

Ep. 1 Visualizing numbers up to 100 000

Subject/Grade Level:	Mathematics – Grade 4
Title:	Numbers up to 100 000
Competency:	Visualizing, representing and Identifying numbers up to 100 000
KCh Growth Mindset Norm(s):	Empowered – realizes self-worth and takes charge of his/her life Responsible – owns his/her decisions and translates them into action
Critical Issue:	Financial Literacy/budgeting/practicality
Growth mindset:	Perseverance and effort is needed in order to excel in math. Mistakes are important.

I. Objectives

At the end of the session, students should be able to:

- Visualize numbers up to 100 000 with emphasis on numbers 10 001 – 100 000
- Give the place value and value of a digit in numbers up to 100 000

II. Essential Understanding

- Unknown quantities can be determined by grouping together numbers by tens, hundreds, thousands and ten thousands.

III. Essential Questions

- (Overarching Essential Question) How can math help solve real-world problems?
- (Overarching Essential Question) Is math useful in life?
- Will you be able to read, write and represent numbers?

IV. Summary of the Episode

This episode covers key concepts in visualizing numbers up to 100 000 by presenting how to group by numbers/items by tens, hundreds, thousands and ten thousands. Multiple examples are presented in the episode. A presentation on why counting is essential is likewise included.

V. Pre-Viewing (Motivation)

Bring a jar to school. The jar should be full of white beans or candies or any other small object. The teacher should know how many pieces are inside the jar but she does not reveal this to the class. She then asks the class, How many (candies/beans/bottle caps) do you think are inside my jar?

Children are asked to write their guesses on the board.

Once all the children have presented an answer, ask them how they came up with their guesses.

Follow-up questions:

1. What do you observe? Was there a particular pattern or process that you used in order to estimate or guess?

Our first topic is on visualizing numbers up to 100 000. Let's watch.

VI. Viewing Proper

Mathdali Ep 1: Numbers up to 100 000

VII. Post Viewing

1. Questions (re the episode)

- a. What was the episode about?

2. Review Questions (re content)

- a. When did they use to be able to count all the pencils that were donated?
- b. What did they call one group of 10?
- c. If there are 10 groups of ten, what do you have?
- d. How can you form 1000?
- e. How can you form 10 000? 100 000?

Show teaching materials on representing ones, tens, hundreds, etc. Show what a hundred , a ten, a one and a thousand look like.

3. Deepening: My Turn Your Turn Activity

- a. Go back to the jar. Reveal the number of items inside and allow the students to read the number.
- b. After the teacher's turn it will be student's turn
 - I will name something that I know is grouped by tens. Then it will be your turn to give an example.
 - Let us now take turns thinking of items grouped by hundreds/thousands/ten thousands.

4. Group Work/Activity: Discovery Activity (9:50)

- Ask the students to work on the collaborative activity mentioned in the episode.

VIII. Synthesis and Valuing

TPS (Think-Pair-Share)

To summarize, the students will be asked to enumerate the steps on how to represent a grouping by tens, hundreds, thousands and ten thousands.

Ep. 2 Rounding off numbers to the nearest thousands or ten thousands

Subject/Grade Level: Mathematics – Grade 4

Title: Rounding off numbers to the nearest thousands or ten thousands

Competency: Giving the place value and value of a digit in numbers up to 100,000

Critical Issue: _____

Growth mindset norm(s):

I. Objectives

At the end of the session, students should be able to:

- a. differentiate between value and place value
- b. identify the place value and value of a digit from 1001 – 100 000
- c. write numbers in expanded form

II. Essential Understanding

III. Essential Questions

Overarching questions: How can math help solve real-world problems?
Is math useful in life?

Will you be able to tell the place value or value of a number?

IV. Summary of the Episode

Kuya Robbie relays a story where Papa Gipeto and his puppet named Pinoykya get a call for a large order of puppets. They can't seem to get the number of puppets right so they decide to round off the number. Pinoykya asks why Papa Gipeto mentioned a number that was smaller than his originally stated number.

Robbie introduces the term "rounding off". Vic and Joj travel to the world of Papa Gipeto and Pinoykya to learn more about rounding off. The term "rounding off" is explained. A lesson is presented on how to round off to the highest place value. Other examples (such as the mountain and a skateboard) are presented to further strengthen the learning.

To elevate the learning to a higher level, viewers are taught how to round off to a given place value. A KCh game is presented to spark more interest in the viewer.

The episode ends with Papa Gipeto talking to Pinoykya about his successful sale. Pinoykya jokes around with Gipeto and reminds him to cut his hair and beard.

V. Pre-Viewing (Motivation)

1. Distribute show-me boards. Show the number wheel and instruct the children to round off the number to the biggest place value and to write their answers on their show-me boards. Spin the wheel and start the game.
2. Process how they got their answers.
3. Introduce the episode

VI. Viewing Proper **Mathdali Ep 2: Rounding off numbers**

VII. Post Viewing

1. How did you find the episode?
2. What strategies did you learn in rounding off numbers?
 - using the mountain and skateboard
 - changing all the other numbers next to the rounded number to 0
 - which number is closer to the number...etc

VIII. Synthesis and Valuing

1. why do you think is it important to know about rounding off?

Ep. 7 Understanding Division

Subject/Grade Level: Mathematics – Grade 4
Title: Understanding Division

Competency: Dividing 3- to 4-digit numbers by 1-to 2-digit numbers without and with remainder

KCh Growth Mindset Norm(s): Math is about **connections** and communicating.

Critical Issue: Dividing fairly; “hating-kapatid”

I. Objectives

At the end of the session, students should be able to:

- understand the concept of division
- know how to divide numbers with answers that work out evenly
- know how to divide numbers where there is a remainder

II. Essential Understanding

- Understand the concept that division breaks quantities into groups of equal size.
- Understand that division is the inverse of multiplication.

III. Essential Questions

- How do you find out the numbers of objects in each group or numbers of groups?
- How do you solve a division problem and how will learning this help improve math skills?

IV. Summary of the Episode

This episode is about KuyaRobi trying to figure out how many yema candies should he put to each of the four dolls so that his nieces and nephews get equal shares.

V. Pre-Viewing (Motivation)

Write a problem up on the board: Mrs. Bair brought 9 cookies into school to share with Miss Miller and Miss Conrad. How many cookies would each teacher receive?

Ask the students which operation they are using. (division)

Ask the students to discuss in their groups how they would solve this.

Ask volunteers to tell you how to solve the problem. (split method, one for you, one for you, one for me)

Leave the same problem up on the board but change the amount of cookies to 127. Ask the students: Do we want to sit here making 127 tally marks? Ask them if they think there is another way they could do it, let them share if they have any ideas.

Our topic is on “Understanding Division”. Let’s watch.

VI. Viewing Proper

MathDali Episode 7: Understanding Division

VII. Post Viewing

5. **Questions** (Re: the episode)
 - a. What was the episode about?

6. **Review Questions** (Re: content)
 - f. What was the problem of KuyaRobi and the four yema dolls?
 - g. What strategies did they use to get the possible answer?

7. **Deepening: My Turn Your Turn Activity**
 - c. Go back to the given problem: Mrs. Bair brought 127 cookies into school to share with Miss Miller and Miss Conrad. How many cookies would each teacher receive?
 - d. After the teacher's turn, ask the students to answer some exercises.

8. **Group Work/Activity: Discovery Activity (9:50)**
 - Ask the students to work on the collaborative activity mentioned in the episode.

VIII. Synthesis and Valuing

To summarize, the students will be asked to write their personal reflections on their math journals.

Ep. 8 Estimating Quotients

Subject/Grade Level: Mathematics – Grade 4

Title: Estimating Quotients

Competency: Estimating the quotient of 3- to 4-digit dividends by 1- to 2-digit divisors with reasonable results.

KCh Growth Mindset Norm(s): Perseverance and effort are needed in order to excel in math. Mistakes are valuable.

Critical Issue: Proper Time Management / Saving Time and Energy

I. Objectives

At the end of the session, students should be able to:

- understand the concept and importance of estimation; and
- finding the estimated quotient of 3- to 4-digit dividends by 1- to 2-digit divisors with reasonable results.
- use multiples, compatible numbers and rounding off in estimating quotients

II. Essential Understanding

We can use estimation to determine the reasonableness of solutions.

III. Essential Questions

- How do we know if our solution is correct?
- What strategies have I learned that help me solve large division problems?

IV. Summary of the Episode

This episode is about KuyaRobi and Shoks trying to figure out how many fishes could sleep in each of the octopuses' tentacle.

V. Pre-Viewing (Motivation)

Bring a jar to school. The jar should be full of white beans or candies or any other small object. The teacher should know how many pieces are inside the jar but she does not reveal this to the class. She then asks the class, how many (candies/beans/bottle caps) do you think are inside my jar? If these candies are to be distributed equally to the students, how many candies would each student get?

Children are asked to write their guesses on the board.

Once all the children have presented an answer, ask them how they came up with their guesses.

Follow-up questions:

What do you observe? Was there a particular pattern or process that you used in order to estimate or guess?

Our topic is on "Estimating Quotients". Let's watch.

VI. Viewing Proper

MathDali Episode 8: Estimating Quotients

VII. Post Viewing

9. Questions (Re: the episode)

- a. What was the episode about?

10. Review Questions (Re: content)

- h. What was the problem of Shoks and KuyaRobi? Why did they need to get an answer in a shorter time possible?
- i. What strategies did they use to get the possible answer?

11. Deepening: My Turn Your Turn Activity

- e. Go back to the jar. Reveal the number of items inside and allow the students to read the number.
- f. After the teacher's turn, ask the students to make an estimate of how many candies will each of them get?

12. **Group Work/Activity: Discovery Activity (9:50)**

- Ask the students to work on the collaborative activity mentioned in the episode.

**VIII. Synthesis and Valuing
TPS (Think-Pair-Share)**

To summarize, the students will be asked to enumerate the methods that can be used to find an estimated quotient and give examples for each.

Ep. 9 Order of Operations

Subject/Grade Level: Mathematics – Grade 4

Title: Order of Operations

Competency: Applying the MDAS Rule in solving series of operations

KCh Growth Mindset Norm(s): Perseverance and effort is needed in order to excel in math.

Critical Issue: Importance of following rules

I. Objectives

At the end of the session, students should be able to:

- understand the need for an agreed upon order in which to perform operations; and
- apply the standard order of operations to a variety of number expressions.

II. Essential Understanding

Just like any language, Math involves basic principles which we all use in order to communicate and understand each other well.

III. Essential Questions

1. Why do we need an order of operations?
2. Why are Multiplication and Division Done before Addition and Subtraction?

IV. Summary of the Episode

The four friends saw a lot of colored balls, so they thought of building a sculpture out of these balls. They solved a series of operations and then the answer will determine the number of balls

that they need to use. KuyaRobi serves as the judge of whose sculpture has the correct number of balls used.

V. Pre-Viewing (Motivation)

Give examples of easier math problems that only have one operation in them. Example: $5 + 6$. What if there is more than one operation? Then show examples of operations with more than one operation. Examples: $7 + 8 \div 4$, $3 \times 8 + 9 \times 7$, etc. Ask the class to solve these harder expressions without telling them if they are right. You will collect a bunch of different answers because the students will be confused about which operation they should do first. Then explain that there is a method of doing these harder problems called MDAS.

Explain this by connecting it to cooking a meal. If we have all of the different instructions for a meal, but do them in the wrong order, our meal isn't going to taste very good. It is very important to cook and solve equations in the correct order!

Our topic is on "Order of Operations". Let's watch.

VI. Viewing Proper
MathDali Episode 9: Order of Operations

VII. Post Viewing

13. **Questions** (Re: the episode)

- a. What was the episode about?

14. **Review Questions** (Re: content)

- j. Why did the four friends have different solutions to the given question?
- k. Why is it important to follow a certain order/rule in dealing with series of operations?
- l. What happens when you do not follow the MDAS Rule?

15. **Deepening: My Turn Your Turn Activity**

- I. Give more exercises. Using a practice worksheet, have students use the order of operations acronym to work through each of the problems.
- II. Remind students that this activity is to be completed alone or by pair.
- III. Tell students to follow the order according to MDAS.
- IV. Use the key to check student answers.

16. **Group Work/Activity: Discovery Activity**

Ask the students to work on the collaborative activity mentioned in the episode.

VIII. Synthesis and Valuing
TPS (Think-Pair-Share)

Allow students to ask questions that they still have and make comments about what they have learned.

Ep. 10 Prime and Composite Numbers

Subject/Grade Level: Mathematics – Grade 4

Title: Prime and Composite Numbers

Competency: Identifying prime and composite numbers

KCh Growth Mindset Norm(s): **Math is about creativity and making sense** (showing prime and composite numbers through visual representations)

Math is about connections and communicating (determining whether a number is a prime or composite number and that a composite number has a set of prime factors)

Critical Issue:

I. Objectives

At the end of the session, students should be able to:

- identify prime and composite numbers
- differentiate between prime and composite numbers

II. Enduring Understanding

- A prime number is a whole number greater than 1, whose only whole-number factors are 1 and itself.
- 1 and 2 are special numbers. 1 is not a prime number. 2 is the only even number that is a prime number.
- A composite number is a whole number that can be divided evenly by numbers other than 1 or itself.

III. Essential Questions

- What is a prime number? How do you identify a prime number?
- What is a composite number? How do you identify a composite number?
- What is the difference between a prime and a composite number?

IV. Summary of the Episode

There was a debate of partylists on which are the correct factors of 12. It was mentioned that numbers that have more than 2 factors are called composite numbers. By visual representations, it was shown how to determine if a number is prime or composite. There was also an interview with “number 1” that clarifies that 1 is neither prime nor composite. It is a special number, as well as 2, since 2 is the only even number that is prime.

V. Pre-Viewing (Motivation)

Materials: three baskets; three sets of fish (each set contains fish numbered from 1-100)

Divide the class into three groups. The teacher gives each group a basketful of cardboard fish. Each fish has a number written on it. The groups are to race against each other in getting all the factors of a given number. Once they are done, the group members are to shout "*We're done fishing!*" in unison.

