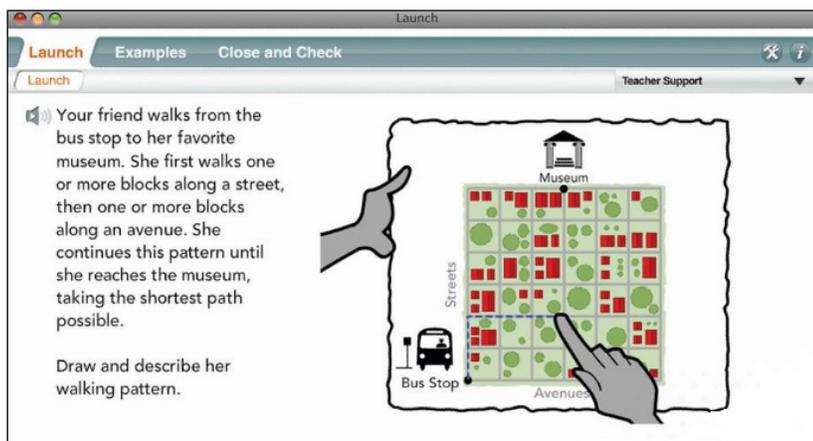


Teaching an On-Level Lesson

Introduction This guide introduces a digits® Texas interactive on-level lesson, identifies the three-part lesson structure, and observes how students use the Student Companion pages to engage in the lesson.

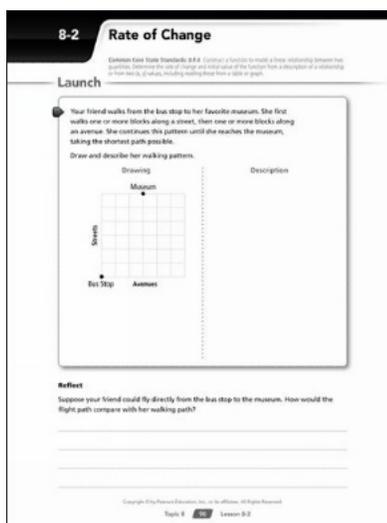
Launch At the start of every on-level lesson, students solve a Launch problem. The Launch problem is designed to engage students immediately in math, activate prior knowledge, and introduce the lesson concept.

You can use the Launch as a warm-up exercise for students to complete independently or as a prompt to promote mathematical discourse.



Student Companion Page

Students can use the first page in their Student Companions to write their responses to the Launch problem.



You can also open an electronic copy of the Student Companion page right from the lesson Launch and invite students to share their work on the interactive whiteboard. Click **Solution** to open the annotated page for students to self check their work.

Notice the screen has a clean design to work out the problem. Click **Work It Out** to maximize interactive whiteboard space even more. Click **Return** to return the problem to its original dimensions.

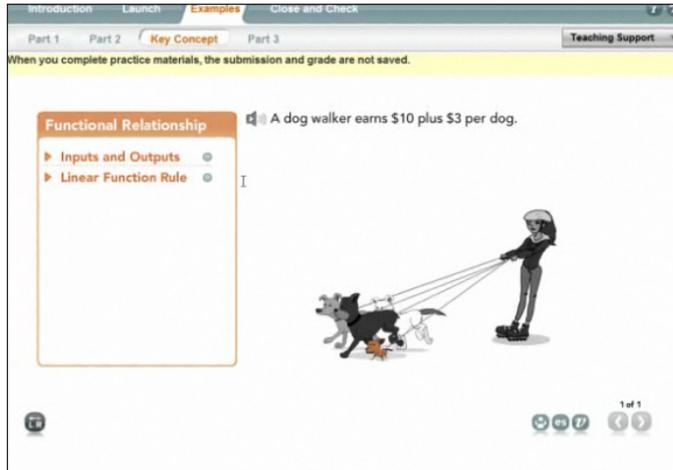
Focus Question

Now, go to page three of the Launch. The Focus Question is presented here to provide real-world context for students as they learn the math concept. digits® Texas has a team of hosts who appear throughout the lessons. In this lesson, Jay is the host. Students can listen to him as he reads the Focus Question aloud to the class.

Learning Modalities

The host is just one feature in digits[®] Texas that support the learning styles of middle school students. digits[®] Texas has a variety of features built into its lessons to support different learner types.

The audio icon feature supports audio learners. When a student clicks the icon, he or she will hear the text on the screen.

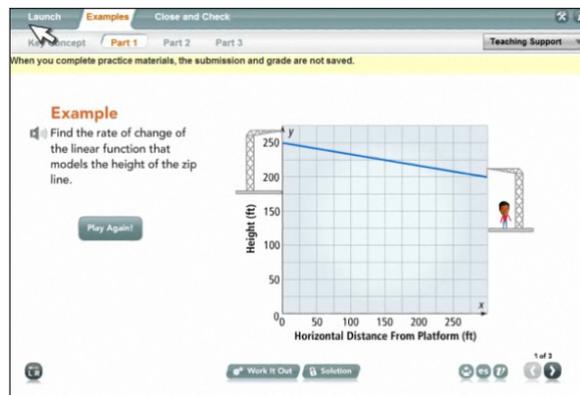


Color and animation support visual learners. Many of the interactive problems in the program support kinesthetic learners by providing the ability to move objects.

