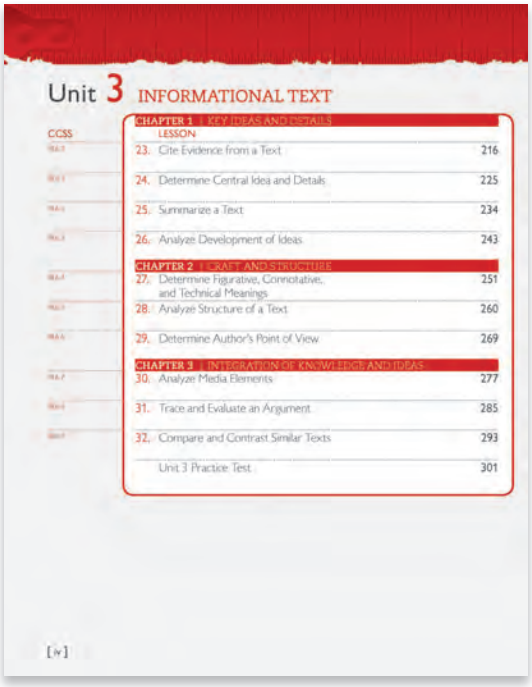

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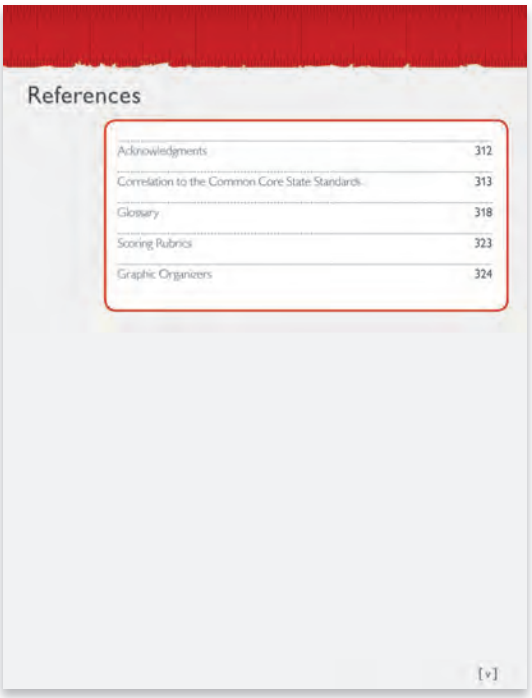

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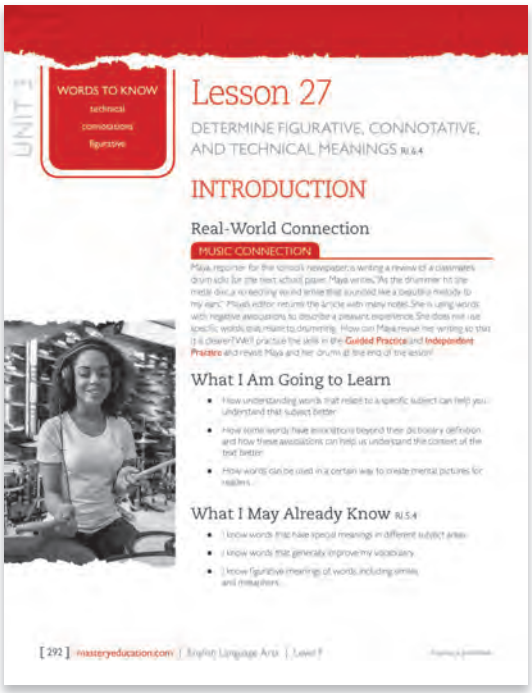

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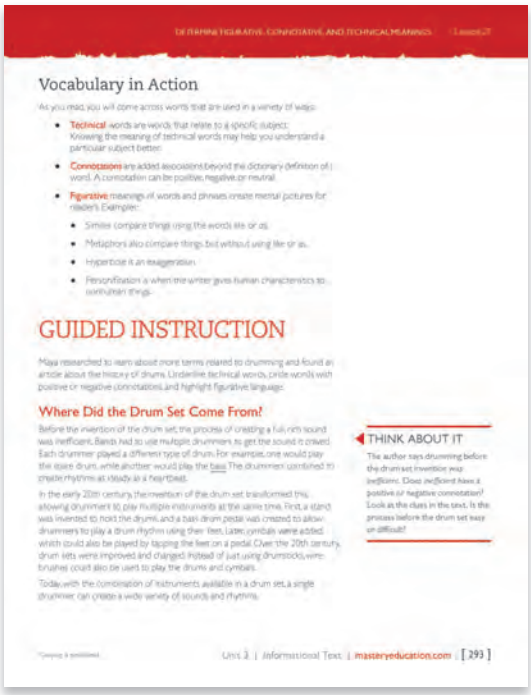

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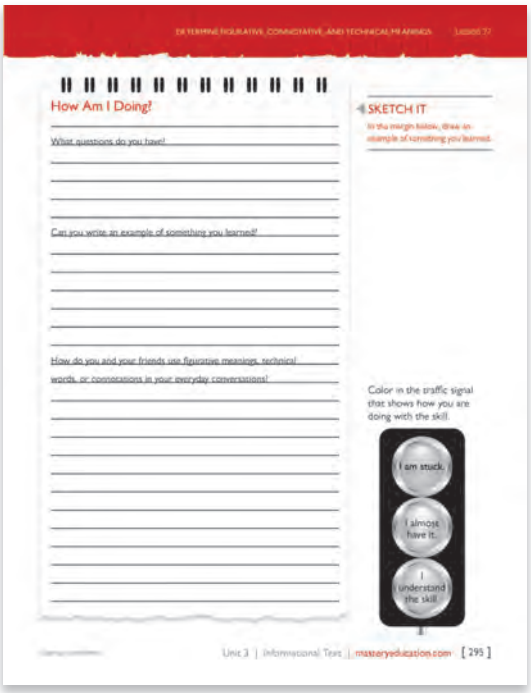

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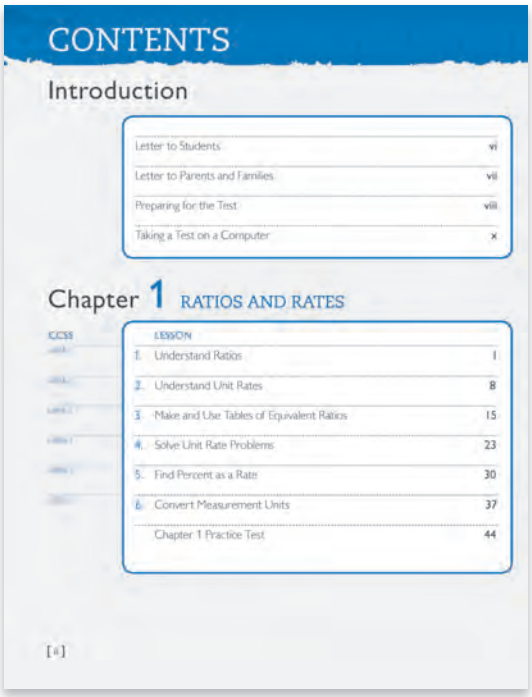

