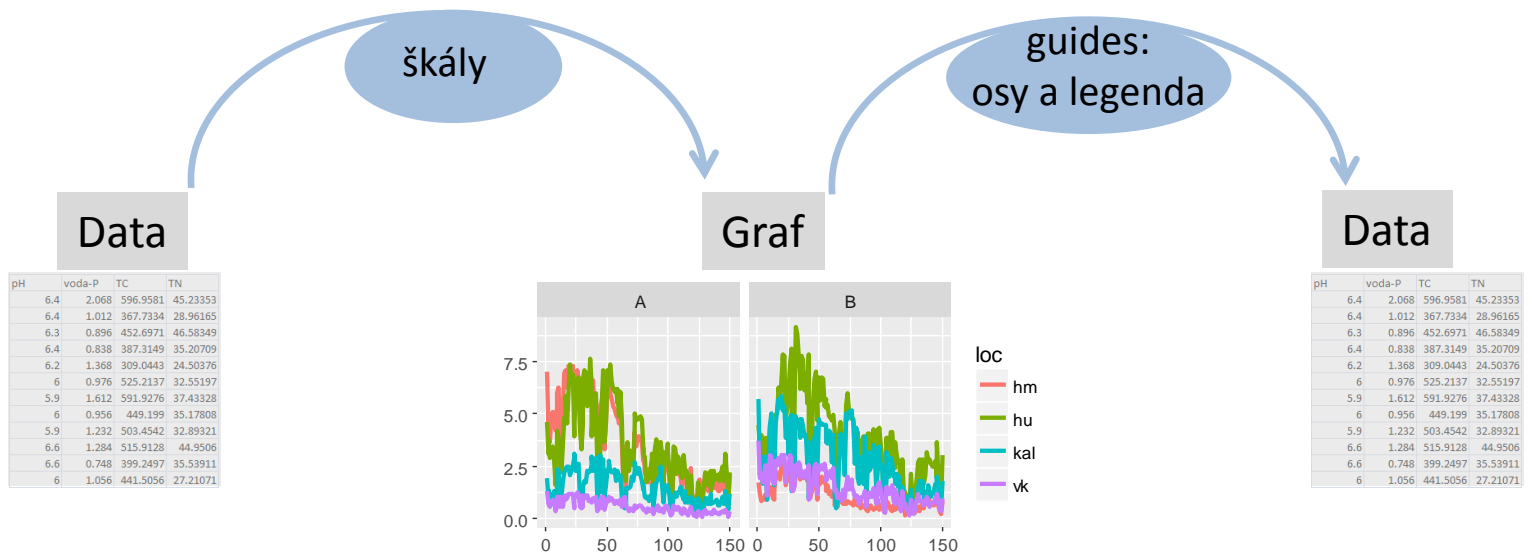


SCALES

VÍT SYROVÁTKA

SCALES - ŠKÁLY

- určují mapování dat do estetik
 - vezmou data a převedou je do něčeho, co vidíme v grafu: barva, pozice, velikost, tvar
- poskytují nástroje umožňující číst graf: osy a legenda



SCALES – PŘIDÁNÍ ŠKÁLY

```
ggplot(miry, aes(vyska, noha, colour= sex)) +  
  geom_point() +  
  scale_x_continuous() +  
  scale_y_continuous() +  
  scale_colour_discrete()
```

