Exercise I

1. Identify valid and invalid identifiers
    a. total,
    b. Sum
    c. .fine.with.dot
    d. tot@l
    e. 5um
    f. _fine,
    g. TRUE
    h. .0ne
    i. this_is_acceptable
    j. Number5

2. Create a numerical variable **r** with value 27. Then evaluate the following expression A=pi*r*r and B=pi*r^2
3. Create two variables with values : b=12 and c=-12.
   Evaluate the expression a=b+c
4. Create a variable s=TRUE. Negate the variable.
5. Create two variables a=15 and b=4. Observe the output of a/b and a%%b.
6. Create three logical variables x=TRUE , y= FALSE and z= TURE. Observe the output of the following expressions
    a. x & y
    b. x & z
    c. x | y
    d. x | z
    e. !x & y

7. Create a matrix : x.mat <-matrix(1:12,nrow=3,ncol=4)
    a. Examine the default dimension names of the matrix
    b. Assign some dimnames to the matrix :
        i. dimnames(x.mat) <- list(letters[1:3],letters[1:4])
    c. Combine matrices:
        i. xx <- cbind(x.mat,x.mat),
        ii. xxx <- rbind(x.mat,x.mat),
        iii. rbind(xx,xxx)
8. Create a vector x <- 1:10,
    a. names(x) <- letters[x]; the purpose of this statement?
    b. x[1:3]
        i. Output?

c. x[c(1,10)]
    i. Output?
d. x[c(-1,-2)]
    i. Output?
e. x[x > 5]
    i. Output?
f. x[c("a","d")]
    i. Output?
g. x[]
    i. Output?
h. jj1 <- matrix(1:100,ncol=10)
    i. Output?
i. jj1[1:5,]
    i. Output?
j. jj1[1:4,x[x <3]]
    i. Output?

9. Create a matrix: x.mat <- matrix(1:10,ncol=2)
    a. The output of the following commands
    b. x.mat+1
    c. x.mat + x.mat
    d. x.mat %*% t(x.mat)