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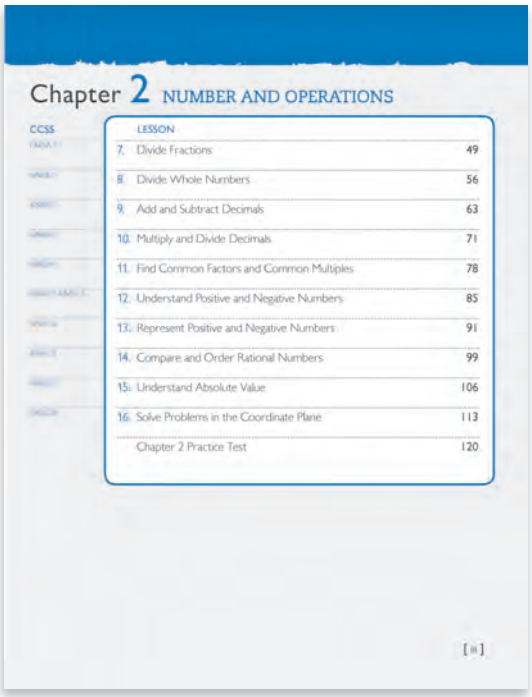

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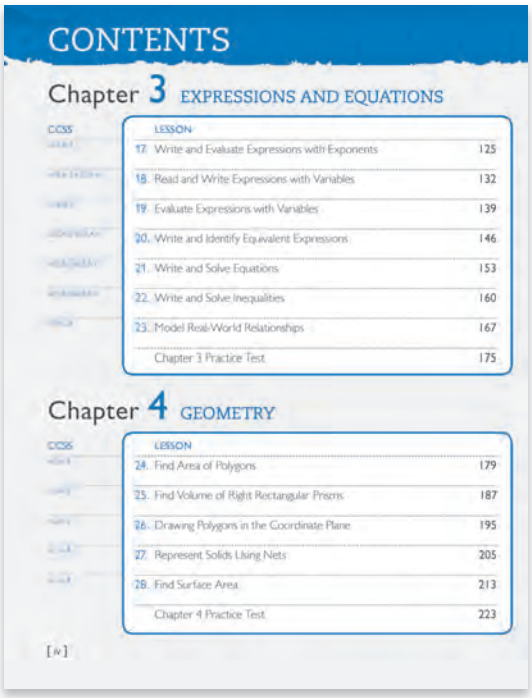

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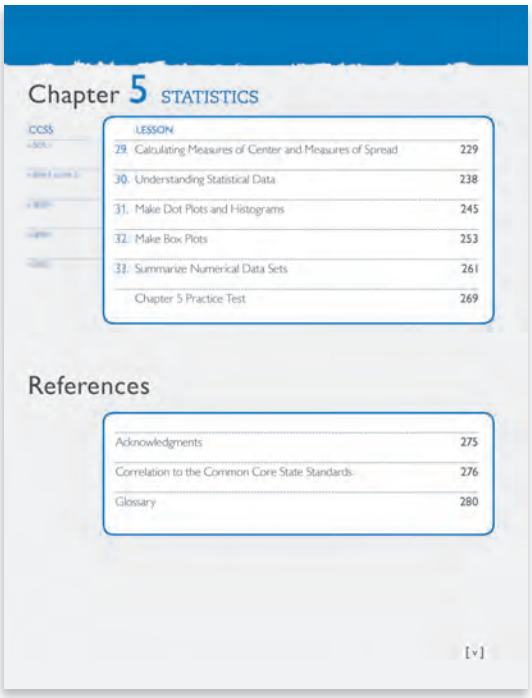

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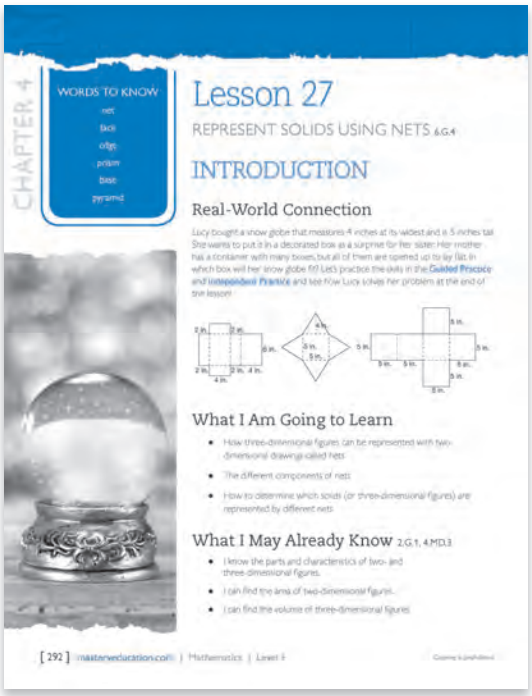
CHAPTER 4

WORDS TO KNOW
net
face
edge
prism
base
pyramid

Lesson 27

REPRESENT SOLIDS USING NETS 6.G.4

INTRODUCTION

Real-World Connection

Lucy bought a snow globe that measures 4 inches at its widest and is 5 inches tall. She wants to put it in a decorated box as a surprise for her sister. Her mother has a container with many boxes, but all of them are opened up to lay flat. In which box will her snow globe fit? Let's practice the skills in the Guided Practice and Independent Practice and see how Lucy solves her problem at the end of the lesson.

What I Am Going to Learn

- How three-dimensional figures can be represented with two-dimensional drawings called nets
- The different components of nets
- How to determine which solids (or three-dimensional figures) are represented by different nets

What I May Already Know 2.G.1, 4.MD.3

- I know the parts and characteristics of two- and three-dimensional figures.
- I can find the area of two-dimensional figures.
- I can find the volume of three-dimensional figures.

