# CosmicWimpout

## 2023-03-28

### `roll.dice` function

Rolls a set of dice in Cosmic Wimpout

**Input:** - n.dice: number of dice to roll - wild (boolean): whether the wild die is in the set of dice

**Output:** - dice: set of dice - wild: the wild die (NULL if wild not rolled)

```r
roll.dice <- function(n.dice, wild){
  if(wild){
    n.dice <- n.dice-1
    w <- sample(size=1,c(10,2:6))
    dice <- sample(size=n.dice,c(10,2:6),replace=TRUE)
  }
  else{
    w <- NULL
    dice <- sample(size=n.dice,c(10,2:6),replace=TRUE)
  }

  return(list(dice=dice,wild=w))
}
```

```r
roll.dice(5,TRUE)
```

```
## $dice
## [1] 10  3  3 10
##
## $wild
## [1] 10
```

```r
roll.dice(4,FALSE)
```

```
## $dice
## [1] 10  4  3  5
##
## $wild
## NULL
```

### `score` function

Scores a roll.

**Input:** - A Comic Wimpout roll (`roll.dice` function defined above) - Starting score to add on to

**Output:** - Score: Player score (excludes using wild die as an individual 5/10) - wild.used: tells player whether the wild die was used to complete a set - dice.remaining: tells player how many dice they have for their next roll - must.continue (boolean): tells player if they need to continue to roll.

```r
score <- function(roll,score=0){
```

```r
wild.used <- FALSE
w <- roll$wild; if(is.null(w)) wild.used <- TRUE
r <- roll$dice

must.continue <- FALSE
dice.remaining <- length(r)

for(i in c(10,6:2)){
  n <- length(which(r==i))

  if(n==4){
    if(w==i|w==3){ # if wild matches i or wild completes 5
      score <- score + i*100
      wild.used <- TRUE

      must.continue <- TRUE # all five dice scored
    }
    else{ # do not use wild
      # score 3/4
      score <- score + i*10
      dice.remaining <- dice.remaining-3

      # if 4th is a 10 or 5
      score <- score + (i==5|i==10)*i
      dice.remaining <- dice.remaining - (i==5|i==10)
    }
  }
  else if(n==3){
    score <- score + i*10
    dice.remaining <- dice.remaining-3
    must.continue <- TRUE # triple
  }
  else if(n==2){
    if((w==i|w==3)&!wild.used){
      score <- score + i*10
      wild.used <- TRUE
      must.continue <- TRUE # triple
    }
    else{
      # if 5/10 dice, score them, remove two dice
      score <- score + (i==5|i==10)*i*2
      dice.remaining <- dice.remaining - (i==5|i==10)*2
    }
  }
  else if(n==1){
    # if 5/10 die, score it, remove one dice
      score <- score + (i==5|i==10)*i
      dice.remaining <- dice.remaining - (i==5|i==10)
  }
}

dice.remaining <- dice.remaining + !wild.used
if(dice.remaining==0) must.continue <- TRUE
```

```
  return(list(score=score,wild.used=wild.used,dice.remaining=dice.remaining,must.continue=must.continue)
}
```

```
roll <- roll.dice(5,wild=TRUE)
roll
```

```
## $dice
## [1]  4 10  2  4
##
## $wild
## [1] 3
```

```
score(roll)
```

```
## $score
## [1] 50
##
## $wild.used
## [1] TRUE
##
## $dice.remaining
## [1] 3
##
## $must.continue
## [1] TRUE
```