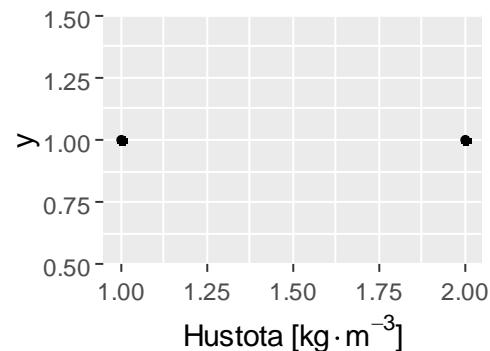
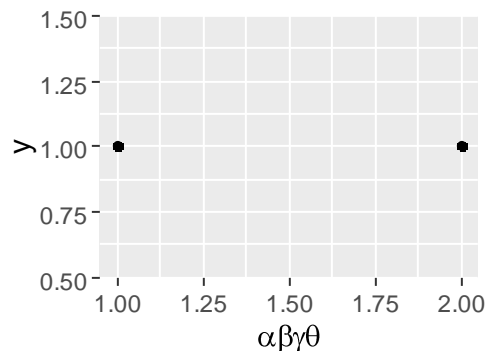
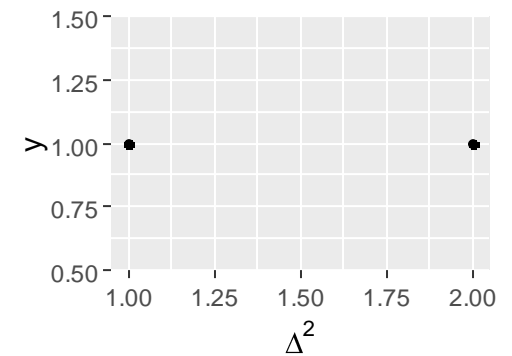
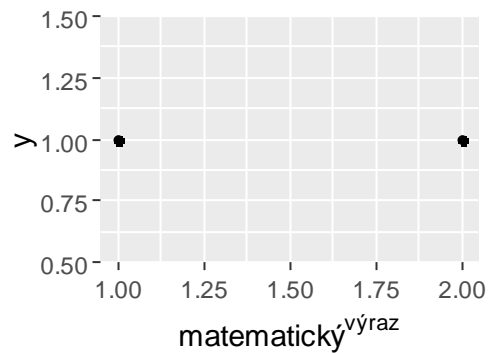
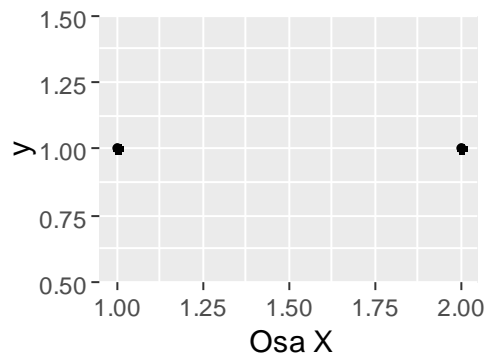
```
ggplot(miry, aes(vyska, noha, colour= sex)) +  
  geom_point() +  
  scale_x_continuous("Popisek osy X")
```

```
ggplot(miry, aes(vyska, noha, colour= sex)) +  
  geom_point() +  
  scale_x_continuous("Popisek osy X") +  
  scale_x_continuous("Boží popisek osy X")
```

SCALES – NÁZEV

try this:
demo(plotmath)

```
dtf<- data.frame(x= 1:2, y= 1, z= "a")  
p<- ggplot(dtf, aes(x,y)) + geom_point()  
p + scale_x_continuous("Osa X")  
p + scale_x_continuous(expression(matematický ^ výraz))  
p + xlab(expression(Delta^2))  
p + ylab(expression(alpha * beta * gamma * theta))  
p + xlab(x = expression(paste("Hustota [", kg %.% m^-3, "]"))))
```



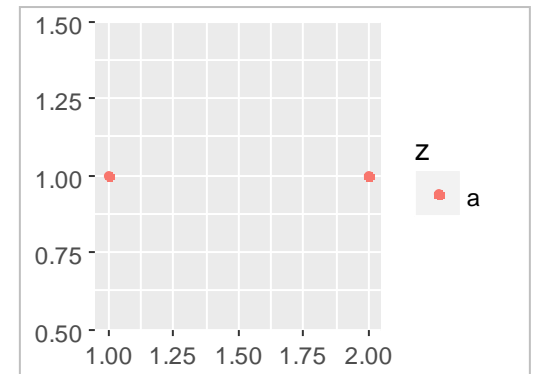
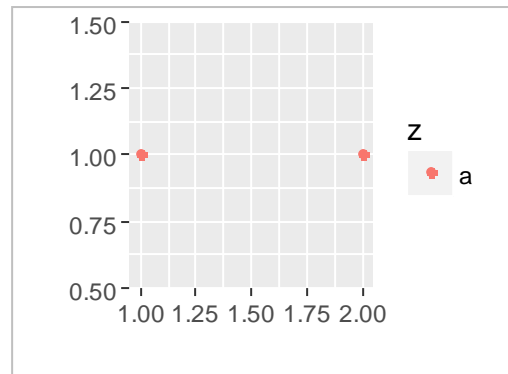
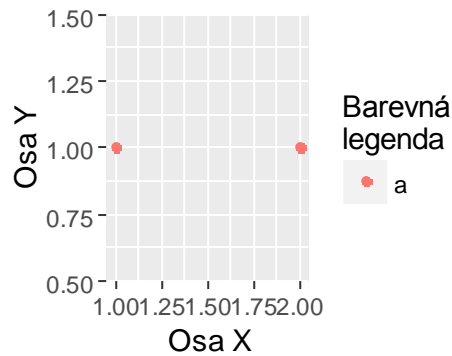
SCALES – HROMADNÁ ÚPRAVA NÁZVŮ

```
p<- ggplot(dtf, aes(x,y)) + geom_point(aes(colour= z))
```