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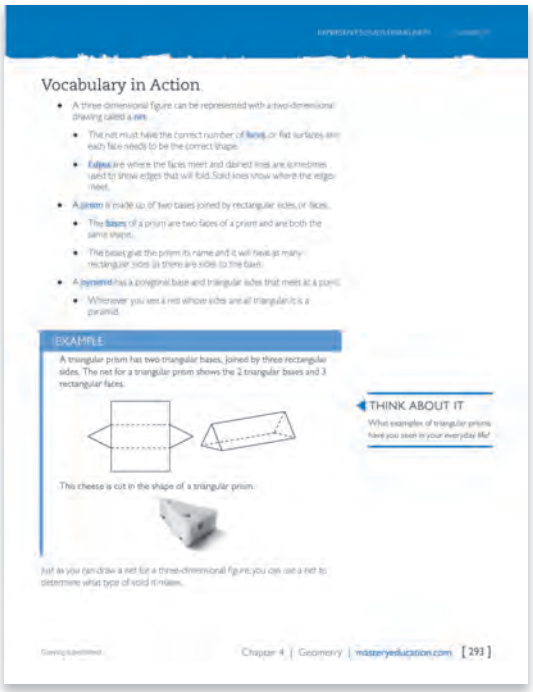
Vocabulary in Action

- A three-dimensional figure can be represented with a two-dimensional drawing called a net.
  - The net must have the correct number of faces, or flat surfaces, and each face needs to be the correct shape.
  - Edges are where the faces meet and dashed lines are sometimes used to show edges that will fold. Solid lines show where the edges meet.
- A prism is made up of two bases joined by rectangular sides, or faces.
  - The bases of a prism are two faces of a prism and are both the same shape.
  - The bases give the prism its name and it will have as many rectangular sides as there are sides to the base.
- A pyramid has a polygonal base and triangular sides that meet at a point.
  - Whenever you see a net whose sides are all triangles, it is a pyramid.

EXAMPLE

A triangular prism has two triangular bases, joined by three rectangular sides. The net for a triangular prism shows the 2 triangular bases and 3 rectangular faces.

This cheese is cut in the shape of a triangular prism.

Just as you can draw a net for a three-dimensional figure, you can use a net to determine what type of solid it makes.

THINK ABOUT IT

What examples of triangular prisms have you seen in your everyday life?

Chapter 4 | Geometry | masteryeducation.com [293]

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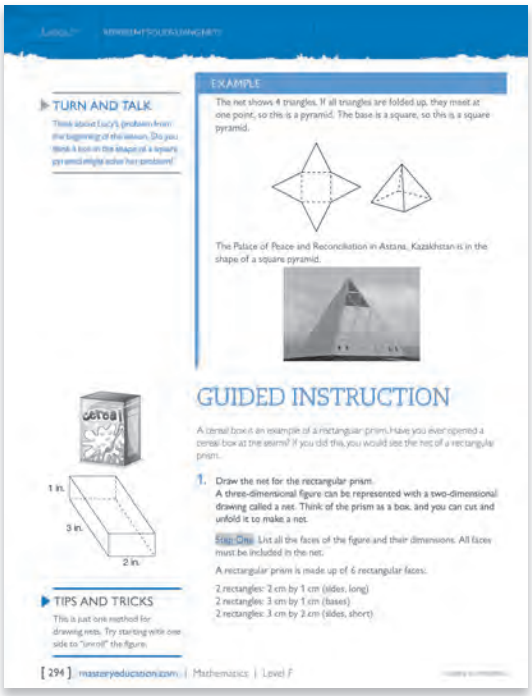
TURN AND TALK

Think about Lucy's problem from the beginning of the lesson. Do you think a box in the shape of a square pyramid might solve her problem?

EXAMPLE

The net shows 4 triangles. If all triangles are folded up, they meet at one point, so this is a pyramid. The base is a square, so this is a square pyramid.

The Palace of Peace and Reconciliation in Astana, Kazakhstan is in the shape of a square pyramid.

GUIDED INSTRUCTION

A cereal box is an example of a rectangular prism. Have you ever opened a cereal box at the seams? If you did this, you would see the net of a rectangular prism.

1. Draw the net for the rectangular prism.
A three-dimensional figure can be represented with a two-dimensional drawing called a net. Think of the prism as a box, and you can cut and unfold it to make a net.

Step One List all the faces of the figure and their dimensions. All faces must be included in the net.

A rectangular prism is made up of 6 rectangular faces:

2 rectangles: 2 cm by 1 cm (sides, long)
2 rectangles: 3 cm by 1 cm (bases)
2 rectangles: 3 cm by 2 cm (sides, short)

1 in.
3 in.
2 in.

TIPS AND TRICKS

This is just one method for drawing nets. Try starting with one side to "unroll" the figure.

[294] masteryeducation.com | Mathematics | Level F

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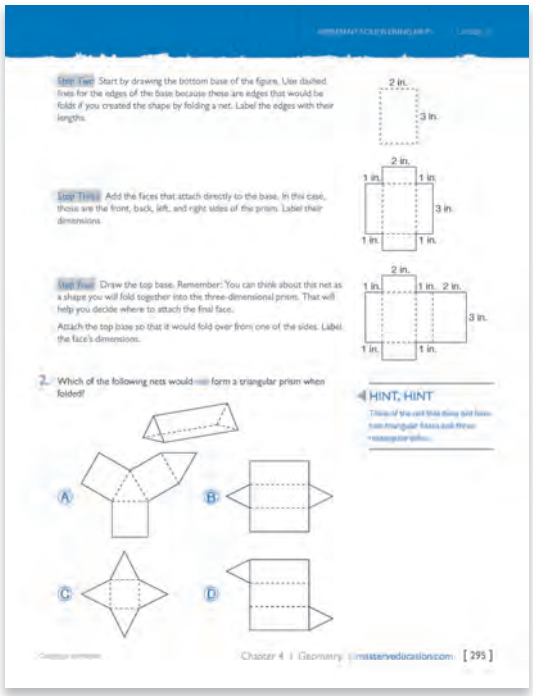
Step Two Start by drawing the bottom base of the figure. Use dashed lines for the edges of the base because these are edges that would be folds if you created the shape by folding a net. Label the edges with their lengths.

2 in.
3 in.

Step Three Add the faces that attach directly to the base. In this case, those are the front, back, left, and right sides of the prism. Label their dimensions.

2 in.
1 in. 1 in.
3 in.
1 in. 1 in.

Step Four Draw the top base. Remember: You can think about this net as a shape you will fold together into the three-dimensional prism. That will help you decide where to attach the final face.

Attach the top base so that it would fold over from one of the sides. Label the face's dimensions.

2 in.
1 in. 1 in. 2 in.
3 in.
1 in. 1 in.

2. Which of the following nets would not form a triangular prism when folded?

A B C D

HINT, HINT

Think of the net this way: two triangular bases and three rectangular sides.

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***Measuring Up to the Ohio Learning Standards*, Mathematics Grade 6**

RESEARCH PRINCIPLE 2:

MEASURING UP TO THE OHIO LEARNING STANDARDS INCORPORATES SOUND RESEARCH-BASED PEDAGOGY IN EACH LESSON

MU is designed to support and enhance best practices for effective teaching of the Ohio Learning Standards. Clearly written, teacher-friendly lessons serve as models of effective instruction, building teachers' confidence that they are meeting the rigorous requirements while navigating the changing educational environment.

The research-based unifying pedagogical principles, summarized below, are common across *MU* and form the foundation of the Measuring Up design.