Click the Spanish button to open a translation of the text on screen. You can also launch the lesson's Vocabulary and Key Concepts feature. This feature is also available in Spanish to support English language learners.

Examples

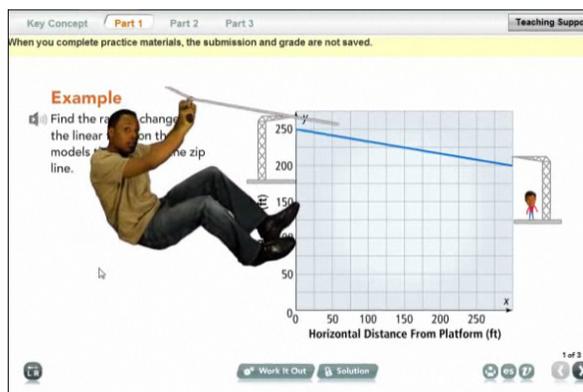
After the Launch section, students will move on to the Examples section in the lesson, which also supports students' learning styles.



Part 1

Part 1 includes an introduction to the rate of change of a function by reading coordinate values on a graph. The Example in Part 1 comes to life with animation and explicit instruction.

Jay, the host, reminds students that he is sliding down (not up) the zip line, so the rate of change is negative. As you get deeper into the three parts in the Examples, you will notice that they build upon one another in terms of difficulty and connecting concepts.



Got It?

Go to the next page of Part 1. Each Example concludes with a Got It? question.

The Got It? feature is actually a formative assessment that you can use to determine whether or not the class understood the Example's concept. You can present the Got It? question in a variety of ways.

You can solve it on the interactive whiteboard and invite students to the board. Additionally, if the class has student response devices (otherwise known as clickers), you can display multiple-choice options and the correct answer.

Also, you can have students complete the Got It? question independently on scratch paper and then open the solution so that they can self check their work.

Part 2

Next, take a look at the other parts of the Examples section. In Part 2, the Example extends students' thinking from Part 1. In this second Example, the problem has two steps where students must first identify the equation of the linear function and then find the rate of change.

Launch Examples Close and Check

Key Concept Part 1 Part 2 Part 3 Teaching Support

Example

Identify the equation of each linear function shown at the right. Then state the rate of change of the function.

Equation Choices

$y = 3x + 3$
 $y = -3x + 3$
 $y = \frac{1}{3}x$
 $y = 3x$

x	y
-2	$-\frac{2}{3}$
0	0
2	$\frac{2}{3}$

Equation: Equation:

Rate of change: Rate of change:

2 of 3

Work It Out Solution

Key Concept

The Key Concept is a feature that summarizes the content of the on-level lesson. The animation helps students organize what they know to create a visual reminder of how the various terms such as slope, rate of change, rise and run, and vertical-horizontal change relate to one another.

Part 3

Go to the most challenging example in Part 3. The problem in Part 3 is designed for higher-order thinking.

Students identify the rate of change of a linear function from a table of values. In this case, one quantity is decreasing while the other is increasing. Students must express the inverse relationship of this rate and also use appropriate units.

Because the Examples progressively build on each other, you have the option to select particular Examples to use according to your students' abilities.

Example

An employee at a candle-making company collected data about the burn time of a new candle.

Hours Candle Burns	Height of Candle (cm)
0	25
1	22
2	19
3	16
4	13
5	10
6	7

The run on a graph is the difference between the inputs in a table.

The rise on a graph is the difference between the outputs in a table.

Find the rate of change of the candle's height between hour 1 and hour 4. What does the rate of change mean in this situation?

1 of 2

Close and Check

Now it is time to wrap up the lesson and shore up understanding—which is the main function of the Close and Check portion of the on-level lesson in digits® Texas. The Close and Check feature is designed to bring students back to the Focus Question.

Just like the Launch section, this portion of the lesson has a matching Student Companion page. Students can write in their personal responses and complete additional exercises independently.

Focus Question

Each part of a linear function plays a role in how its graph looks. What role does the rate of change play?

1 of 1

Student Companion Page Close	While students complete their Student Companion pages, you can circulate around the classroom to observe their thinking processes and assist any students who have conceptual gaps or misunderstandings. You can also open the solution page so that students can self check their work.
Homework	When the lesson is finished, your students are ready to practice what they have learned. Students launch personalized homework assignments powered by MathXL® for School. To learn more about homework and MathXL® for School, watch the tutorial called Getting the Most Out of MathXL® for School on this Web site.
Review	This guide introduced a digits® Texas interactive on-level lesson, identified the three-part lesson structure, and observed how students use the Student Companion pages to engage in the lesson.
