Binary arithmetic practice

1.

```
   63        00111111
 + 8       +00001000
   71
```

2.

```
   65        01000001
 - 8       +00001000
   57
```

3.

```
                    s4   u4
   0 0 1 0          +2    2
 + 1 1 0 0          -4   12
```

4.

```
                    s4   u4
   1 0 0 0          -8    8
 + 0 1 0 0          +4    4
```

5.

```
                    s4   u4
   0 1 1 0          +6    6
 - 0 0 1 0          +2    2
```

6.

```
                    s4   u4
   1 1 1 1          -1   15
 + 1 1 1 0          -2   14
```

7.

```
                    s4
   0 1 0 1          +5
 - 0 0 1 1          +3
```

8.

```
                    s4
   1 0 0 1          -7
 - 1 1 1 0          -2
```

9.

```
                    s4
   0 1 0 1          +5
 + 0 0 1 0          +2
```

10.

```
                    s4
   1 1 0 0          -4
 - 0 1 0 0          -4
```

Unsigned Binary <-> Decimal Conversion

x16 (2^4)	+ x8 (2^3)	+ x4 (2^2)	+ x2 (2^1)	+ x1 (2^0) =

x16 (2^4)	+ x8 (2^3)	+ x4 (2^2)	+ x2 (2^1)	+ x1 (2^0) =

Two's Complement Binary <-> Decimal Conversion

x -16 - (2^4)	+ x8 (2^3)	+ x4 (2^2)	+ x2 (2^1)	+ x1 (2^0) =

x -16 - (2^4)	+ x8 (2^3)	+ x4 (2^2)	+ x2 (2^1)	+ x1 (2^0) =

Synchronous circuit analysis