RESEARCH BASIS FOR PRINCIPLE 2: Each *MU* lesson follows a consistent format and embodies the principles of the *Whole-Part-Whole (WPW)* pedagogical framework and the Gradual Release of Responsibility instructional framework. The *WPW* pedagogical framework provides learners with the ability to understand content at a variety of levels and allows for higher-order cognitive development (Swanson & Law, 1993). The whole-part-whole model provides a comprehensive system for instruction. **First, teachers construct a framework of the new concepts, as a whole, for their students. Then students practice each individual part under the guidance of their teachers. Next, students experience the concepts, as a whole again, on their own.**

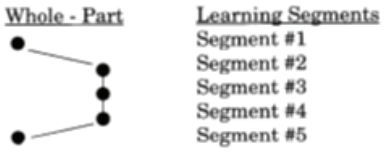


Figure 1. Basic Whole-Part-Whole Learning Model.

(Swanson & Law, 1993)

Swanson & Law's framework is similar to the expanded Gradual Release of Responsibility framework, which incorporates differentiation as well as a collaborative learning component, which Fisher and Frey describe as an essential component of the learning process (2014).

Gradual Release of Responsibility framework:

- **Focused Instruction** — Whole class time; establishes purpose; makes real-world connections to the content as a whole;
- **Guided Instruction** — Small group time; additional instruction; time to differentiate; time to address individual components of skills/content;
- **Collaborative Learning** — No new content introduced; allows for conversation and inquiry about content as a whole;
- **Independent Learning** — Individual work on the content as a whole; relies on readiness of student to engage with material.

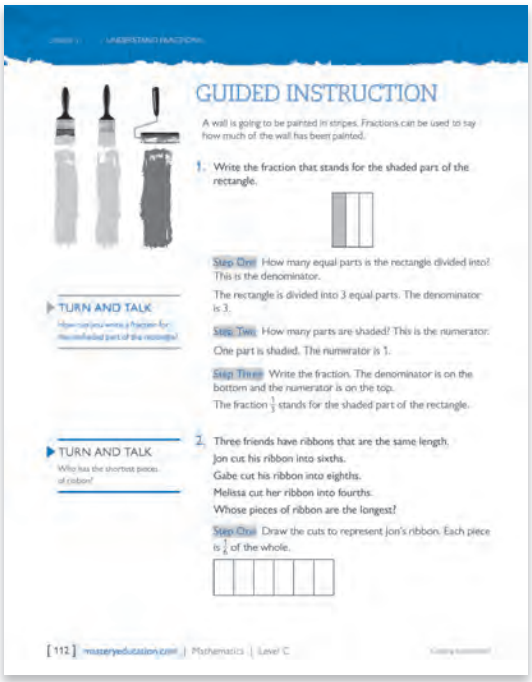
(Fisher & Frey, 2014)

Each component of the lesson should be purposeful and explicit, providing effective strategy instruction that is clearly explained, used, and applied in order for students to succeed (Duffy, 2002). Furthermore, there should be ample opportunity for teachers to differentiate and meet their individual students' needs (Fisher & Frey, 2014). As students work with individual "components within the whole" and with the strategies embedded within the instruction, there are greater opportunities for "higher order development" (Swanson & Law, 1993). The collaborative interactions encourage "negotiating with peers, discussing ideas and information, and engaging in inquiry with others" so that students can "apply what they already know". Then, when students enter the independent learning phase, they can "apply skills and knowledge to produce new products" and genuinely show what they know and what they know how to do (Fisher & Frey, 2014).

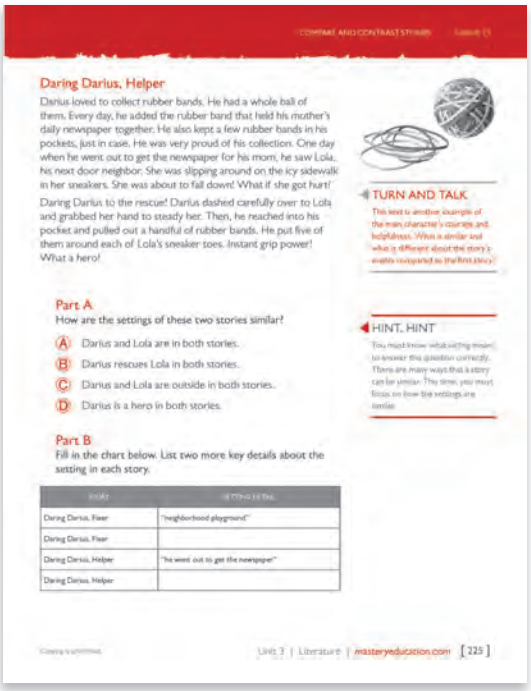
RESEARCH PRINCIPLE 2 APPLIED: The systematic instruction provided in the *MU* lessons, combined with resources in the Teacher's Edition, is designed to help students master the rigorous standards and to maximize student engagement. Each lesson includes the following components for a thoughtful progression of *Whole-Part-Whole* learning and a *Gradual Release of Responsibility*:

Whole-Part-Whole and Gradual Release of Responsibility Framework	Process and Purpose	*Measuring Up to the Ohio Learning Standards*
Whole	The first "whole" provides a foundational understanding, introduces new content, and establishes purpose for learning.	• **Real World Connection** provides examples to show the applicability of what students are learning. • **What I Am Going to Learn** reviews and explains the skills and content embedded within the standards. • **What I May Already Know** cues related standards and articulates understandings covered in previous lessons. • **Vocabulary in Action** displays key vocabulary highlighted in context.
Part	Then specific skills, or "parts," are examined in depth for mastery.	• **Guided Instruction** provides scaffolded support through step-by-step problem-solving instruction and critical thinking questions to build mastery and develop higher-order thinking skills. Students can work in small groups or individually, and teachers can differentiate based on need. • Embedded **Turn and Talk** prompts create collaborative engagement. • **How Am I Doing?** and **Stop Light graphics** allow students to self-evaluate their understanding and provide teachers with an informal formative assessment midway through the lesson.
Whole	Finally, the "parts" are brought together within the context of the "whole" for deep understanding and application.	• **Independent Practice** gives students the chance to apply the skills they have learned as a whole. Students may be working on baseline expectations or higher-order application of knowledge depending on where they are in the learning continuum. • **Hint, Hint, Tips and Tricks, Think About It, Sketch It, checklists**, and **workspaces** create opportunities for increased student engagement with content.
Assessment	Ongoing progress monitoring occurs through short assessments at the end of each lesson and through summative assessments.	• **Exit Tickets** follow every lesson and are another informal formative assessment to engage students and teachers in the process of evaluation before moving on to the next lesson. • **Summative Assessments** are placed at the end of each chapter (math) or unit (ELA) to provide students with opportunities to experience rigorous AIR-formatted questions (multiple choice and constructed-response).

Whole-Part-Whole and Gradual Release of Responsibility within *MU* lessons allows for scaffolded instructional support informed by ongoing formative assessment. Teachers and students together can determine where there are areas of strength and weakness before moving on to the next activity or lesson.



