

Table of Contents

Differentiating Instruction

Why Do We Need Differentiated Instruction? . . .	4
What Brain Research Has to Say	6
Understanding by Design (UbD)	8
Response to Intervention (RTI)	11
Conclusion	12

The Nuts and Bolts of Differentiation

Understanding Differentiation	13
The Myths of Differentiation.	13
How Do We Differentiate?	16
Grouping Strategies	17
Proficiency Levels for English Language Learners	18
Anchor Activities.	20
Assessment.	21

How to Use This Product

Resources	22
Vertical Alignment	23

Correlation to Standards

How to Find Your State Correlations.	24
McREL Compendium	24

References Cited 27

Tiered Assignments

Tiered Assignments Table of Contents	29
Overview and Lessons	30

Leveled Questions

Leveled Questions Table of Contents	57
Overview and Lessons	58

Multiple Intelligences

Multiple Intelligences Table of Contents.	89
Overview and Lessons	90

Using Realia/CRA

Using Realia/CRA Table of Contents.	117
Overview and Lessons	118

Choices Board

Choices Board Table of Contents	155
Overview and Lessons	156

Open-Ended Tasks

Open-Ended Tasks Table of Contents	189
Overview and Lessons	190

Problem-Based Learning

Problem-Based Learning Table of Contents . .	219
Overview and Lessons	220

Learning Contracts

Learning Contracts Table of Contents.	251
Overview and Lessons	252

Appendix

Contents of the Teacher Resource CD.	303
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Leveled Questions

Table of Contents

Vertical Alignment Theme: Variables

Leveled Questions Overview58

Grades: K–2

What’s Missing?

Lesson Plans60

Student Reproducibles63

Grades: 3–5

Word Variables

Lesson Plans67

Student Reproducibles69

Grades: 6–8

Discovering Variables

Lesson Plans73

Student Reproducibles75

Grades: 9–12

Multiplication of Binomials

Lesson Plans79

Student Reproducibles83

Leveled Questions Overview

Leveling questions is adjusting the language of a question to the different levels of student readiness. The key to leveling questions is to make the questions accessible for *all* students. Most questioning strategies can be used in whole-group discussions, but it doesn't make sense to use leveled questions in this way. Leveled questions should be used in small homogeneous group discussions or as assignments for students to answer individually. Below are a few guidelines to follow as you level questions for your students.

Below-grade-level students need the questions narrowed, vocabulary support, and examples. While trying to level questions for below-grade-level students, some teachers make the mistake of asking for less. For example, if the on-grade-level question asks students to find the area and perimeter of a shape, the teacher might ask the below-grade-level student to find only the perimeter. This is not a leveled question. A leveled question will still ask for the same information, but use added support to help these students answer the questions.

English language learners need context added to the questions. This might be in the form of pictures or small icons directly next to key words. English language learners also benefit from chunking the sentences. For example, if the on-grade-level question is *What is the average of this set of data?* It would be best written this way for English language learners: *Using this set of data, what is the average?* As English language learners read the question, they know right away that the question is about the set of data. Adding context also means to provide definition of terms. Instead of saying *sum*, use *addition*, *altogether*, or *total*.

Many times, above-grade-level students already know the answers to the questions you will ask. These questions do not provide any kind of challenge for these learners. Instead of wasting their time asking questions that they can answer without any effort, use the sentence stems below to create questions that will challenge these students.

- How many can you create...?
- What would happen if...?
- Defend the best use of...
- Evaluate your ideas...
- Judge your understanding of the problems...
- Debate whether or not...
- How can you improve...?
- Design a test that proves...
- What is the likelihood...?
- Predict the outcome...
- Form a hypothesis...
- What are three ways to classify...?
- Support your reason...
- Make a plan for...
- Propose a solution...
- What is an alternative to...?

Leveled Questions Overview (cont.)

Steps for Using Leveled Questions to Differentiate

1. Start with the whole class topic. (on-grade-level question)

K–2 example: $6 + ? = 10$

3–5 example: Why is it important to estimate an answer in math?

Secondary example: Explain how FOIL ensures that each term in the second factor is multiplied by each term in the first.