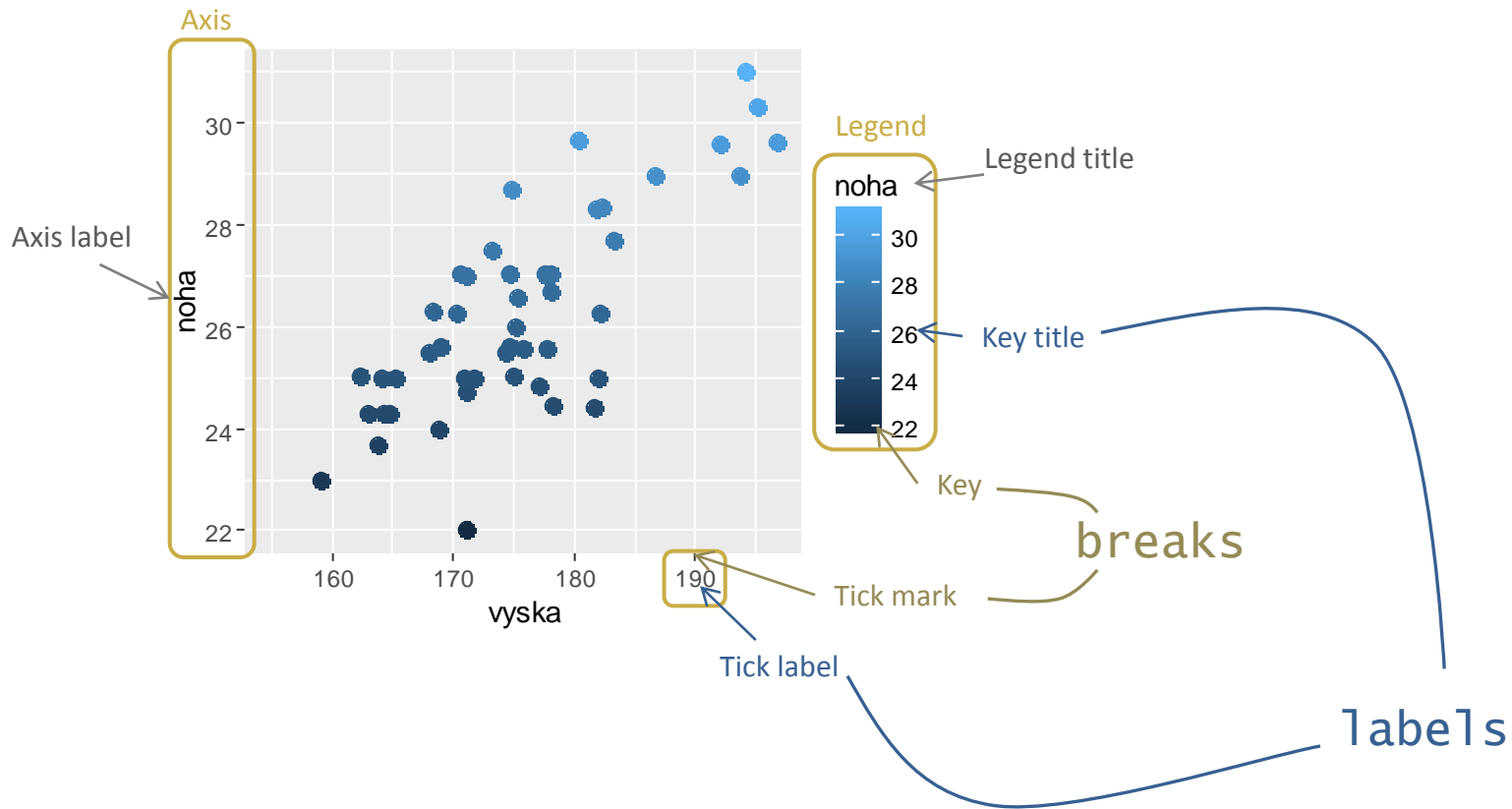
```
p + labs(x= "Osa X", y= "Osa Y", colour= "Barevná\nlegenda")
```

```
p + labs(x= "", y= "")
```

```
p + labs(x= NULL, y= NULL)
```