Measuring Up, Math Grade 3



Measuring Up, ELA Grade 3

RESEARCH PRINCIPLE 3:

MEASURING UP TO THE OHIO LEARNING STANDARDS PROVIDES RIGOROUS CONTENT AND APPLICATION OF KNOWLEDGE THROUGH HIGHER-ORDER SKILLS

The Ohio Learning Standards provides rigorous standards-based content and application of knowledge through higher-order skills. To acquire this content and to experience independent application of knowledge, students must utilize what they have learned across a range of cognitive levels.

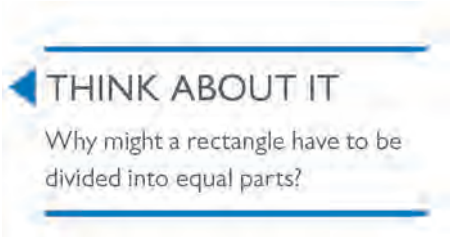
RESEARCH BASIS FOR PRINCIPLE 3: To achieve the greater depth of knowledge and rigor required by Ohio Learning Standards, students should experience a learning progression across the "cognitive rigor matrix." Bloom's Taxonomy, first developed by Benjamin Bloom in 1956 and later revised into a set of verbs by Anderson, Krathwohl, et al. (2001), describes actions students take to achieve each level of thinking. In 1997, Norman Webb developed a framework for Depth of Knowledge (DOK) to address the depth to which students should demonstrate their understanding of content. Seen in combination in a "cognitive rigor matrix," it is possible to create a learning progression that is methodical and provides scaffolding for learning standards and prepares students for assessments.

A "Snapshot" of the Cognitive Rigor Matrix (based on Hess, Carlock, Jones, & Walkup, 2009)				
Depth of Knowledge (Webb, 1997) Actions Taken (Revised Bloom's Taxonomy, 2001)	**DOK Level 1 Recall/Reproduction**	***DOK Level 2 Basic Skills/Concepts***	***DOK Level 3 Strategic Thinking/ Reasoning***	***DOK Level 4 Extended Thinking***
Remember	• Recall, locate basic facts, define, cite, identify, describe, illustrate			
Understand	• Select appropriate words for use when intended meaning is clearly evident • Sketch a model recalling key components	• Select appropriate words for use when intended meaning is clearly evident • Specify, explain relationships, rephrase • Identify central ideas	• Explain, generalize, or connect ideas using supporting evidence (quote, text evidence, example)	• Explain how concepts or ideas specifically relate to other content domains or concepts, compare/contrast
Apply	• Use language structure (pre/suffix) or word relationships (synonym/antonym) to determine meaning	• Use context to identify word meanings • Obtain and interpret information using text features	• Use concepts to solve non-routine problems	• Devise an approach among many alternatives to research a novel problem
Analyze	• Identify the kind of information contained in a graphic, table, visual, etc.	• Compare/contrast literary elements, facts, terms, events • Analyze format, organization, & text structures • Determine relationships	• Analyze or interpret author's craft (e.g. literary devices, viewpoint, or potential bias) to critique a text	• Analyze multiple sources or texts • Analyze complex abstract themes
Evaluate			• Cite evidence and develop a logical argument for conjectures based on one text or problem	• Evaluate relevance, accuracy, & completeness of information across texts/sources
Create	• Brainstorm ideas, concepts, problems, or perspectives related to a topic or concept	• Generate conjectures or hypotheses based on observations or prior knowledge and experience	• Develop a complex model for a given situation • Develop an alternative solution	• Synthesize information across multiple sources or texts • Articulate a new voice, alternate theme, or new knowledge or perspective

RESEARCH PRINCIPLE 3 APPLIED: Mastery Education created the *Measuring Up* series to help students master the Ohio Learning Standards and to challenge them to think on a higher level about the concepts and skills they are learning.

As students move through high-quality instruction, independent and collaborative activities, and review in MU, they are challenged to consider, analyze, interpret, evaluate, and create instead of simply recalling facts.

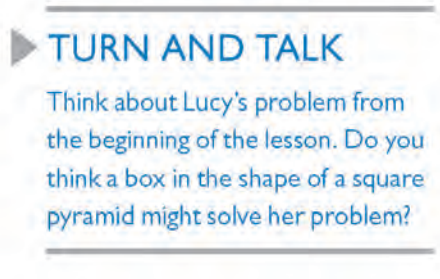
During *Guided Instruction* students are asked to *Think About It* as they encounter new content and skills. These Think About It prompts may ask students to use previous knowledge in a new application, analyze their reasoning, or evaluate what they are learning using previous knowledge.



Measuring Up, Math Grade 3

Measuring Up, ELA Grade 3

In both the *Guided Instruction* and the I*ndependent Practice* sections, students are frequently prompted to *Turn and Talk*. This is the valuable collaborative component of each lesson that engages students in higher-order thinking. When students answer these prompts collaboratively, they are analyzing and problem-solving while articulating what they have learned. The Turn and Talk prompts provide Accountable Talk as a means of "staying on topic, using information that is accurate and appropriate for the topic, and thinking deeply about what the partner has to say" (Fisher & Frey, 2014).

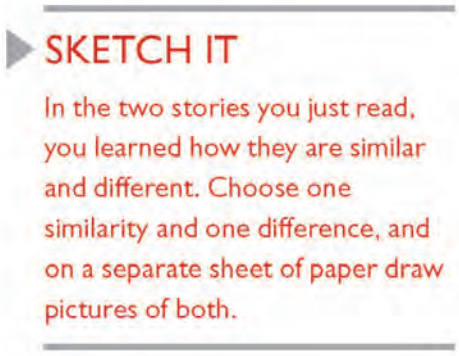


Measuring Up, Math Grade 6

Measuring Up, ELA Grade 3

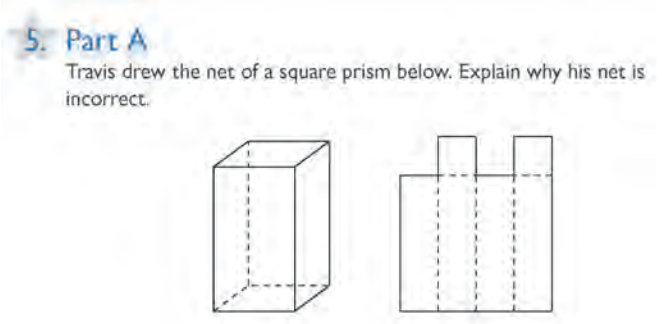
As students work independently and self-evaluate their progress, they may be prompted to Sketch It to develop a conceptual model or a real-world model that will help them to visualize their understanding of a new concept.

Measuring Up, Math Grade 6



Measuring Up, ELA Grade 3

Starred questions in the *Independent Practice* section indicate that students are required to use higher-order thinking skills. These questions might ask students to cite evidence, consider connotative meaning, explain how they arrived at an answer, or show mathematical reasoning.