Our topic is on "Prime and Composite Numbers". Let's watch.

VI. Viewing Proper

MathDali Episode 10: Prime and Composite Numbers

VII. Post Viewing

17. Questions (Re: the episode)

- a. What was the episode about?
- b. What do you like most about the episode?

18. Review Questions (Re: content)

- m. Is 12 a prime or a composite number?
- n. What strategy did they use to determine if 12 is prime or composite?

19. Deepening: My Turn Your Turn Activity

Put the students in groups. Give each group an activity sheet and counters. The students must work together to find all the factors of a whole number, then identify the number as prime or composite. They must use the counters to make arrays to represent the multiplication equations that correlate with the whole number. The students must communicate precisely to others within their groups.

20. Group Work/Activity: Discovery Activity

- Ask the students to work on the collaborative activity mentioned in the episode.

VIII. Synthesis and Valuing

To summarize, the students will be asked to write their personal reflections on their math journals / reflection notes.

Ep. 11 Greatest Common Factor

Subject/Grade Level: Mathematics – Grade

Title: Greatest Common Factor

Competency: Finding the greatest common factor (GCF) of two numbers

KCh Growth Mindset Norm(s): Empowered - Realizes self-worth and takes charge of his/her life.

Reflective - Attempts to understand the world around him/her.

Critical Issue: Comparing/Growth Mindset

I. Objectives

At the end of the session, students should be able to:

- find the common factors and the greatest common factor (GCF) of two numbers using the following methods: listing, prime factorization, and continuous division
- solve real-life problems involving GCF of 2 given numbers.

II. Enduring Understanding

- The greatest common factor (GCF) is the largest number that is a factor of two or more numbers.
- Listing method, prime factorization and continuous division can be used to find the GCF of numbers.
- Prime factorization means a number is written as the product of all its prime factors.

III. Essential Questions

- How can we determine the GCF of a set of numbers?
- How can we use GCF in solving problems?

IV. Summary of the Episode

The ants need to construct boats to be able to load their food and survive from the flood. They have to determine the most number of boats that they need to make to put equal numbers of rice and bread pieces.

V. Pre-Viewing (Motivation)

Factor Review:

Divide the students into 2 groups. One group will list all the factors of a number (ex. 24); the other group will list all the factors of a different number (ex. 54).

Check for understanding while writing each factor on a sticky note and placing on the board. Ask the students to find the common factors and then identify the biggest among them.

Our topic is on “Greatest Common Factors”. Let’s watch.

VI. Viewing Proper

MathDali Episode 11: Greatest Common Factors

VII. Post Viewing

1. **Questions** (Re: the episode)
 - a. What was the episode about?

2. **Review Questions** (Re: content)

- o. How do you get the GCF of 12 and 16 using the listing method?
- p. How do you get the GCF of 12 and 16 using prime factorization?
- q. How do you get the GCF of 12 and 16 using continuous division?

3. **Deepening: My Turn Your Turn Activity**

Put the students in groups. Give each group an activity sheet with this problem to solve:

Anthony's father gathered 16 mangoes in the morning and 24 sugar apple (atis) in the afternoon from his farm. He wants to put the fruits he gathered in baskets. What is the largest number of mangoes and of sugar apples that can be put in the baskets if there should be the same number in each basket?

Have the students solve the problem by getting the GCF of 16 and 24 using the listing method, prime factorization and continuous division.

4. **Group Work/Activity: Discovery Activity**

- Ask the students to work on the collaborative activity mentioned in the episode.

VIII. Synthesis and Valuin

To summarize, the students will be asked to write their personal reflections on their math journals / reflection notes.

Ep. 12 Least Common Multiple

Subject/Grade Level: Mathematics – Grade 4

Title: Least Common Multiple

Competency: Finding the least common multiple (LCM) of two numbers

KCh Growth Mindset Norm(s): **Empowered** - Realizes self-worth and takes charge of his/her life.

Reflective - Attempts to understand the world around him/her.

Critical Issue: Comparing/Growth Mindset

I. Objectives

At the end of the session, students should be able to:

- find the least common multiple (LCM) of two numbers using the following methods: listing, prime factorization, and continuous division
- solve real-life problems involving LCM of 2 given numbers.

II. Enduring Understanding

- Finding the least common multiple allows us to determine when two cyclical events will occur simultaneously
- Listing method, prime factorization and continuous division can be used to find the LCM of numbers.

III. Essential Questions

- How can we determine the LCM of a set of numbers?
- How does writing numbers using multiples help us solve real-world problems?

IV. Summary of the Episode

Senior Robi wanted to buy equal number of roses from Joj and Jai. They wanted to know how many bundles of roses Robi should buy from each girl, considering that Joj sells bundles of 8 roses while Jai sells bundles of 6 roses.

V. Pre-Viewing (Motivation)

Ask the kids to sit in a circle.

Give them a number. Example: 7. Choose someone to go first and they will start counting with 1, next person says 2, and the next person says 3, so on and so on around the circle. The object of the game is to count quickly (have a nice rhythm going) and say "buzz" whenever you get to a number that is a **multiple** of the number you chose. So once they get to 14, 21 or any other multiple of 7, that person will say "buzz" and the counting continues.

If the person forgets and says the number instead of "buzz," the round ends and they have to start the counting over at 1. Counting also begins again if the person takes a long pause on their turn. The counting should be automatic. After several times around the circle, you can choose a new number.

Our topic is on "Least Common Multiple". Let's watch.

VI. Viewing Proper

MathDali Episode 12: Least Common Multiple

VII. Post Viewing

5. **Questions** (Re: the episode)
 - a. What was the episode about?

6. **Review Questions** (Re: content)

- r. How do you get the LCM of 12 and 30 using the listing method?
- s. How do you get the LCM of 12 and 30 using prime factorization?
- t. How do you get the LCM of 12 and 30 using continuous division?

7. **Deepening: My Turn Your Turn Activity**

Put the students in groups. Each group shall play the Bizz-Buzz Game:

The students will be given two numbers. When the group counts and one student reaches a multiple of the first number, they will say "bizz" instead. As in the first game, when a student reaches a multiple of the second number, they will say "buzz" instead. When a student reaches a **common multiple** of both numbers, they will say "bizz-buzz!"

8. **Group Work/Activity: Discovery Activity**

Ask the students to work on the collaborative activity mentioned in the episode.

Have the students solve the problem by getting the LCM of 13, 16 and 21 using the listing method, prime factorization and continuous division.

VIII. Synthesis and Valuing

To summarize, the students will be asked to write their personal reflections on their math journals / reflection notes.

Ep. 13 Understanding Fractions

Subject/Grade Level: Mathematics – Grade 4

Title: Understanding Fractions

Competency: Identifying proper fractions, improper fractions and mixed numbers

KCh Growth Mindset Norm(s): **Math is about creativity and making sense.**
Value depth over speed.

Critical Issue:

I. Objectives

At the end of the session, students should be able to:

- identify proper fractions, improper fractions, and mixed numbers
- change improper fraction to mixed numbers and vice versa.