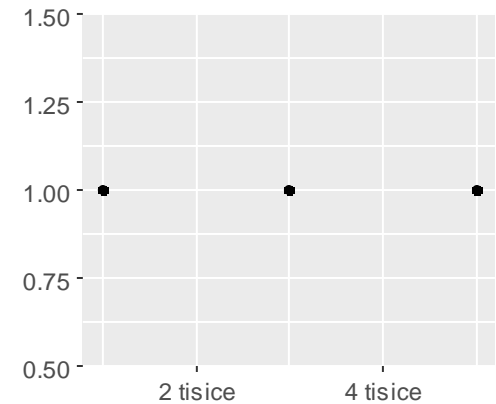
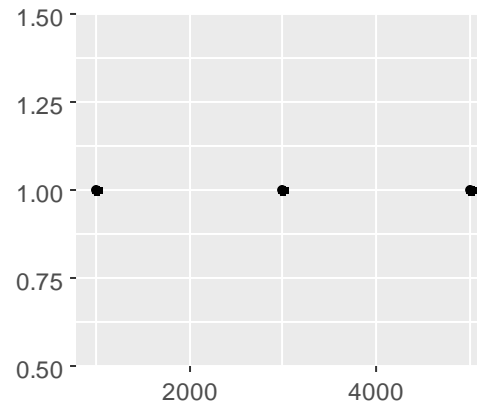
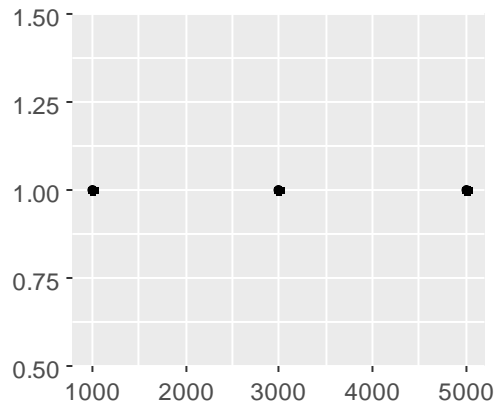
BREAKS AND LABELS



BREAKS

```
dtf<- data.frame(x= c(1,3,5) * 1000, y= 1)  
p<- ggplot(dtf, aes(x, y)) + geom_point() + labs(x= NULL, y= NULL)
```

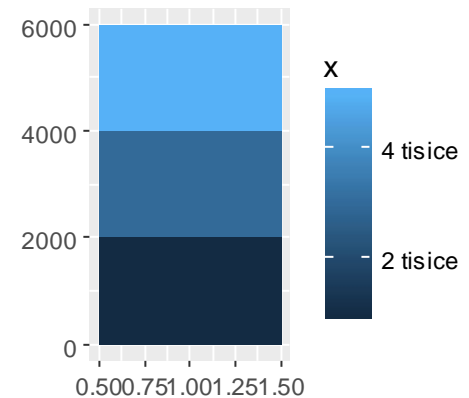
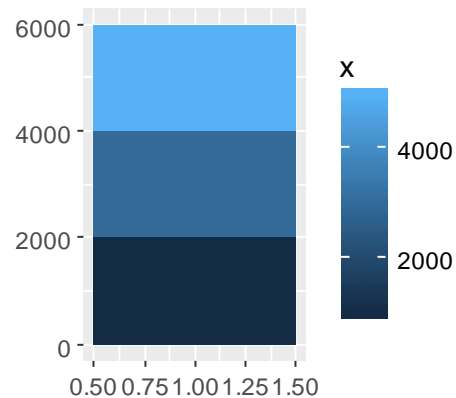
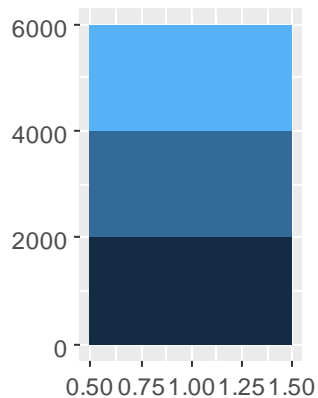
```
p  
p + scale_x_continuous(breaks= c(2000,4000))  
p + scale_x_continuous(breaks= c(2000,4000),  
                        labels= c("2 tisice", "4 tisice"))
```



BREAKS

```
p <- ggplot(dtf, aes(y,x)) + geom_tile(aes(fill= x)) +  
  labs(x= NULL, y= NULL)
```