Measuring Up, Math Grade 6

Measuring Up, ELA Grade 6

RESEARCH PRINCIPLE 4:

MEASURING UP TO THE OHIO LEARNING STANDARDS MAXIMIZES STUDENT ENGAGEMENT

Student engagement is critical if students are to acquire the necessary skills and content to be college and career ready. MU helps teachers monitor student engagement, use student self-reported engagement and comprehension data, and employ proven engagement strategies.

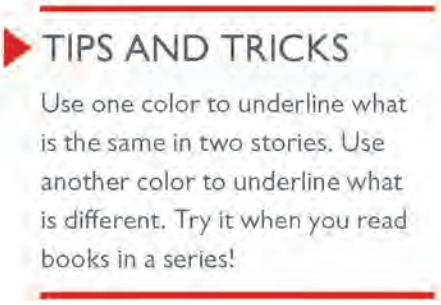
RESEARCH BASIS FOR PRINCIPLE 4: According to Robert Marzano in *The New Art and Science of Teaching* (2017), monitoring student engagement is critical so that teachers know when to employ effective engagement strategies and when students may need differentiated instruction to optimize learning. Students can provide teachers with self-reported engagement data in the form of informal verbal or written prompts throughout a lesson. Teachers should show students that they are aware of student engagement and reacting when they are disengaged (2017, p. 65). Increasing engagement might involve creating a "lively pace" through the use of instructional segments, physical movement (standing to vote for an answer), allowing students to work at their own individual pace, grouping students according to where they are in their comprehension of new material, or presenting new and unusual information (real-world connections) (2017, p. 66-71).

According to educational researchers Richard Strong, Harvey F. Silver, and Amy Robinson, "Students who are engaged in their work are energized by four goals—success, curiosity, originality, and satisfying relationships" (1995). Students must find the material with which they are working attainable, interesting (and not repetitive), creative, and constructed around building relationships with others (1995). To make the work interesting, real-world connections are critical, as are opportunities to create something original with the material learned; finally, students want to engage with their peers and to create good relationships with their peers (1995).

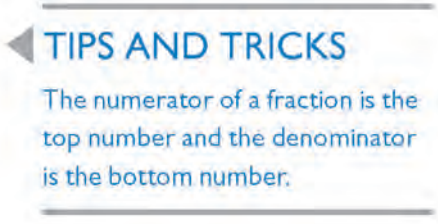
Students who are actively engaged take greater ownership of their own learning with the use of effective formative assessments and clear communication between teacher and student (Stiggins, 2005). "As teachers help students track their progress, students can tell exactly where they are. A student who knows he's far from meeting a target will realize that he needs additional practice or more scaffolding. And a student who meets a target quickly can tell that she's ready for an additional challenge" (Dobbertin, 2012).

RESEARCH PRINCIPLE 4 APPLIED: The *Measuring Up* series is designed with student engagement in mind. Lessons are segmented so that the pacing is appropriate and students are motivated to engage with the material. Within the lessons students are prompted to activate their background knowledge, interact directly with the learning materials, and utilize their problem-solving strategies.

During *Guided Instruction* and *Independent Practice*, Tips and Tricks serve as reminders to students as they are introduced to new vocabulary. These reminders might be content or skill related.

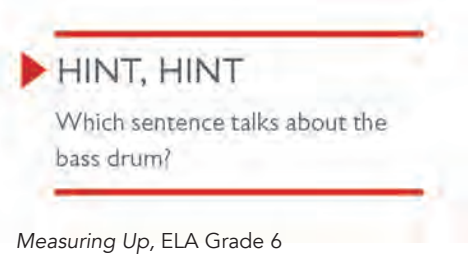


Measuring Up, ELA Grade 3

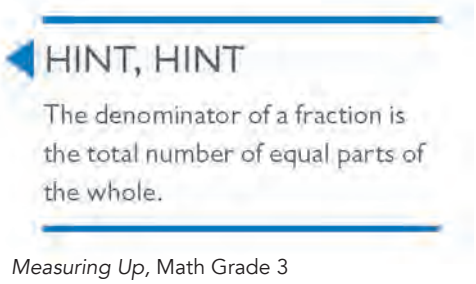


Measuring Up, Math Grade 3

Hint, Hint prompts might cue students to look back at a particular part of the reading or to use a skill that they have learned in the past.



Measuring Up, ELA Grade 6



Measuring Up, Math Grade 3

Work spaces and checklists allow students to take notes while reading, organize their thoughts before writing, and test out their ideas and make calculations in math. Students are encouraged to use these spaces through the *Hint, Hint*, *Writing Checklist*, *Reading Notes*, math *Work Space*, and *Sketch It* prompts.

Measuring Up, ELA Grade 3

Measuring Up, Math Grade 3

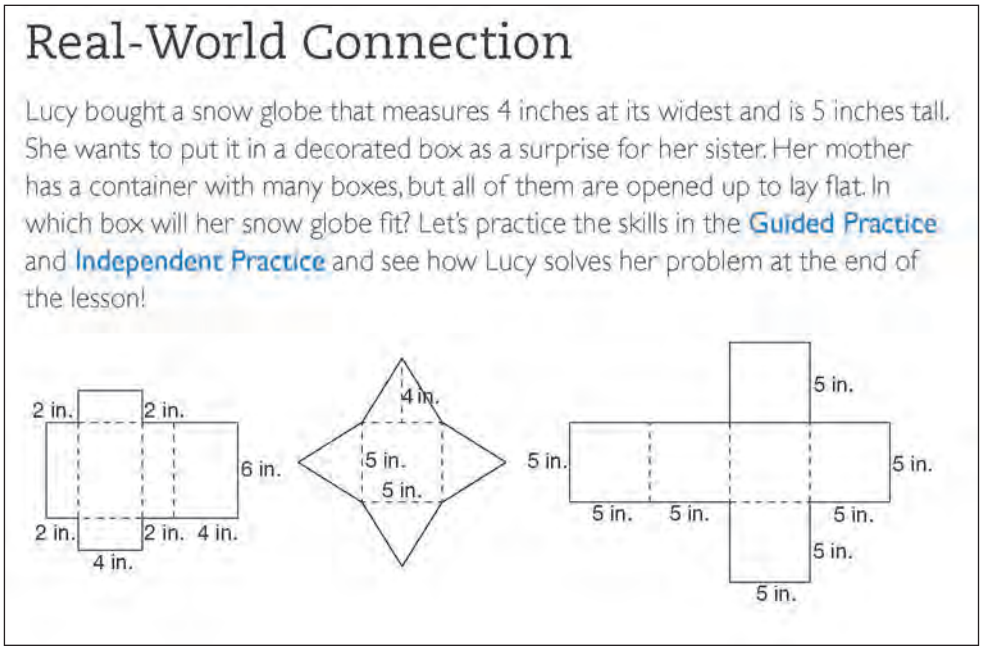
Creating real-world connections to show the relevance and the interest-value of the learning materials is an essential component of student engagement in *MU* lessons. Students are provided with real-world applications of vocabulary and math skills, authentic writing tasks, and real models of math concepts. Each lesson is grounded in the significance of the concepts being learned.