II. Enduring Understanding

- The numerator represents how many parts of that whole are being considered, while the denominator represents the total number of parts created from the whole.
- An improper fraction is a fraction whose numerator is equal to or larger than the denominator.
- A mixed number is a number that is made up of a whole number and a fraction.

III. Essential Questions

- How can I determine the fraction when given parts and a whole?
- How are mixed numbers and improper fractions related?

IV. Summary of the Episode

There was a group of treasure-hunters who discovered about fractions.

V. Pre-Viewing (Motivation)

Ask for two student volunteers to come in front. Each student will receive a $\frac{1}{2}$ fraction circle. Ask the students to think about what two $\frac{1}{2}$ would equal. Have these students pair up with each other and see what they have now: 2 halves. Two halves equal 1 whole.

Then, call another student to join the two students in front. Tell the students to form a group of 3. Now, ask them how much they have: $1\frac{1}{2}$. Guide students to say this number as $\frac{3}{2}$ (three halves). Discuss $\frac{3}{2}$ as an improper fraction and $1\frac{1}{2}$ as a mixed number.

Our topic is on "Understanding Fractions". Let's watch.

VI. Viewing Proper

MathDali Episode 13: Understanding Fractions

VII. Post Viewing

9. Questions (Re: the episode)

- a. What was the episode about?
- b. What do you like most about the episode?

10. Review Questions (Re: content)

- u. What are some examples of proper fractions? Improper fractions? Mixed numbers?
- v. What strategy did they use to convert an improper fraction to a mixed number and vice versa?

11. Deepening: My Turn Your Turn Activity

12. Group Work/Activity: Discovery Activity

- Ask the students to work on the collaborative activity mentioned in the episode.

VIII. Synthesis and Valuing

To summarize, the students will be asked to write their personal reflections on their math journals / reflection notes.

Ep. 14 Adding and Subtracting Similar Fractions

Subject/Grade Level:	Mathematics – Grade 4
Title:	Adding and Subtracting Dissimilar Fractions
Competency:	Adding and Subtracting Dissimilar Fractions
KCh Growth Mindset Norm(s):	Math is about creativity and making sense. Value depth over speed.
Critical Issue:	

I. Objectives

At the end of the session, students should be able to:

- perform addition and subtraction of similar fractions.
- solve problems involving addition and/or subtraction of fractions
- reduce fractions to lowest terms

II. Enduring Understanding

- Fractions that have the same or a common denominator are called similar or like fractions.
- Fractions in simplest form or lowest term are those whose numerator and denominator have no common factor other than 1.

III. Essential Questions

- How can I add and subtract similar fractions?
- How can I reduce fractions to lowest terms?

V. Summary of the Episode

Jai had a whole bibingka. Her friends Joj, Igi Boy and Vic got some parts of the bibingka. How much bibingka did they get from Jai's bibingka? What part of the bibingka was left with Jai?

VI. Pre-Viewing (Motivation)

Post these two questions on the board. Then ask the students to read, analyze and try to solve each of them.

1. Cake was the dessert for dinner. Two-thirds of it was left over. If a visitor arrives and is offered one-third of the cake, then what portion of the cake is left over?
2. Lyn bought some special plastic sticker to use for decorating her walls. She used $\frac{2}{6}$ for one wall and $\frac{3}{6}$ for another wall. How many of her plastic stickers did she use?

Our topic is on “Adding and Subtracting Similar Fractions”. Let’s watch.

VI. Viewing Proper

MathDali Episode 14: Adding and Subtracting Similar Fractions

VII. Post Viewing

13. Questions (Re: the episode)

- a. What was the episode about?
- b. What do you like most about the episode?

14. Review Questions (Re: content)

- w. What strategy did they use to add and subtract similar fractions?
- x. What strategy did they use to reduce fractions to lowest terms?

15. Deepening: My Turn Your Turn Activity

Let the students practice the skills of adding and subtracting similar fractions by playing the MathDali games:

- a. Apple O Fraction
- b. Help the Helper / Food Fractions

16. Group Work/Activity: Discovery Activity

- Ask the students to work on the collaborative activity mentioned in the episode.

VIII. Synthesis and Valuing

To summarize, the students will be asked to write their personal reflections on their math journals / reflection notes.

Ep. 15 Adding and Subtracting Dissimilar Fractions

Subject/Grade Level:	Mathematics–Grade4
Title:	Adding and Subtracting Dissimilar Fractions
Competency:	Adding and Subtracting Dissimilar Fractions
KCh Growth Mindset Norm(s):	Math is about creativity and making sense. Value depth over speed.

Critical Issue:

I. Objectives

At the end of the session, students should be able to:

- visualize addition and subtraction of dissimilar fractions
- perform addition and subtraction of dissimilar fractions
- solve problems involving addition and/or subtraction of fractions

II. Enduring Understanding

- Fractions that have different denominators are called dissimilar or unlike fractions.
- Equivalent fractions have the same value, even though they may look different.

III. Essential Questions

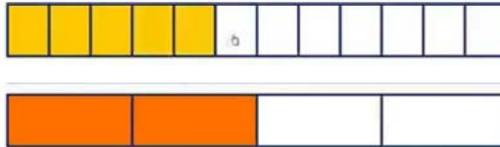
- How can you add and subtract dissimilar fractions?
- How do you make fractions equivalent?

IV. Summary of the Episode

Joj and Jai made a mural painting – the fraction wall – entitled the “Isa ang Sukat, Iba-iba ang Tawag” and showed it to Vic and Igi Boy. This mural was used to discuss equivalent fractions. The concept of equivalent fractions is then used to show how to add and subtract unlike fraction. Later on, when the mural suddenly disappeared, the four friends explored the process of adding and subtracting dissimilar fractions without using the fraction wall.

V. Pre-Viewing (Motivation)

Post these two figures on the board.



Ask the students to name the fractions represented by the figures.

Let the students think of what must be the result when these two fractions are combined.

Accept any possible answers from the students.

Our topic is on “Adding and Subtracting Dissimilar Fractions”. Let’s watch.

VI. Viewing Proper

MathDali Episode 15: Adding and Subtracting Dissimilar Fractions

VII. Post Viewing

17. Questions (Re: the episode)

- What was the episode about?
- What do you like most about the episode?

18. Review Questions (Re: content)

- How did they get the pair/group of equivalent fractions?
- How did they add and subtract dissimilar fractions?

