week1

```
x <- 1:10
y <- 10:1
ls()
```

```
## [1] "x" "y"
```

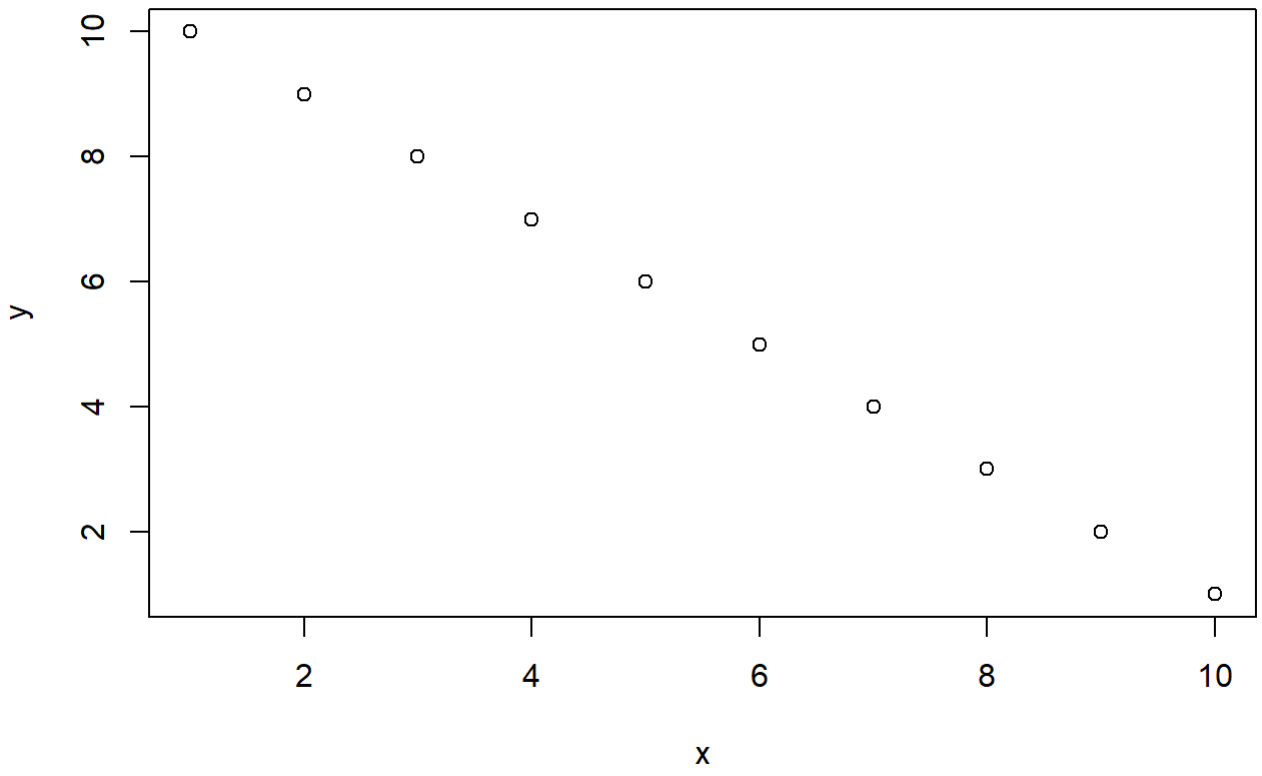
```
x
```

```
##  [1]  1  2  3  4  5  6  7  8  9 10
```

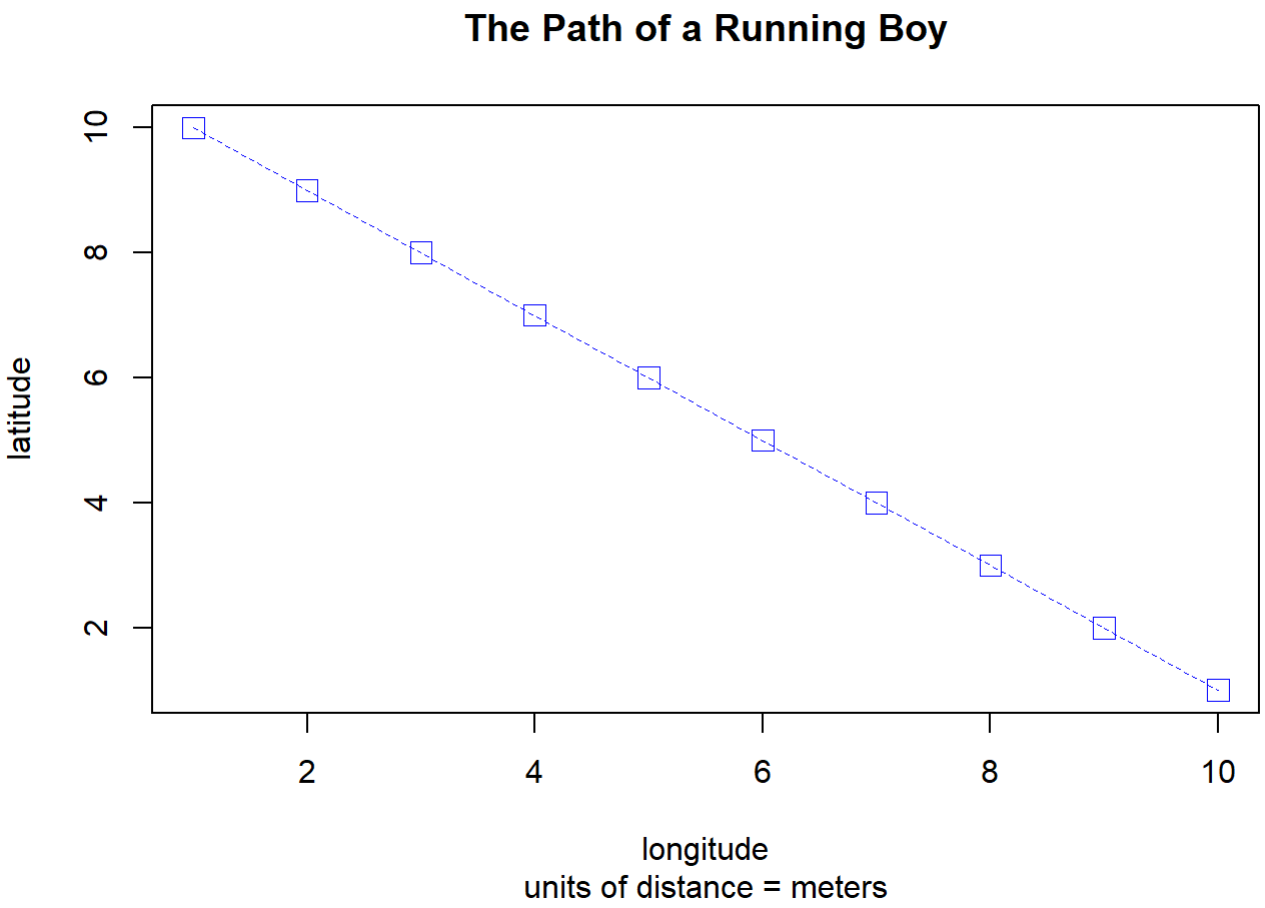
```
y
```

```
##  [1] 10  9  8  7  6  5  4  3  2  1
```

```
plot(x,y)
```

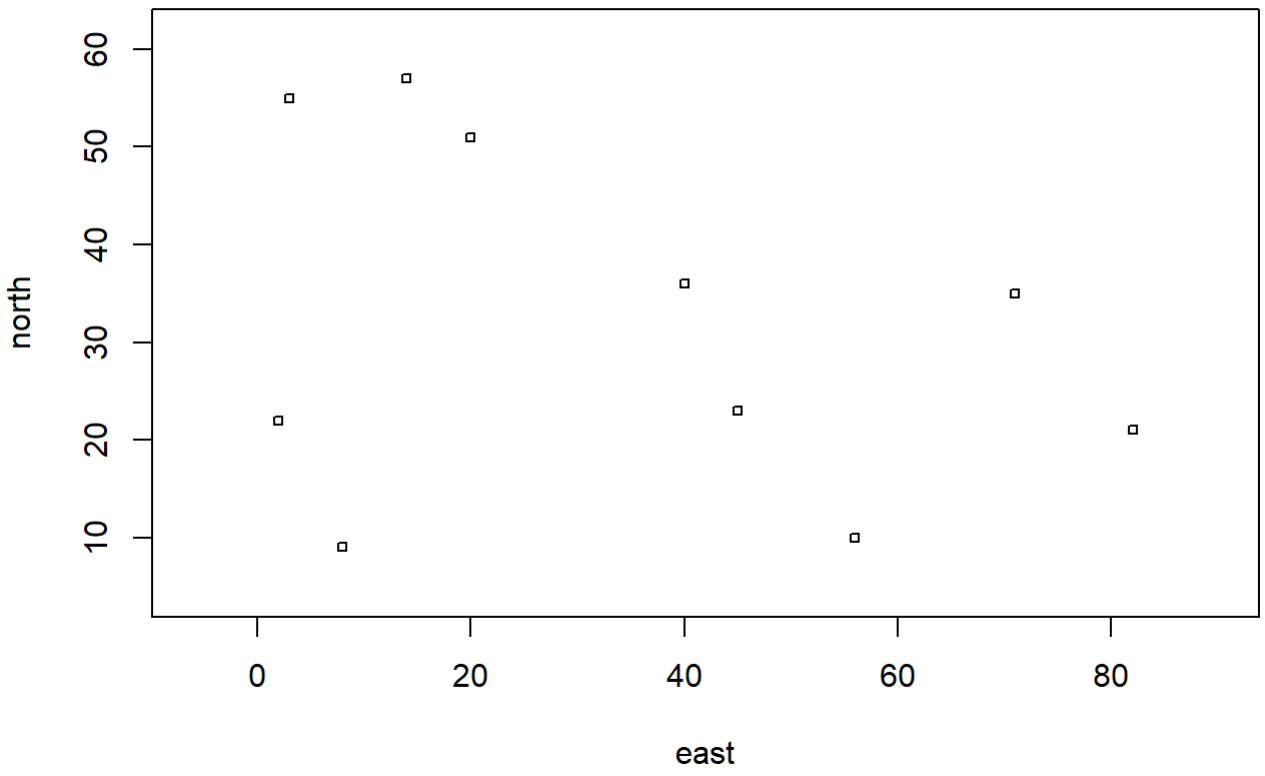


```
plot(x,y, type="o",
     main = "The Path of a Running Boy",
     sub = "units of distance = meters",
     xlab = "longitude",
     ylab = "latitude",
     lty = 2,
     lwd = .75,
     col = "blue",
     pch = 0,
     cex = 1.5)
```



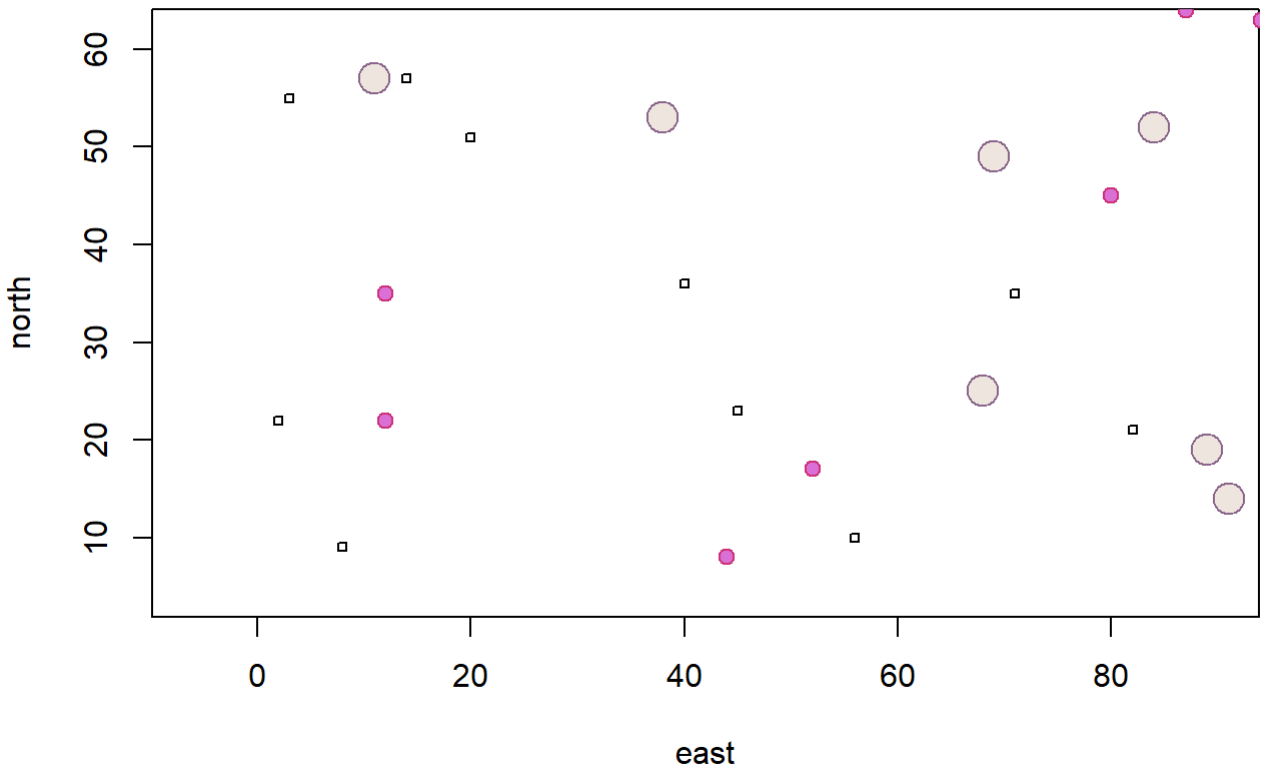

```
#lty is linetype
#lwd is lineweight
#pch is point symbol
#cex is symbol scale
```

```
x <- 1:100
