

Class Prep 3: 2.2.1 to 2.2.2

```
library(cmna)
```

Chapter 2: Error Analysis

Section 2.2.1: Binary Numbers

```
as.integer(2^31 - 2)
## [1] 2147483646
as.integer(2^31 - 1)
## [1] 2147483647
as.integer(2^31)
## Warning: NAs introduced by coercion to integer range
## [1] NA
-2147483646L
## [1] -2147483646
-2147483646L - 1L
## [1] -2147483647
-2147483646L - 2L
## Warning in -2147483646L - 2L: NAs produced by integer overflow
## [1] NA
-2147483646L
## [1] -2147483646
as.integer(0.5)
## [1] 0
as.integer(1.9)
## [1] 1
```

```
0xFACE
```

```
## [1] 64206
```

```
2^32
```

```
## [1] 4294967296
```

```
class(2^32)
```

```
## [1] "numeric"
```

Section 2.2.2: Floating Point Numbers

```
2^31
```

```
## [1] 2147483648
```

```
2^40
```

```
## [1] 1.099512e+12
```

```
0/0
```

```
## [1] NaN
```

```
NaN == NaN
```

```
## [1] NA
```

```
sqrt(-1)
```

```
## Warning in sqrt(-1): NaNs produced
```

```
## [1] NaN
```

```
Inf - Inf
```

```
## [1] NaN
```

```
c(1, 2, 3, 4, NA, 5, 6)
```

```
## [1] 1 2 3 4 NA 5 6
```

```
matrix(c(1, 2, NA, 4, NA, 6, NA, 8, 9), 3)
```

```
##      [,1] [,2] [,3]
## [1,]    1    4  NA
## [2,]    2   NA    8
## [3,]   NA    6    9
```

```
1/0
```

```
## [1] Inf
```

```
1/Inf
```

```
## [1] 0
```

```
Inf/Inf
```

```
## [1] NaN
```

```
Inf == Inf
```

```
## [1] TRUE
Inf == -Inf
## [1] FALSE
Inf > 100
## [1] TRUE
Inf < 100
## [1] FALSE
-Inf > 100
## [1] FALSE
1/(-0)
## [1] -Inf
-0
## [1] 0
1/-Inf
## [1] 0
1/sqrt(-0)
## [1] -Inf
```