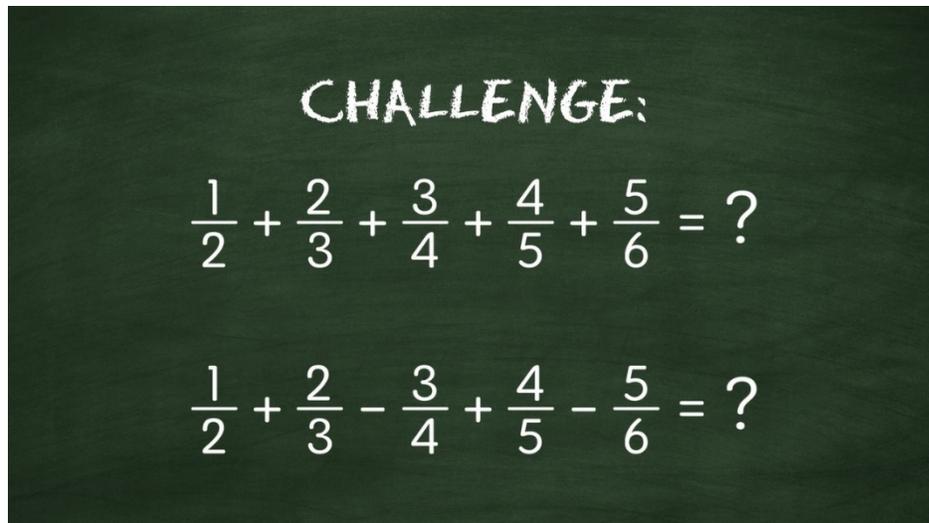
19. Deepening: My Turn Your Turn Activity

Let the students practice the skills of adding and subtracting similar fractions by playing the MathDali games:

- a. Change is Coming
- b. Thrifty Decimal

20. Group Work/Activity: Discovery Activity

Ask the students to work on the Challenge activity mentioned in the episode.



VIII. Synthesis and Valuing

To summarize, the students will be asked to write their personal reflections on their math journals / reflection notes.

3 things that they remember about the lesson

2 examples of what they learned

1 question on something that they do not understand

Ep. 16 Understanding Decimals

Subject/Grade Level: Mathematics – Grade 4

Title: Understanding Decimals

Competency: Reading, writing and comparing decimals to thousandths

KCh Growth Mindset Norm(s): Math is about creativity and making sense.
Value depth over speed.

I. Objectives

At the end of the session, students should be able to:

- visualize decimal numbers using models like blocks, grids, number lines and money to show the relationship to fractions
- rename decimal numbers to fractions, and fractions whose denominators are factors of 10 and 100 to decimals.

II. Enduring Understanding

- Every fraction can be written as a decimal number.
- Decimals have place values related by groups (powers) of 10.

III. Essential Questions

- How can I use decimals in real life?
- Other than fractions, how do I communicate a quantity that is smaller than a whole?

IV. Summary of the Episode

Professor (played by Igi Boy) showed to his students his invention – a machine that has the capacity to shrink an object or person put as target. They used this to understand the concept of decimals. Professor shrinks Vic, Jai and Joj so that the students could see the very tiny portions of the rectangular prism.

V. Pre-Viewing (Motivation)

As an introduction to decimals, post a 2-column chart labeled “Fractions” and “Decimals”. Ask students to think about when they have seen or heard fractions or decimals in the different places around them - at home, in stores, at a sports games, etc. Ask students to provide examples of a fraction or decimal and how they were used.

Sample chart:

Fractions	Decimals
$\frac{1}{2}$ dozen eggs	8.5 liters of gasoline
quarter after 3 pm	P 39.75
$\frac{1}{4}$ teaspoon	32.8 °C

Share with the students that they will begin exploring decimals. Part of what they will explore is how fractions and decimals are similar and how they are different.

Our topic is on “Understanding Decimals”. Let’s watch.

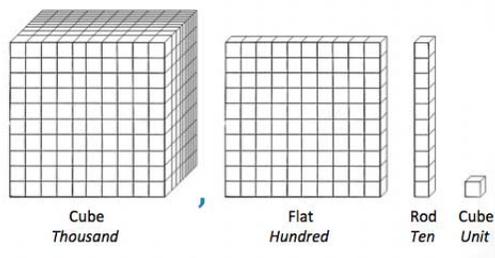
VI. Viewing Proper

MathDali Episode 16: Understanding Decimals

VII. Post Viewing

21. **Questions** (Re: the episode)
 - a. What was the episode about?
 - b. What do you like most about the episode?
22. **Review Questions** (Re: content)
 - aa. How did they get the pair/group of equivalent fractions?
 - bb. How did they add and subtract dissimilar fractions?
23. **Deepening: My Turn Your Turn Activity**

Provide students with sets of Base Ten Blocks. Start by modeling whole numbers. Determine the value of a unit (1), a rod (10), a flat (100) and a cube (1000).



Allow students time to work with a partner to model the question with their cubes and to discuss their answers before sharing with the class. Ask students to explain their reasoning. (i.e., “There are 10 units in a rod, so a rod equals 10.” or “There are 10 flats in a cube and one flat equals 100, so 10 of these equals 1000.”)

Change the whole. Suppose that a flat represents 1 whole, what is the value of a rod? ($1/10$ or 0.1) Suppose that a flat represents 1 whole, what is the value of a unit? ($1/100$ or 0.01) Again, allow students time to work with a partner to model the question with their cubes and to discuss their answers before sharing with the class. Students should be asked to explain how they know. (i.e., “There are 10 rods in a flat, so one rod would be $1/10$ or 0.1 of the flat.” or “There are 10 flats in a cube. If one flat equals 1, then 10 flats would equal 10.”) Repeat this activity as needed, changing the whole each time.

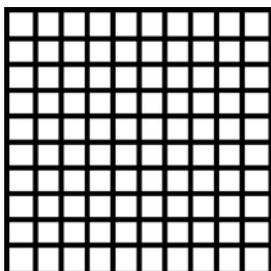
Note: If base 10 blocks manipulatives are not available, pictures of these base 10 blocks can also be used instead.

Let the students practice the skills of reading and writing decimals by playing the MathDali games:

- a. Change is Coming
- b. Thrifty Decimal

24. Group Work/Activity: Discovery Activity

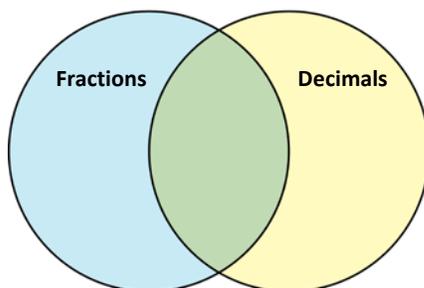
Students will work in pairs/groups to build decimal models. Provide each group of students with 2 to 3 sheets of the 100's grids.



Have students create a model to show thousandths using the hundreds grid. They need to discuss and decide how they can represent 1 whole, 1 tenth, 1 hundredth, and 1 thousandth in the same model. Once they have decided, students should create their model by taping the hundreds grids together. Their model might look like one of the following: Note: In both of these models, color parts of the whole. The red represents 0.001, the blue represents 0.01, and the orange represents 0.1. The whole rectangle represents 1 whole.

VIII. Synthesis and Valuing

Have students work in pairs or groups to complete the Venn diagram comparing fractions and decimals. Each student should fill out his or her own Venn diagram with ideas generated within the group.



To summarize, the students will be asked to write their personal reflections on their math journals / reflection notes.

3 things that they remember about the lesson

2 examples of what they learned

1 question on something that they do not understand

Ep. 17 Reading, Writing, and Rounding Decimal Numbers

Subject/Grade Level: Mathematics – Grade 4

Title: Reading, Writing, and Rounding Decimal Numbers

Competency: Reading, writing and rounding decimals to hundredths

KCh Growth Mindset Norm(s): Math is about creativity and making sense.
Value depth over speed.

I. Objectives

At the end of the session, students should be able to:

- give the place value and the value of a digit of a given decimal number through hundredths
- read and write decimal numbers through hundredths
- round decimal numbers to the nearest whole number and tenths

II. Enduring Understanding

- The value of a decimal number is determined by the place of its digits.
- Decimals have place values related by groups (powers) of 10.
- Rounded decimal numbers are approximate and not exact.

III. Essential Questions

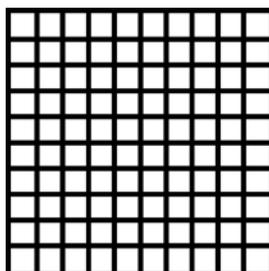
- Does rounding a number change its value relative to other numbers?
- In what situations might a person want to round a number to the nearest whole number? to the nearest tenth?
- Why is it helpful to round decimal? How is rounding used in everyday life? In which situations should decimals be rounded?
- How do you round a decimal?

IV. Summary of the Episode

There was a group of four caterpillars who were discussing about the decimal numbers' "special powers" – the ability of decimal numbers to measure lengths of the leaves that are not exact.

V. Pre-Viewing (Motivation)

Give each student a 10×10 grid. Ask each of them to color/shade some of the units of the grid to form the initial letter of their first/last name.



Then, tell the students to determine the fraction and decimal that represents the shaded and the unshaded part of the grid. For example, letter L covers 37 units of the grid. Therefore, $37/100$ or 0.37 of the grid was shaded and $63/100$ or 0.63 of the grid was unshaded.

Our topic is on “Reading, Writing, Rounding Decimal Numbers”. Let’s watch.

VI. Viewing Proper

MathDali Episode 17: Reading, Writing, and Rounding Decimal Numbers

VII. Post Viewing

25. **Questions** (Re: the episode)

- a. What was the episode about?
- b. What do you like most about the episode?

26. **Review Questions** (Re: content)

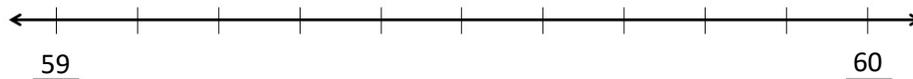
- cc. How did they read and write the decimal number 0.26 ?
- dd. How did they round the decimal number 0.26 to the nearest whole number? to the nearest _____ tenth?

27. **Deepening: My Turn Your Turn Activity**

Round each decimal to the nearest tenth using number line.

1. Round 59.14 to the nearest whole number.

Locate 59.14 on the number line.



Which is closer to 59.14 ? 59 or 60

59.14 rounded to the nearest whole number is _____.

2. Round 59.14 to the nearest tenth.

Locate 59.14 on the number line.

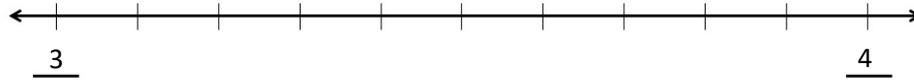
Which is closer to 59.14 ? 59.1 or 59.2

59.14 rounded to the nearest tenth is _____.

59.2

3. Round 3.86 to the nearest whole number.

Locate 3.86 on the number line.

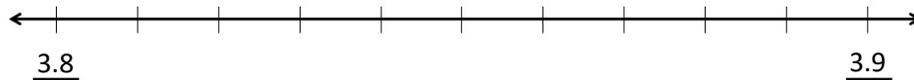


Which is closer to 3.86? 3 or 4

3.86 rounded to the nearest whole number is _____.

4. Round 3.86 to the nearest tenth.

Locate 3.86 on the number line.



Which is closer to 3.86? 3.8 or 3.9

3.86 rounded to the nearest tenth is _____.

28. Group Work/Activity: Discovery Activity

Make the students analyze the thinking of the three fictional students related to their decimal rounding answers.

Their teacher asked the class to round 2.17 to the nearest tenth.

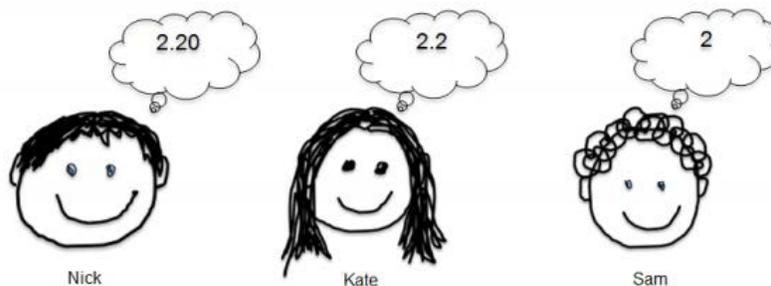
Nick thinks the answer is 2.20.

Kate thinks the answer is 2.2.

Sam thinks the answer is 2.

Which student do you agree with?

Explain why the other two students are not correct.



Facilitate a think-write-share to elicit evidence of students reasoning about which student they agree with and why.

VIII. Synthesis and Valuing

To summarize, the students will be asked to write their personal reflections on their math journals / reflection notes.

3 things that they remember about the lesson

2 examples of what they learned

1 question on something that they do not understand

Ep. 18 Comparing and Ordering Decimal Numbers

Subject/Grade Level: Mathematics – Grade 4

Title: Comparing and Ordering Decimal Numbers

Competency: Comparing and ordering decimal numbers

KCh Growth Mindset Norm(s): Math is about connections and communicating.
Math is about creativity and making sense.

I. Objectives

At the end of the session, students should be able to:

- compare decimals using the $>$, $<$ and $=$ symbols
- put decimals numbers in order of size

II. Enduring Understanding

- Decimal parts can be compared and ordered according to size of parts.
- A number can be written as decimals that have the same value.

III. Essential Questions

- How does the placement of a digit affect the value of a decimal number?
- How do we compare and order decimals?
- Why is it helpful to understand how to compare and order decimals?How is comparing and ordering of decimals used in everyday life?

IV. Summary of the Episode

Vic and Igi Boy like competing against each other. There was a competition between the two on who runs faster, who jumps farther, who makes more spins, who blinks more and who has the longer strand of hair. Comparing of decimal numbers is applied to determine who the winner is.

On the second part of the episode, ordering of decimal numbers is used to determine Joj's favorite food and the color of the longest shorts that Vic will sew.

V. Pre-Viewing (Motivation)

Show the class a 1-peso coin and ask how many 10-centavo coins it takes to equal one 1-peso coin. (10) What fraction of a 1-peso coin is a 10-centavo coin? ($\frac{1}{10}$) Review how to write it as a decimal. (0.1)

Then, ask how many 1-centavo coins it takes to equal one 1-peso coin. (100) What fraction of a 1-peso coin is 1-centavo? ($\frac{1}{100}$) Review how to write it as a decimal. (0.01)

Our topic is on "Comparing and Ordering Decimal Numbers". Let's watch.

