Question 1: Convert 41_8 to a binary number.

Solution:

Given number is 41_8

$41_8 = (4 * 8^1) + (1 * 8^0)$

$= 4 * 8 + 1 * 1$

$= 32 + 1$

$= 33 \text{(Decimal number)}$

Now convert this decimal number to a binary number.

$2 \underline{| 33}$

$2 \underline{| 16} \text{ -- } 1$

$2 \underline{| 8} \text{ -- } 0$

$2 \underline{| 4} \text{ -- } 0$

$2 \underline{| 2} \text{ -- } 0$

$\quad 1 \text{ -- } 0$

The binary number is 100001_2

Answer: $41_8 = 100001_2$

Question 2: Convert 27_8 to a binary number.

Solution:

Given number is 27_8

$27_8 = (2 * 8^1) + (7 * 8^0)$

$= 2 * 8 + 7 * 1$

$= 16 + 7$

$= 23$ (Decimal number)

Now convert this decimal number to a binary number.

2 | 23
2 | 11 -- 1
2 | 5_ -- 1
2 | 2_ --1
2 | 1_ -- 0
2 | 0_ -- 1

The binary number is 10111_2

Answer: $27_8 = 10111_2$

Question 3: Convert 10_8 to a binary number.

Solution:

Given number is 10_8

$10_8 = (1 * 8^1) + (0 * 8^0)$

$= 1 * 8 + 0 * 1$

$= 8 + 0$

$= 8$ (Decimal number)

Now convert this decimal number to a binary number.

2 | 8 -- 0
2 | 4 --0
2 | 2 -- 0
    1

The binary number is 1000_2

Answer: $10_8 = 1000_2$

Question 2: Convert 27_8 to a binary number.

Solution:

Given number is 27_8

$27_8 = (2 * 8^1) + (7 * 8^0)$

$= 2 * 8 + 7 * 1$

$= 16 + 7$

$= 23$ (Decimal number)

Now convert this decimal number to a binary number.

```
2 | 23
2 | 11 -- 1
2 | 5  -- 1
2 | 2  -- 1
2 | 1  -- 0
2 | 0  -- 1
```

The binary number is 10111_2

Answer: $27_8 = 10111_2$

Question 3: Convert 10_8 to a binary number.

Solution:

Given number is 10_8

$10_8 = (1 * 8^1) + (0 * 8^0)$

$= 1 * 8 + 0 * 1$

$= 8 + 0$

$= 8$ (Decimal number)

Now convert this decimal number to a binary number.

```
2 | 8 -- 0
2 | 4 -- 0
2 | 2 -- 0
    1
```

The binary number is 1000_2

Answer: $10_8 = 1000_2$