Real-World Connection

MUSIC CONNECTION

Maya, reporter for the school's newspaper, is writing a review of a classmate's drum solo for the next school paper. Maya writes, "As the drummer hit the metal disc, a screeching sound arose that sounded like a beautiful melody to my ears." Maya's editor returns the article with many notes. She is using words with negative associations to describe a pleasant experience. She does not use specific words that relate to drumming. How can Maya revise her writing so that it is clearer? We'll practice the skills in the **Guided Practice** and **Independent Practice** and revisit Maya and her drums at the end of the lesson!

Measuring Up, ELA Grade 6



Real-World Connection

Lucy bought a snow globe that measures 4 inches at its widest and is 5 inches tall. She wants to put it in a decorated box as a surprise for her sister. Her mother has a container with many boxes, but all of them are opened up to lay flat. In which box will her snow globe fit? Let's practice the skills in the **Guided Practice** and **Independent Practice** and see how Lucy solves her problem at the end of the lesson!

Measuring Up, Math Grade 6

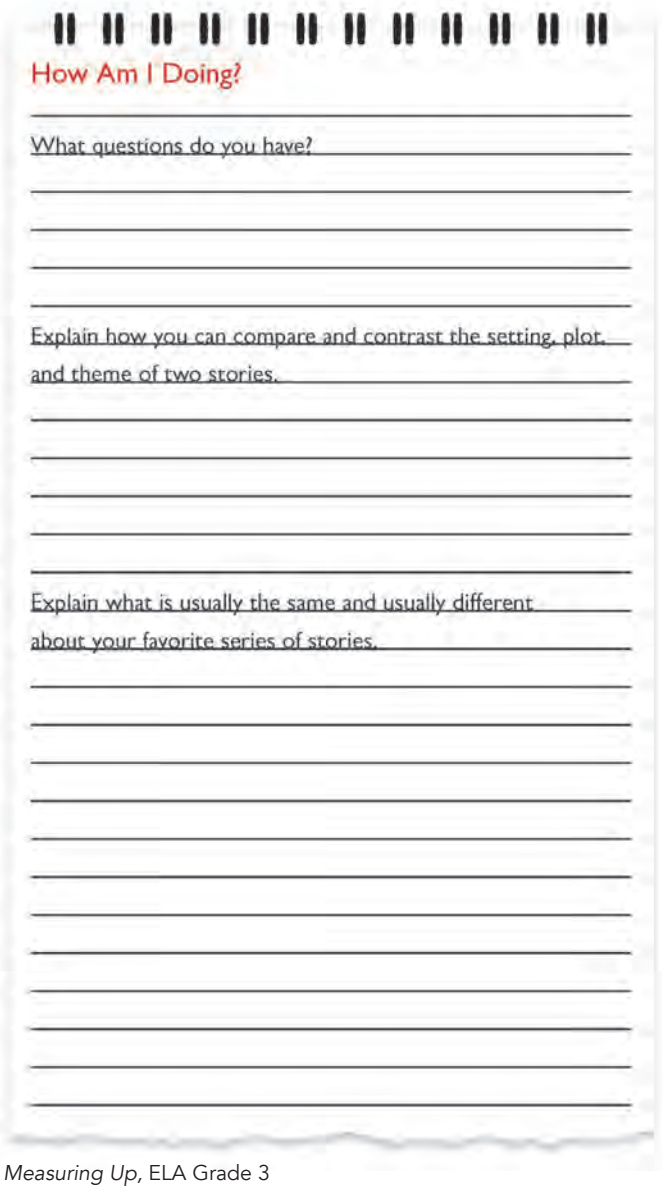
Providing informal assessments throughout a lesson to determine if students are engaged and understanding baseline knowledge is another critical piece of each lesson.

Stop Light graphics ask students to gauge their comprehension in that moment. Teachers can circulate to see which students are stuck and which students might need just a little help. Students are urged to pause and consider their state of mind; are they comprehending what they are being asked to learn or do?

Self-assessment is a key component of student engagement, and both *Exit Tickets* and *How Am I Doing?* give students the tools to communicate their questions and understandings.

How am I Doing? precedes the *Independent Practice* section and helps students and teachers determine what remaining questions students may have and whether or not they can provide a concrete example of what they have learned.

Measuring Up, Math Grade 3



Measuring Up, ELA Grade 3

Exit Tickets provide informal formative assessments to help students self-evaluate and teachers to cue in to student comprehension. Exit Tickets ask students to apply and to explain their understandings and take the form of constructed responses and drawings (for math).

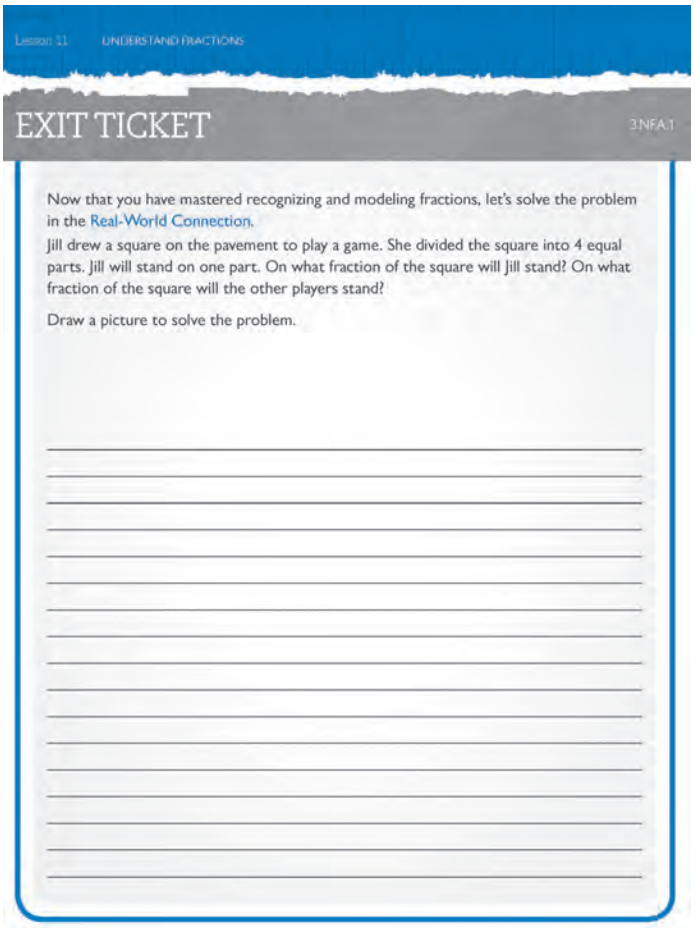

DETERMINE FIGURATIVE, CONNOTATIVE, AND TECHNICAL MEANINGS Lesson 27

EXIT TICKET RI.6.4

Now that you've mastered the art of using figurative, connotative, and technical language, let's revisit the Real-World Connection. Imagine you attended the drum performance with Maya. Revise Maya's original sentence for her article using appropriate technical terms, connotations, and figurative language. Write a paragraph that incorporates the revised sentence and describes the drum solo performance Maya observed. Be sure to use what you learned about musical terms in your paragraph.