y <- 1:100

east <- sample(x, size = 10, replace = TRUE)
north <- sample(y, size = 10, replace = TRUE)
#replace puts the number back to possibly be selected again

symbols(east, north, squares = rep(.75, 10), inches = FALSE)
```




```
#the squares rep thing repeats the .75 size of the square 10 times
```

```
symbols(east, north, squares = rep(.75,10), inches = FALSE)

symbols(sample(x, 10, replace = TRUE),
        sample(y, 10, replace = TRUE),
        circles = rep(.75,10),
        inches = FALSE,
        fg = "violetred3",
        bg = "orchid",
        add = TRUE)

symbols(sample(x, 10, replace = TRUE),
        sample(y, 10, replace = TRUE),
        circles = rep(1.5,10),
        inches = FALSE,
        fg = "plum4",
        bg = "seashell2",
        add = TRUE)
```



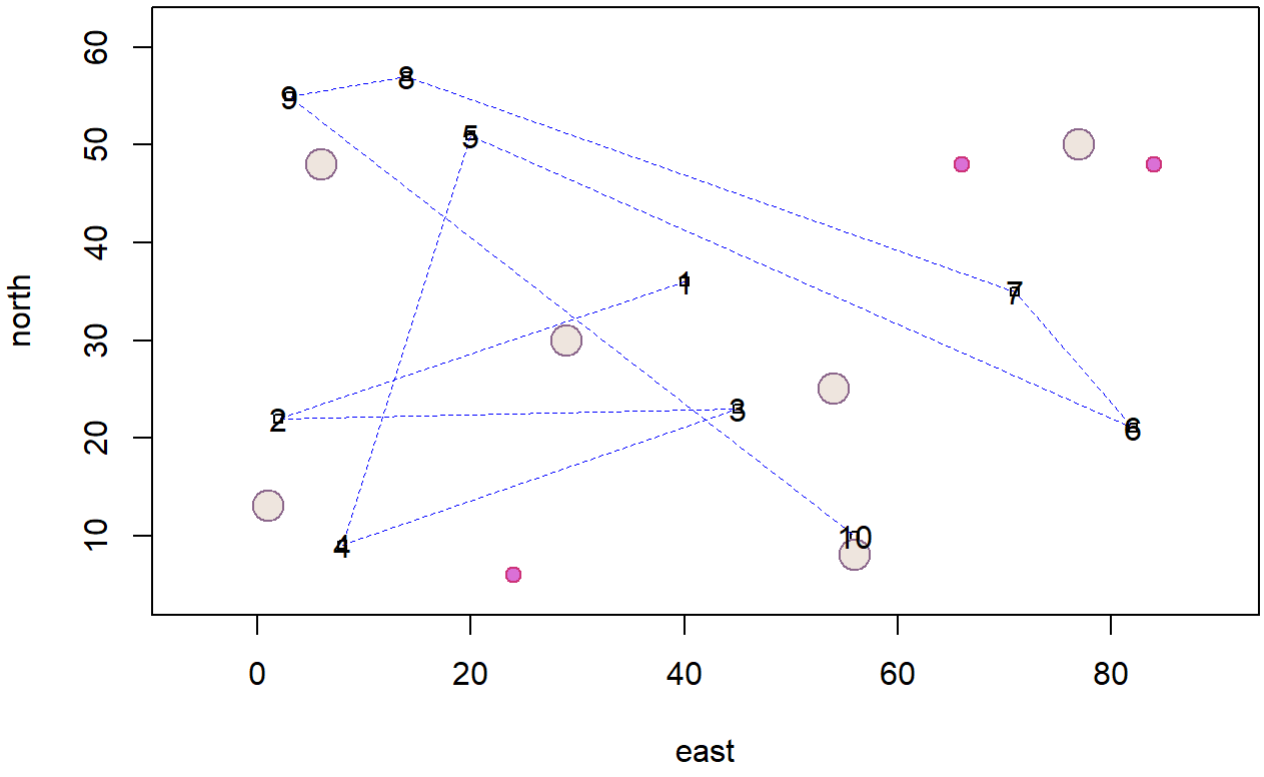

```
#add = TRUE adds circles
#fg selects the outline color for the circles
#bg selects the fill color
```

```
dwellings <- cbind.data.frame(id = 1:10, east, north)
dwellings
```

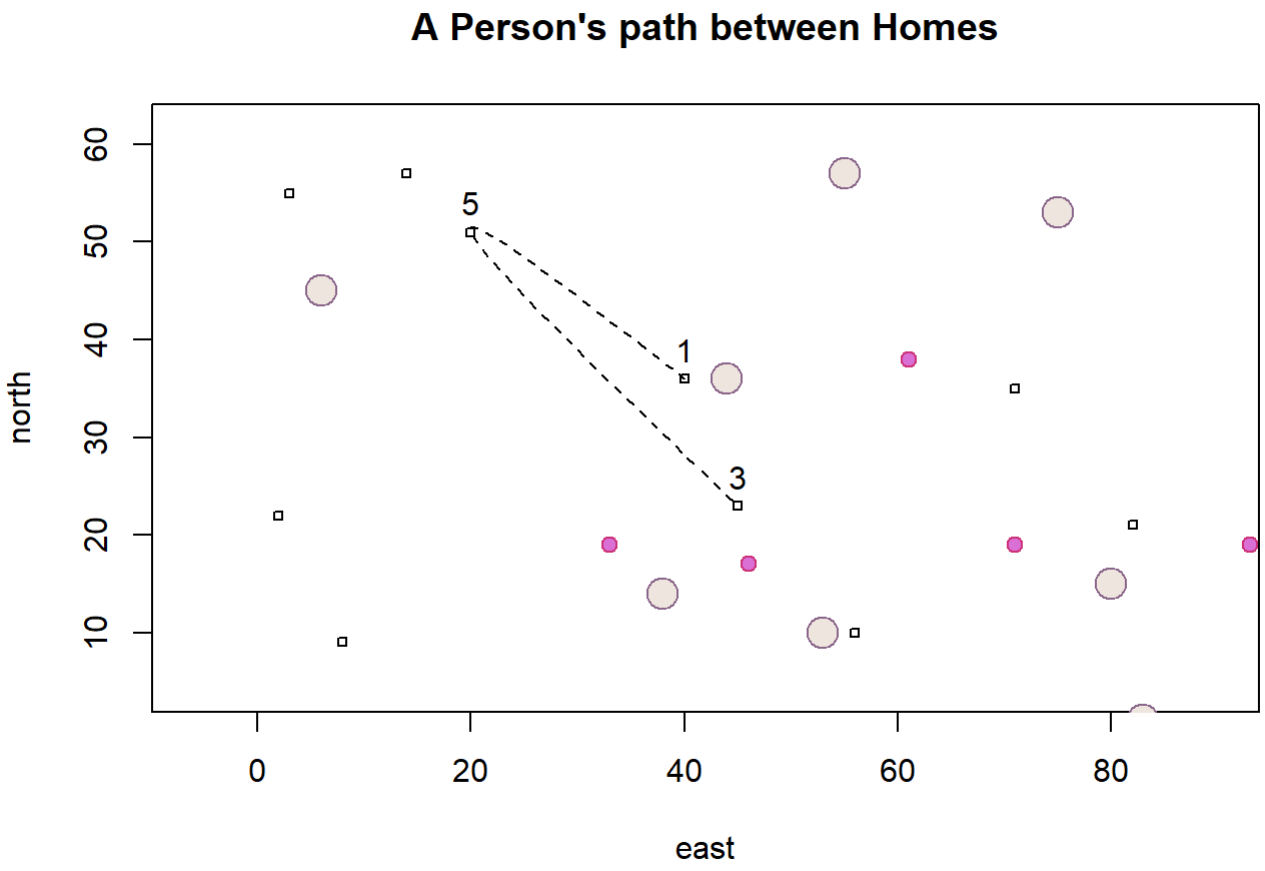
```
##    id east north
## 1   1   40    36
## 2   2    2    22
## 3   3   45    23
## 4   4    8     9
## 5   5   20    51
## 6   6   82    21
## 7   7   71    35
## 8   8   14    57
## 9   9    3    55
## 10 10   56    10
```

```
#cbind binds lists together into columns in a dataframe
```

```
symbols(east, north, squares = rep(.75,10), inches = FALSE)

symbols(sample(x, 10, replace = TRUE),
        sample(y, 10, replace = TRUE),
        circles = rep(.75,10),
        inches = FALSE,
        fg = "violetred3",
        bg = "orchid",
        add = TRUE)

symbols(sample(x, 10, replace = TRUE),
        sample(y, 10, replace = TRUE),
        circles = rep(1.5,10),
        inches = FALSE,
        fg = "plum4",
        bg = "seashell2",
        add = TRUE)
lines(x = dwellings$east,
      y = dwellings$north,
      lty = 2,
      lwd = .75,
      col = "blue")
text(x = dwellings$east,
     y = dwellings$north,
     labels = dwellings$id)
```

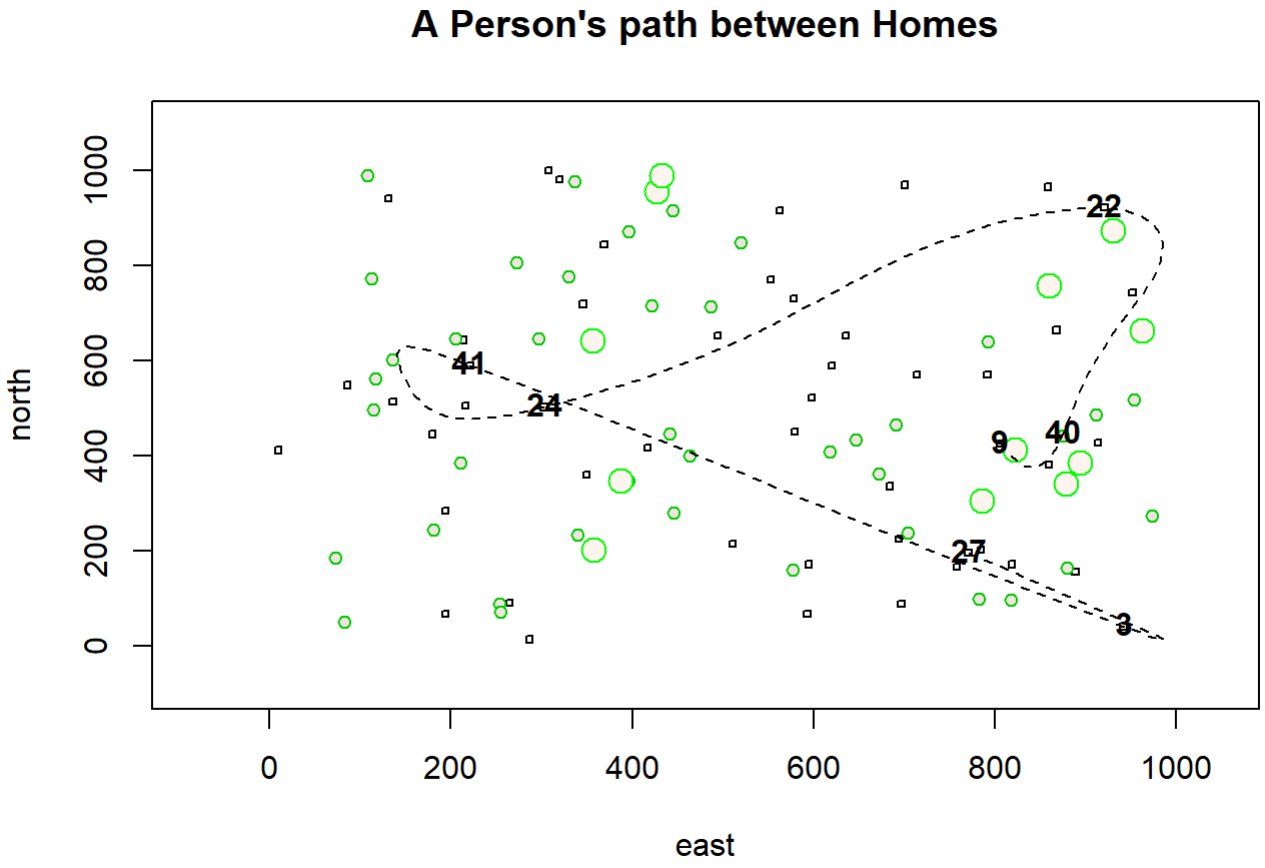


```
symbols(east, north, squares = rep(.75,10), inches = FALSE)

symbols(sample(x, 10, replace = TRUE),
