

Panel 1

**\*\* Welcome to Ms. Guthrie's \*\***  
**\*\* 3rd Grade Math Class \*\***  
 \*\*\*\*\*

**Agenda:**

- 1) Our lesson and WA State Standards.
- 2) Switch into teacher/student role.

**Note:** Minimal instructions on DyKnow software and Tablet PCs as needed from my teacher's aides as needed.

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Panel 2

**Content Standards**

1. **The student understands and applies the concepts and procedures of mathematics.**  
 To meet this standard, the student will:  
 1.1. Understand and apply concepts and procedures from number sense--number and numeration; computation; and estimation.
3. **The student uses mathematical reasoning.**  
 To meet this standard, the student will:  
 3.1. Analyze information.  
 3.2. Make predictions, inferences, conjectures, and draw conclusions.
5. **The student understands how mathematical ideas connect within mathematics, to other subject areas, and real-world situations.**  
 To meet this standard, the student will:  
 5.2. Relate mathematical concepts and procedures to other disciplines.

<http://www.k12.wa.us/CurriculumInstruct/mathematics/pubdocs/mathematics.doc>

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Panel 3

**Announcements and Reminders:**

1. Remind your parents to sign up for their parent/teacher conference meeting next week.
2. Bring in field trip permission slips.
3. Do problems #8, #11, #13, and #15 on page 81 from our book for tomorrow.
4. Remember: We have a test two weeks from Friday.

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Panel 4

**An Exercise to Get Started:**

Using your paper decoding sheet, write the letters associated with the following dot pattern. Please work alone.

Tell them to work alone.

Talk through this one.

•	•	•	•
•	•	•	•
↓	↓	↓	↓

Ask them what they got. Then poll next page.

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Panel 5

What answer did you get?

Vote **A** if you got: CABD

Vote **B** if you got: CBDA

Vote **C** if you got something else

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Panel 6

Form a conjecture about why people got different answers.  
Write your conjecture here:

Moral:

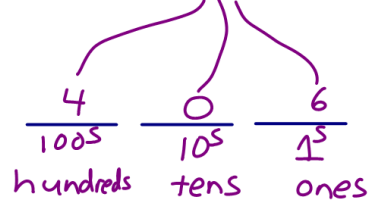
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Panel 7

Representing Numbers with the Binary System:

- + We are used to using the decimal or base 10 system
- + What does a base 10 representation mean?

$406_{10}$  which we write as 406



4 hundreds plus  
0 tens plus  
6 ones → 406

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Panel 8

Base Ten (Decimal) Compared to Base Two (Binary):

- + In base ten there are \_\_\_\_\_ digits.
- + In base ten the digits go from 0 through \_\_\_\_\_.
- + In base ten the places are powers of \_\_\_\_\_.
- + In base two there are \_\_\_\_\_ digits.
- + In base two the digits go from 0 through \_\_\_\_\_.
- + In base two the places are powers of \_\_\_\_\_.

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Panel 9

I will show what number  $110_2$  represents, then you will try one:

**Step 1:** Write it down.

<u>1</u>	<u>1</u>	<u>0</u>
4 (fours)	2 (twos)	1 (ones)

**Step 2:** Add the places up.

one four + one two + no ones

**Step 3:** Record the final answer.

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Let them replay my work.

Panel 10

Determine what number  $101_2$  represents:

**Step 1:** Write it down.

<u>1</u>	<u>0</u>	<u>1</u>
4 (fours)	2 (twos)	1 (ones)

**Step 2:** Add the places up.

**Step 3:** Record the final answer.

Let them try. Then they submit and replay.

Panel 11

Table to Complete:

Binary	Decimal	Binary	Decimal
0	→	1	→
10	→	11	→
100	→	101	→
110	→	111	→

<http://faculty.plattsburgh.edu/albert.cordes/bindec.html>

Panel 12

A Conjecture about Properties of Odd and Even Values:

Team up with a partner for this exercise.

+ Write a conjecture that describes a property of all odd numbers (as compared to all even numbers) when expressed in binary in the box provided below:

Have them submit + discuss.

Panel 13

Fashion meets Mathematics:



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Panel 14

Wrapping Up:

- a) We will start the next class with a quiz on converting values from decimal to binary.
- b) I will use DyKnow Monitor to block out other applications (you won't be able to use the web site converter)!
- c) Practice by reviewing and replaying your DyKnow notes from home tonight.

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