VI. Viewing Proper

MathDali Episode 18: Comparing and Ordering Decimal Numbers

VII. Post Viewing

29. **Questions** (Re: the episode)

- What was the episode about?
- What do you like most about the episode?

30. **Review Questions** (Re: content)

ee. Compare the following using $>$, $<$ and $=$ signs.

9.216 seconds ___ 9.215 seconds

1.75 meters ___ 1.85 meters

8.1 spins ___ 7.5 spins

2.097 seconds ___ 2.098 seconds

0.634 meters ___ 0.624 meters

ff. Arrange from smallest to greatest.

0.95 m, 0.8 m, 0.75 m

gg. Arrange from greatest to smallest.

0.8 kg, 0.75 kg, 1.25 kg

31. **Deepening: My Turn Your Turn Activity**

In this task, students will create a garden of vegetables in which each vegetable can be expressed in tenths. Students will determine the fraction and decimal number represented by each type of vegetable. Then students will create their own flower garden in which each flower color can be expressed in hundredths. They will identify the fraction and decimal number represented by each flower color.

Students will follow the directions below from the “Decimal Garden” task sheet.

Decimal Gardens: Flower Garden

1. Use 10 unifix cubes to make a design for a vegetable garden. For example, use red for tomatoes, yellow for corn, and green for green beans. (A picture of a rectangular bar divided into 10 equal parts may be an alternative.)
2. Record your unifix cube vegetable garden by coloring the grid below to match the colors of your unifix cubes.
3. Use the table below to record each vegetable in your garden and its color.
4. Determine each vegetable’s fractional part of the whole garden. Record that fraction and the corresponding decimal.

Color	Vegetable	Fraction	Decimal Number

5. Next, design a 10 x 10 flower garden on graph paper using a different color to represent each type of flower in the garden. You may use as many different colors as you like to represent different types of flowers.
6. Make a table like the one above to record each type of flower. Be sure you record each flower color with a fraction and a decimal number.
7. Write a number sentence comparing 2 flower types of flowers. Use $>$, $<$ or $=$.
8. Be ready to display and explain your decimal gardens.

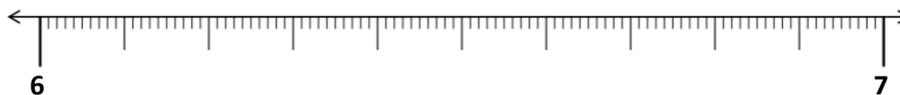
Answer the following formative assessment questions:

- Which vegetable section of your garden is the largest? Smallest? How do you know?
- How are these numbers (fraction, decimal number) alike? Different?
- How will your fractions change when you change from a 10-frame to a 10 x 10 grid?
- Which is larger, 0.1 or 0.01? How do you know?

32. **Group Work/Activity: Discovery Activity**

Students will place decimal numbers (tenths and hundredths) on a number line and order them.

To introduce this task, discuss as a large group, the structure of a number line that includes decimals. Students need to recognize that like a ruler, tick marks of different lengths and thicknesses represent different types of numbers. One way to begin this task is to display the number line shown below:



As a class, discuss where the following decimal numbers would be located on the number line: 6.5, 6.25, 6.36, 6.72, 6.9. Ask students how to place the following decimal numbers: 6.5 and 6.9. Students should be able to place these decimal numbers on the number line as shown below.

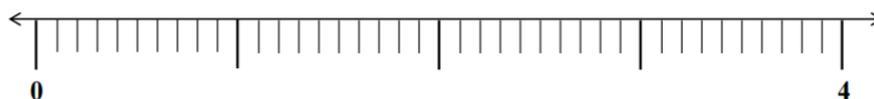
Once the tenths have been labeled, work as a class to place the decimal numbers 6.25, 6.36, and 6.72. While placing these decimal numbers on the number line, use the “think aloud” strategy to explain how to place it in the correct location on the number line. Alternatively, ask students to explain where to place these decimal numbers on the number line.

Answer the following formative assessment questions:

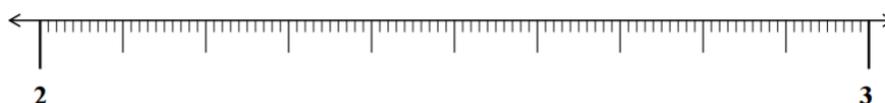
- What factors are you considering as you decide where to place whole numbers on your number line?
- Which tick marks are used to represent decimal numbers to the tenths? Hundredths?

Place the decimal numbers on the number line. Then, arrange the decimals from smallest to greatest. Explain how you know the decimal numbers are placed and ordered correctly.

- a. 3.7 2.3 1.6 0.9 1.2



- b. 2.53 2.19 2.46 2.02 2.85



VIII. Synthesis and Valuing

To summarize, the students will be asked to write their personal reflections on their math journals / reflection notes.

3 things that they remember about the lesson

2 examples of what they learned

1 question on something that they do not understand

Ep. 19 Identifying Parallel, Intersecting, and Perpendicular Lines

Subject/Grade Level: Mathematics – Grade 4

Title: Identifying Parallel, Intersecting, and Perpendicular Lines

Competency: Identifying parallel, intersecting, and perpendicular lines

KCh Growth Mindset Norm(s): Math is about creativity and making sense.
Math is about connections and communicating.

I. V. V.Objectives

- Describe and illustrate parallel, intersecting, and perpendicular lines
- Draw parallel, intersecting, and perpendicular lines using a ruler and a set square
- Identify parallel, intersecting, and perpendicular lines in real-life situations

II. Enduring Understanding

- Lines can be classified as intersecting or non-intersecting.
- Intersecting lines that form a right angle are perpendicular.
- Parallel Lines are lines that are always the same distance apart. They will never cross or intersect.

III. Essential Questions

- How do you prove that two lines are parallel or perpendicular?
- How can you describe the relationship between two lines?
- How do we draw parallel, intersecting, and perpendicular lines and identify these in two-dimensional figures?

IV. Summary of the Episode

There were a group of points who were talking to each other. They were in a straight line and extend infinitely to two different directions. They called themselves line.

Robi, Igi Boy, Joj, Jai and Vic were discussing about points, line, and line segments. Later on, they were talking about the different pairs of lines, such as parallel lines, intersecting lines and perpendicular lines.

V. Pre-Viewing (Motivation)

Show photos of geometric figures around us that show the different pairs of lines. Ask the students to pair-share any mathematical observations they can make about the display. Then invite volunteers to share their ideas with the class.

Our topic is on “Identifying Parallel, Intersecting, and Perpendicular Lines”. Let’s watch.

VI. Viewing Proper

MathDali Episode 19: Identifying Parallel, Intersecting, and Perpendicular Lines

VII. Post Viewing

33. Questions (Re: the episode)

- a. What was the episode about?
- b. What do you like most about the episode?

34. Review Questions (Re: content)

- a. What examples of points, line and line segments do you see around us?
- b. What examples of parallel, intersecting, and perpendicular lines do you see around us?