2. Open up the question. (above-grade-level question)

K–2 example: Jon has 6 puppies. He wants to have 10 puppies. How many more puppies does he need to buy?

3–5 example: Why is estimating an answer important when solving a problem? Give a real-life example of this.

Secondary example: Defend the argument that the FOIL method is the same as the vertical method. Then, use the distributive property to explain why the FOIL method works.

3. Narrow down the question. (below-grade-level question)




K–2 example: $6 + ? = 10$



3–5 example: Estimate the answer to 503×299 . What strategy did you use to estimate?

Secondary example: Explain how the word *FOIL* helps you multiply binomials.

4. Add context to the language. (English language learners question)

K–2 example: Jon has 6 puppies . He wants to have 10 puppies . How many more puppies  does he need to buy?

3–5 example: Estimate means to find a number that is close to the exact amount. Why is it important to estimate an answer in math?

Secondary example: *FOIL* means first, outer, inner, and last. Tell how the FOIL method works.

What's Missing?


Student: _____ Date: _____

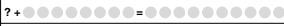
Leveled Questions


What's Missing?


Directions: Use your chips to find the answers.

Addition: Find the missing addends.



1. $6 + 7 = 10$
 $+ ? =$

2. $7 + 8 = 10$
 $? +$  $=$



3. $3 + 7 = 10$
 $+ ? =$

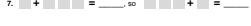


4. $7 + 5 = 10$
 $? +$  $=$



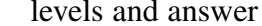
Challenge Question: $7 + 6 + 2 = 10$

$? +$  $+$  $=$

Directions: Use your chips to solve these problems.

6.  $+$  $=$ _____

7.  $=$ _____, so  $+$  $=$ _____

8.  $+$  $=$ _____, so  $=$ _____

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Overview of Activity

- ▶ Students will observe as the teacher takes an unknown number of objects from a total group of counted objects, and then students will figure out the number of missing objects.
- ▶ Students will work in pairs to hide an unknown number of objects from a known total to design problems with missing addends.
- ▶ Students will work in groups based on their proficiency levels and answer leveled questions based on their skills to reinforce and extend their knowledge about missing addends.

How This Strategy Benefits Students

- ▶ Students who are **above grade level** benefit from leveled questions because the questions posed challenge them to use their critical and creative thinking abilities. Above-grade-level students need consistent challenge to grow intellectually.
- ▶ **On-grade-level** students benefit from leveled questions because they are challenged to analyze problems in new ways at their level of development.
- ▶ Leveled questioning helps **below-grade-level** students because there is room for growth and development at their level of achievement.
- ▶ Using leveled questioning with **English language learners** helps them develop mathematical thinking with assistance from the teacher.

Skills Summary

Mathematics Content

Commutative law of addition

Differentiation Strategy

Leveled questions
(See pages 58–59 for more information.)

Differentiation Management Tip

Divide the activity sheets in piles using your fingers. As you walk around the room, you will easily be able to find the right sheet to distribute to the different groups of students.

Learning Standards

- ▶ Students will solve problems with missing addends.
- ▶ Students will learn the commutative law of addition.

What's Missing? *(cont.)*



Whole-Class Activity

1. Count out 10 magnetic chips with the students and drop them into an empty paper bag. Tell students that you are going to put your hand into the bag and take out a bunch of the chips. You will show them how many chips you take out, but they will need to figure out how many are left in the bag.
2. Take out some chips (in this example we will use 6) and put them on the magnetic board as students count them. Ask students how many chips there were when you started. Then explain that if you take the 6 chips and add the ones that are left in the bag, you will have 10 chips.
3. Elicit from students the number sentence indicated and write it on the board ($6 + ? = 10$). Tell students that what they are finding is the missing *addend*—a number that is added in an addition problem; for example, $6 + 4 = 10$ (6 and 4 are addends). Have students figure out the answer.
4. Show students what is left in the bag, and write in the missing addend 4. Count the ones that were put in the bag to see if the answer is correct. (You may do this several times, starting with different numbers of chips, and taking different numbers out of the bag.)
5. Once you have demonstrated this a sufficient number of times, have students work in pairs. Give each pair of students a pile of plastic chips and an empty paper bag. (You can give each pair of students the same number of chips or vary the number depending on students' skill levels.) Tell them to write their problems on a sheet of paper just as you did on the board.
6. Meet again as a class and discuss the process students used to determine the missing numbers. Write some of their number sentences on the board with missing addends and then fill them in as students explain how they arrived at their answers.
7. Tell students that they will now complete special activities about missing numbers (pages 63–65). Place students in ability groups and give each group the appropriate supplies and sheet. Give below-grade-level students the circle page, on-grade-level students the square page, and above-grade-level students the triangle page. English language learners should be grouped according to their mathematical abilities, but they might need the circle sheet that has illustrations on it. Students will be completing problems with leveled questions.
8. Circulate around the room as students complete their work. Help students as necessary.

