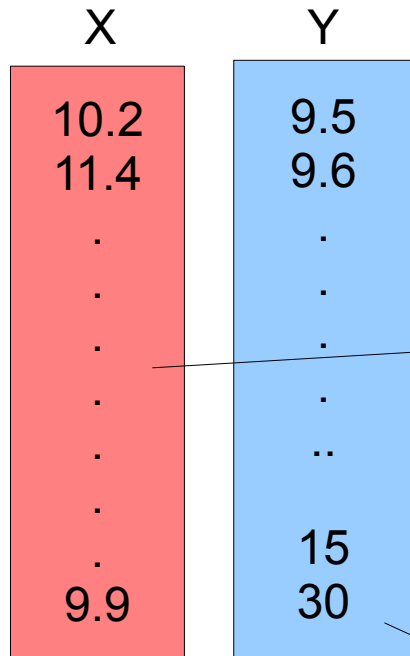


(2 numeric vectors)



```
x <- stack(list(X=X, Y=Y))
* result becomes data.frame
```



(data.frame w/2 variables) x



```
unstack(x)
* result becomes list
(or data.frame only if the
lengths of vectors are same)
```

```
t.test(X, Y)
or
wilcox.test(X, Y)
```

to test the location parameters

** The stacked format has 2 advantages:

- (1) read data from tab-delimited text as a spread sheet.
- (2) easy to draw the stratified graphs as

```
boxplot(values~ind, data=x)
stripchart(values~ind, data=x, vert=T, method="jitter")
Mx <- tapply(x$values, x$ind, mean)
Sx <- tapply(x$values, x$ind, sd)
Ix <- 1:2+0.1
points(Ix, Mx, pch=18, cex=2)
arrows(Ix, Mx-Sx, Ix, Mx+Sx, angle=90, code=3)
```

```
t.test(values~ind, data=x)
or
wilcox.test(values~ind, data=x)
```