35. Deepening: My Turn Your Turn Activity

Ask for a pair of student-volunteers to come in front. Using only their own body, without using any other materials, show:

- a. Parallel lines
- b. Intersecting lines
- c. Perpendicular lines

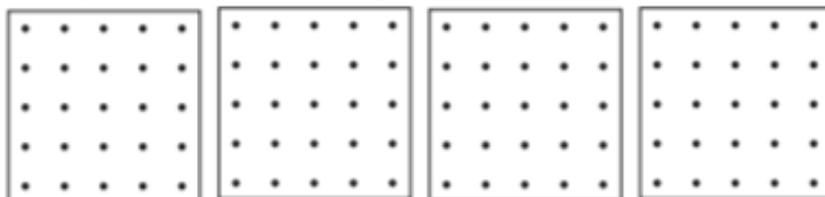
Students may be allowed to stand, lie on the floor, etc.

36. Group Work/Activity: Discovery Activity

Practice to identify and describe parallel, perpendicular, and intersecting lines using concrete objects and pictorial models. Ask the students to do the following activity.

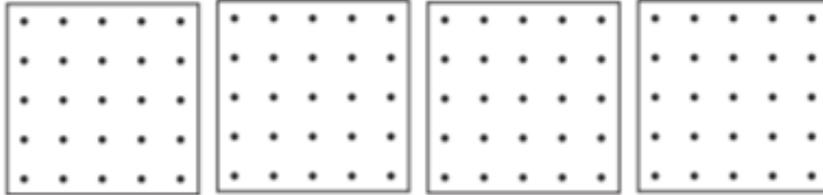
ALPHABET LINES

On a geoboard, make 4 capital letters that have 2 or 3 parallel lines in them. Use red rubber bands to make the lines that are parallel to each other. Use a ruler and colored pencils to record your work below. Show the parallel lines in red.



How do you know for sure that the lines you made in red are parallel?

On your geoboard, make 4 other capital letters that have perpendicular lines. Record your work below. Draw arrows to show where the lines meet at right angles.



Draw an arrow to show where the two lines intersect.

VIII. Synthesis and Valuing

Think-Pair-Share:

- Explain why there are no intersecting lines that are not perpendicular.
- Explain why not all non-intersecting are parallel lines.

Ep. 20 Angles

Subject/Grade Level: Mathematics – Grade 4

Title: Angles

Competency: Describing and Illustrating Different Angles

KCh Growth Mindset Norm(s): Questions are really important.

Depth is more important than speed.

I. Objectives

- Identify the three main kinds of angles
- Describe and illustrate different angles (right, acute, and obtuse) using models
- Give examples of acute, obtuse, and right angles

II. Enduring Understanding

-

III. Essential Questions

- How are angles measured?
- How are angles classified?
- When is an angle considered to be a right angle? An acute angle? An obtuse angle?

IV. Summary of the Episode

There was a group of children who were watching their favorite TV show “AngMgaKwentoni Lolo Asyong”. While Lolo Asyong was telling the stories “SinaPagong at Kuneho”, “Si Pagong at Si Matsing”, “Si Juan TamadsaMakabagongMundo”, these children found geometric terms, such as rays, vertex, and the different kinds of angles from the stories.

V. Pre-Viewing (Motivation)

Have students use their manipulatives (Popsicle sticks) to model the various types of acute and obtuse angles, as well as to form a right angle. You may also allow them to discuss tricks they can use to remember the names of the three types of angles.

Our topic is on “Angles”. Let’s watch.

VI. Viewing Proper

MathDali Episode 20: Angles

VII. Post Viewing

37. Questions (Re: the episode)

- What was the episode about?
- What do you like most about the episode?

38. Review Questions (Re: content)

- What kinds of angles were discussed in the episode?
- What examples of angles do you see around us?
- What measuring tool is used to measure angles? How is it used?

39. Deepening: My Turn Your Turn Activity

Let the students practice the skills of identifying different angles by playing the MathDali games:

Number Angles

Object Angles

40. Group Work/Activity: Discovery Activity

Have the students do sit ups to make themselves into the three types of angles. When they are lying down with their knees bent, they form an obtuse angle. When they sit up partway, they form a right angle. When they complete the sit up, they form an acute angle. Guide students in doing several sit ups while chanting "Obtuse, right, acute! Obtuse, right, acute!" This will drill the meanings of the words into their heads.

VIII. Synthesis and Valuing

In pairs, instruct students to look around the room and find various angles in the classroom, such as the corner of the blackboard, the legs of a chair, or the opening of a slightly open cabinet. Have them sort these angles into one of the three categories. Discuss the fact that most of the angles that they found were probably right angles, as well as why this might be so.

Ep. 25 Telling Time and Elapsed Time

Subject/Grade Level:	Mathematics – Grade 4
Title:	Telling Time and Elapsed Time
Competency:	Finding the elapsed time in minutes and seconds
KCh Growth Mindset Norm(s):	Math is about creativity and making sense. Math is about connections and communicating.

I. Objectives

- find the elapsed time in minutes and seconds.
- estimate the duration of time in minutes.
- solve problems involving elapsed time.

II. Enduring Understanding

-

III. Essential Questions

- What part does elapsed time play in our life?
- How do I determine how much time has passed between events?
- How do I make an estimate for the length of time of a determined event and know if the estimate is reasonable?

IV. Summary of the Episode

V. Pre-Viewing (Motivation)

Using a teacher clock (large clock for teacher's use), provide students with the opportunity to tell different times. For example set the clock to 5:00, 2:45, 3:15, 11:30, 7:03. Students can record answers on a white board or respond orally. Have students turn and talk to another

student and share before sharing with the whole group. Gauge student understanding of telling time. Have a class discussion if needed to review how to tell time on an analog clock.

Our topic is on “Telling Time and Elapsed Time”. Let’s watch.

VI. Viewing Proper

MathDali Episode 25: Telling Time and Elapsed Time

VII. Post Viewing

41. Questions (Re: the episode)

- a. What was the episode about?
- b. What do you like most about the episode?

42. Review Questions (Re: content)

- a. How were we measuring time?
- b. How did you know what time you would end on?

43. Deepening: My Turn Your Turn Activity

Let the students practice the skills of identifying different angles by playing the MathDali games:

What Time is It?

Missing Time

Have the students answer the following problems by group.

- a. John left home at 3:37 p.m. to walk to his friend's house. It took him 18 minutes.

What time did he arrive?

- b. Molly made cupcakes. They baked for 45 minutes. She took them out of the oven

at 5:30 p.m. At what time did she put them into the oven?

- c. Dad began cutting grass on Saturday morning at 9:48 a.m. He finished the entire yard by 10:53 a.m. How long did it take him to cut the entire yard?

Students can create their own situational elapsed time problems.

44. Group Work/Activity: Discovery Activity

Have students brainstorm activities they do at school. As a class, create a *School* table accounting for how they spend their day at school. Have them create a column that has the start time, end time, and the elapsed time of the activity. Example shown below:

Activity	Start Time	End Time	Elapsed Time
Math	11:15 AM	12:00 PM	45 minutes

VIII. Synthesis and Valuing

The students can write a quick reflection about time. Write about the strategies that they have learned or questions on things that they want to be clarified.