What's Missing? *(cont.)*

Assessment

1. Observe students as they work on their assignments. Make notes about their progress during the bag activity so that you can assign them the right activity sheet.
2. Distribute the *Leveled Questions Self Assessment* (page 66) to students after the activity sheets are complete. This will give you an idea of how students felt about the assignment. There is a place for you to make notes on this sheet as well.
3. Grade student work and assess what needs to be reinforced or if students are ready to move on to the next concept.

Anchor Activities

- ▶ Students who complete work early can create their own story problems with missing addends and minuends.
- ▶ Students who complete work early can contribute to a class challenge book by writing their own story problems that involve finding the addend.

Name _____

What's Missing?

**Directions:** Use your chips to find the answers.

Word Problem	Answer
1. Jon has 6 puppies. He wants to have 10 puppies. How many puppies does he need to add in order to have 10 puppies?	
2. Maria's mom gave her 10 cookies. Maria ate 8 cookies. How many does she have left?	
3. Mario had 3 baseball cards. His friend gave him more cards. Mario now has 10 cards. How many did his friend give him?	
4. Sasha is grilling 5 hot dogs. She has 10 friends coming over. How many more hot dogs should she grill?	
5. Challenge Question: George has 10 pets. 6 are rabbits. 2 are lizards. The rest are cats. How many cats does he have?	

Directions: Use your chips to solve these problems.

6. $4 + 2 = \underline{\hspace{2cm}}$, so $2 + 4 = \underline{\hspace{2cm}}$

7. $1 + 3 = \underline{\hspace{2cm}}$, so $3 + 1 = \underline{\hspace{2cm}}$

8. $3 + 2 = \underline{\hspace{2cm}}$, so $2 + 3 = \underline{\hspace{2cm}}$

Name _____

What's Missing?



Directions: Use your chips to find the answers. Draw your answer in the next column.

Addition (Find the missing addends.)	Draw your answer.
1. $6 + ? = 10$	
2. $? + 8 = 10$	
3. $3 + ? = 10$	
4. $? + 5 = 10$	
5. Challenge Question: $? + 6 + 2 = 10$	

Directions: Use your chips to solve these problems.

6. $4 + 2 = \underline{\hspace{2cm}}$, so $2 + 4 = \underline{\hspace{2cm}}$

7. $1 + 3 = \underline{\hspace{2cm}}$, so $3 + 1 = \underline{\hspace{2cm}}$

8. $3 + 2 = \underline{\hspace{2cm}}$, so $2 + 3 = \underline{\hspace{2cm}}$

Name _____

What's Missing?



Directions: Use your chips to find the answers.

Addition: Find the missing addends.
1. $6 + ? = 10$
2. $? + 8 = 10$
3. $3 + ? = 10$
4. $? + 5 = 10$
Challenge Question: $? + 6 + 2 = 10$

Directions: Use your chips to solve these problems.

6. + = _____, so + = _____













7. + = _____, so + = _____

8. + = _____, so + = _____

Name _____

Leveled Questions Self Assessment

Directions: Circle the face that you think describes each answer.

	Yes	Kind of	Not really
1. The math problems were too hard.			
2. The math problems were too easy.			
3. The math problems were just right.			
4. I finished all my work.			

Teacher Notes:
