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| **THEME:** | Binary numbers |
| **DATE**: | 11 – 09 – 2024 |
| **CLASS**: | Js 3 |
| **TIME**: | 8:40-09:20am |
| **DURATION** | 40 MINUTES |
| **PERIOD** | 3 & 4 |
| **SUBJECT**: | Mathematics |
| **UNIT TOPIC:** | Binary Numbers |
| **LESSON TOPIC:** | Conversion of numbers from one base to another. |

**SPECIFIC OBJECTIVE**: By the end of the lesson, students should be able to

1. Convert numbers from base 2 to other bases
2. Convert numbers from other bases to base two
3. Convert numbers from base 10 to other bases

**INSTRUCTIONAL RESOURCES:** Charts and flash cards

**LESSON PRESENTATION**

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| **STEP 1** | **PREVIOUS KNOWLEDGE:** the students have knowledge of binary numbers from js2 where they were taught how to convert numbers from base 10 to base 2. | | Students recall. |
| **STEP 2** | **EXPLORATION:**  The teacher introduces the topic with the following questions:   1. What are the characteristics of binary number system? 2. State steps in converting numbers from other bases to binary 3. Can you convert a decimal number to binary? | | Students make attempt to answer the questions. |
| **STEP 3**  **Objective 1;**  **Objective 2;**  **Objective 3;** | **DISCUSSION:**  **Converting Base Two Numbers to other bases**  Example:   1. Convert 100012 to a number in base 4.   Solution  First convert 100012 to base 10 then convert to base 4.  100012 =  =  = 16 + 0 + 0 + 0 + 1  = 1710  Convert to base 4  4 17  4 4 R 1  4 1 R 0  0 R 1 = 1014   1. Convert 1111012 to a number in base 6.   Solution  First convert 1111012 to base 10 then convert to base 6.  1111012 =  =  = 32+16 + 8 + 4 + 0 + 1  = 6110  6 61  6 10 R 1  6 1 R 4  0 R 1 = 1416 | | Students listen attentively and take down notes. |
| **STEP 4** | **APPLICATION: convert 356 to binary**  First convert to base 10  356 = 3x61 + 5x60  = 18 + 5  = 2310  2 23  2 11 R 1  2 5 R 1  2 2 R 1  2 1 R 0  0 R 1 = 101112  356 = 101112 | | Students ask questions on the topic which the teacher answers. |
| **STEP 5** | **EVALUATION:** the teacher evaluates the students with the following questions:   1. Convert 2445 to a number in base 2 2. Convert 110213 to a number in base 5 | | The students answer the questions. |
| **Assignment**   1. Convert 6547 to a number in base 2 2. Convert 72210 to a number in base 7   **References**  **New concept mathematics for Jss3 by A. A. Arigbabu et al.**  **New general mathematics for Jss3 by M/ F. Macrae et al.** | |  |