        sample(y, 10, replace = TRUE),
        circles = rep(.75,10),
        inches = FALSE,
        fg = "violetred3",
        bg = "orchid",
        add = TRUE)

symbols(sample(x, 10, replace = TRUE),
        sample(y, 10, replace = TRUE),
        circles = rep(1.5,10),
        inches = FALSE,
        fg = "plum4",
        bg = "seashell2",
        add = TRUE)

locs <- sample(1:10, 3, replace = FALSE)

#lines(x = dwellings[locs,2],
#     y = dwellings[locs,3],
#     lty = 2,
#     lwd = .75,
#     col = "blue")

xspline(x = dwellings[locs, 2],
        y = dwellings[locs, 3],
        shape = -1,
        lty = 2)

text(x = dwellings[locs, ]$east,
     y = dwellings[locs, ]$north + 3,
     labels = dwellings[locs, ]$id)

title(main = "A Person's path between Homes")
```




```
#[] is used to take a subset of the dataframe
#spline makes the lines curve
```

```
#CHALLENGE QUESTION
x <- 1:1000
y <- 1:1000

east <- sample(x, size = 50, replace = TRUE)
north <- sample(y, size = 50, replace = TRUE)
#replace puts the number back to possibly be selected again
dwellings <- cbind.data.frame(id = 1:50, east, north)

symbols(east, north, squares = rep(7, 50), inches = FALSE)


symbols(sample(x, 40, replace = TRUE),
        sample(y, 40, replace = TRUE),
        circles = rep(7,40),
        inches = FALSE,
        fg = "green3",
        bg = "seashell2",
        add = TRUE)

symbols(sample(x, 12, replace = TRUE),
        sample(y, 12, replace = TRUE),
        circles = rep(14,12),
        inches = FALSE,
        fg = "green",
        bg = "seashell",
        add = TRUE)

locs <- sample(1:50, 7, replace = FALSE)

#lines(x = dwellings[locs,2],
#     y = dwellings[locs,3],
#     lty = 2,
#     lwd = .75,
#     col = "blue")

xspline(x = dwellings[locs, ]$east,
        y = dwellings[locs, ]$north,
        shape = -1,
        lty = 2)

text(x = dwellings[locs, ]$east,
     y = dwellings[locs, ]$north + 7,
     labels = dwellings[locs, ]$id,
     font = 2)

title(main = "A Person's path between Homes")
```


A Person's path between Homes
north
0
200
400
600
800
1000
east
0
200
400
600
800
1000
22
41
24
9
40
27
3