Measuring Up, ELA Grade 6

To challenge students appropriately, *MU* recognizes that there are times when students need additional scaffolding and times when they need space to process what they have learned both independently and collaboratively. Each of these student engagement components is essential to an active learning environment where students are tracking their own learning progress and communicating with their teachers about how much or how little guidance they need.


Lesson 11 UNDERSTAND FRACTIONS

EXIT TICKET 3.NF.A.1

Now that you have mastered recognizing and modeling fractions, let's solve the problem in the Real-World Connection.

Jill drew a square on the pavement to play a game. She divided the square into 4 equal parts. Jill will stand on one part. On what fraction of the square will Jill stand? On what fraction of the square will the other players stand?

Draw a picture to solve the problem.

Measuring Up, Math Grade 3

RESEARCH PRINCIPLE 5:

MEASURING UP TO THE OHIO LEARNING STANDARDS IS SUPPORTED BY DIGITAL RESOURCES FOR ONGOING ASSESSMENT, DIFFERENTIATED AND PERSONALIZED INSTRUCTION, AND TEST PREPARATION

Digital resources allow teachers to collect data and use it effectively to support differentiated instruction in the classroom, to tailor personalized learning, and to prepare students for standardized testing. When teachers are able to collect data and share it with their students, mastery of skills and content increases exponentially.

RESEARCH BASIS FOR PRINCIPLE 5: Ongoing assessment and thoughtful use of data are key components of a successfully differentiated classroom. Research has found that both students and teachers need access to data and clear communication between them about how to use it effectively. Sloane & Kelly (2003) write that: "Students can be effective instruments in their own learning if the teacher is clear on the learning goals and the students are informed of their current performance and given clear steps for remediation… The task for teachers is to know and understand their state's standards, and then translate this knowledge to continuously help students learn and self-assess to meet those standards."

Meta-analyses of computer-based instruction by Kulik (1994) provide support for the effectiveness of technology across many applications. Given the fact that technology can give as much feedback as the student needs, on the student's time, and at the student's pace, it stands to reason that digital learning provides many students—including those who need more time and may learn more slowly—with special learning opportunities. Coley, Cradler, & Engel's meta-study (1997) found that ". . . computer-based instruction can individualize instruction and give instant feedback to students, even explaining the correct answer. The computer is infinitely patient and nonjudgmental, thus motivating students to continue." Additionally, "Teachers who frequently use technology find that their students benefit from the increased emphasis on collaboration, communication, critical thinking, and problem solving—all important 21st century skills" (Walden University, 2010).

In a study of the effects of computerized technology on student learning conducted by Martin, Klein, & Sullivan (2007), "Results indicated that among the instructional elements, practice had the most impact on both learner achievement and attitudes. Participants who used one of the versions of the computer program that included practice . . . performed significantly better on the post-test than those who did not receive practice. . ." (Martin, Klein, & Sullivan, 2007). In other words, computer-based practice that is aligned to standards, and designed in a similar format to the standardized tests that students will eventually take, provides students with effective learning opportunities and familiarity with question types and testing formats.

Even more recently, the U.S. Department of Education conducted its own meta-analysis (2010) and Magana & Marzano (2014) examined several meta-analyses of digital education practices, which include blended learning. Both the USDOE and Magana & Marzano concluded that the positive effects of educational technology, in combination with effective instructional practice, on student learning are greater than the effects of either technology in isolation or instructional strategies without technology in the classroom. Furthermore, the USDOE report found that, "Online learning can be enhanced by giving learners control of their interactions with media and prompting learner reflection." Students who are engaged in monitoring their own progress and who make choices about the pace, the level of instruction, and the quantity of practice are at an even greater advantage than those in a traditional classroom setting.

There is also considerable research about how much and what kind of test preparation is valuable. In a landmark meta-analysis of the National Education Longitudinal Study (NELS) database, Briggs (2001) concluded that, after rigorous coursework, the next most significant impact on test scores is the use of quality test-preparation materials that familiarize students with the test and the knowledge base they need to answer the questions.

RESEARCH PRINCIPLE 5 APPLIED: In addition to *MU's* embedded ongoing assessment components (*How Am I Doing?* and *Exit Tickets*) and the chapter/unit summative assessments that are included with the print materials, MU is aligned with complementary digital materials that also support ongoing assessment.

Measuring Up Live 2.0—Insight is designed to enhance formative assessment for the teaching of the Ohio Learning Standards and practice within a digital testing environment. By using *Insight*, teachers have the flexibility to assess students periodically to evaluate understanding. Teachers can opt to pre-assess before beginning a lesson, to assess during a lesson or unit to determine who needs additional instruction, or to assess after a lesson or unit to gauge mastery summatively.

Insight is designed to provide diagnostic information for teachers and students in ways more profound than simple test preparation. Items within Measuring Up Live 2.0 — *Insight* are provided in the format of standardized tests, thus allowing students opportunities to become familiar with both standards-based content and the test format. For many students, familiarity with the testing environment alleviates anxiety and allows students to show what they understand more easily. *Insight* can be used for formative, summative, benchmarking, progress-monitoring, or diagnostic assessment, with the feedback teachers need and the computer-based practice students need to succeed on standardized assessments.

Measuring Up Live 2.0 enables schools to effectively implement a blended digital and face-to-face learning environment that supports and enhances best practices for effective teaching of standards in a way that is teacher- and student-friendly.

Measuring Up Live 2.0 — MyQuest allows all learners differentiated, adaptive instruction at their own pace, including cues for answer prompts and explanations for answers to practice items. The questions are provided in the format of standardized tests, thus allowing students opportunities to become familiar with both standards-based content and the test format. *MyQuest* is a way of increasing the opportunities for standards-based learning and practice that progresses from the "knowledge at comprehension" level to mastery at the "higher-level critical thinking" level. Finally, teachers and students can use data from *Measuring Up Live 2.0* to visualize both skill level and standards mastery.

CONCLUSION

All *Measuring Up* print and digital resources work in tandem to provide instructional materials that keep best-teaching practices in the forefront, ongoing assessment that enables effective differentiated instruction and student engagement, and test preparation that reveals optimal student mastery of skills and content. *MU* print materials give teachers and students the tools they need for skill and content mastery. Teacher Notes (with real-world goals and resources for struggling learners, ELLs, and advanced learners) provide additional classroom support to activate student engagement and foster differentiation. When paired with *MUL 2.0* digital tools (*Insight* & *MyQuest*), teachers can optimize learning in a variety of blended learning environments. *MU* equips Ohio teachers and students with challenging and engaging instructional experiences to meet the rigors of the Ohio Learning Standards.

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