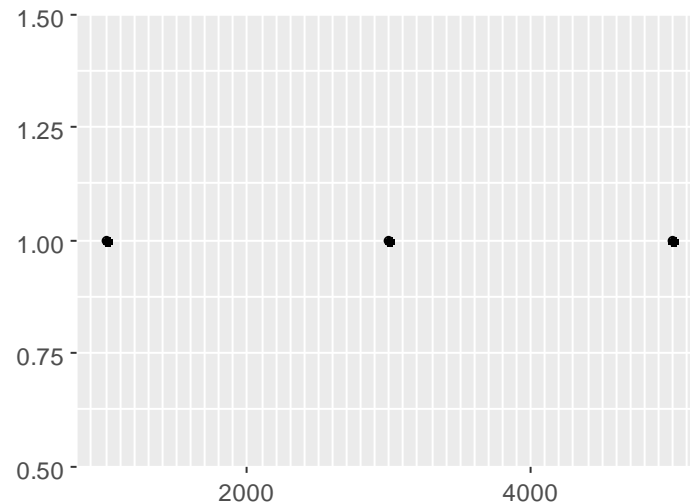
```
p  
p + scale_fill_continuous(breaks= c(2000,4000))  
p + scale_fill_continuous(breaks= c(2000,4000),  
  labels= c("2 tisice", "4 tisice"))
```



MINOR BREAKS

```
dtf<- data.frame(x= c(1,3,5) * 1000, y= 1)
p<- ggplot(dtf, aes(x, y)) + geom_point() + labs(x= NULL, y= NULL)

p + scale_x_continuous(breaks= c(2000,4000),
                       minor_breaks = seq(100, 6000, 100))
```



LEGEND

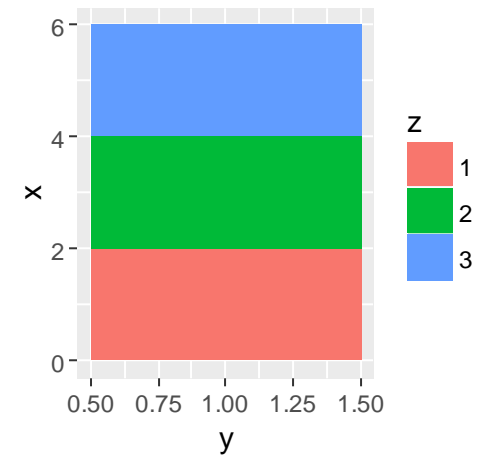
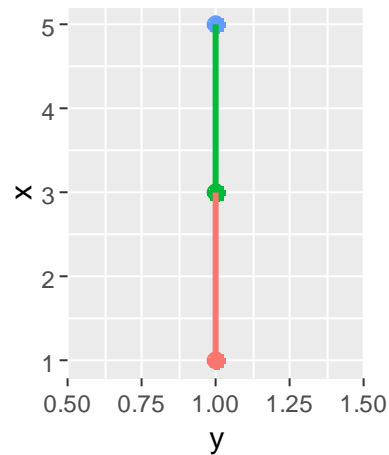
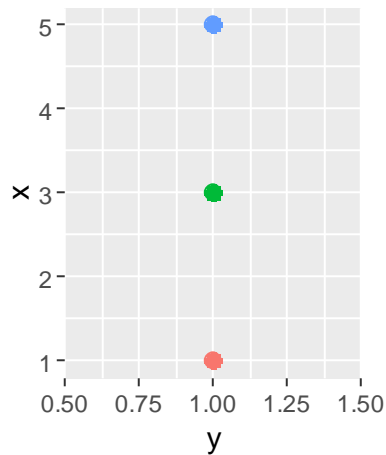
Složitější než osy, protože:

1. Může zobrazovat víc estetik, z více vrstev a typ symbolu závisí na použitém geomu.
2. Může být zobrazena na různých místech.
3. Více detailů – Má být zobrazena horizontálně, nebo vertikálně? Kolik sloupců má mít? Jak velká?

```
ggplot(dtf, aes(y, x, colour= z)) + geom_point()
```

```
ggplot(dtf, aes(y, x, colour= z)) + geom_point() + geom_line(aes(group= 1))
```

```
ggplot(dtf, aes(y, x, fill= z)) + geom_tile()
```

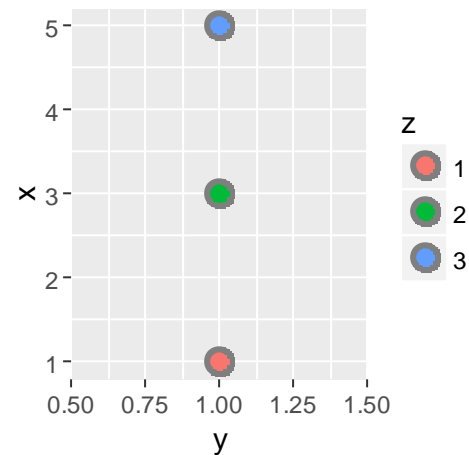
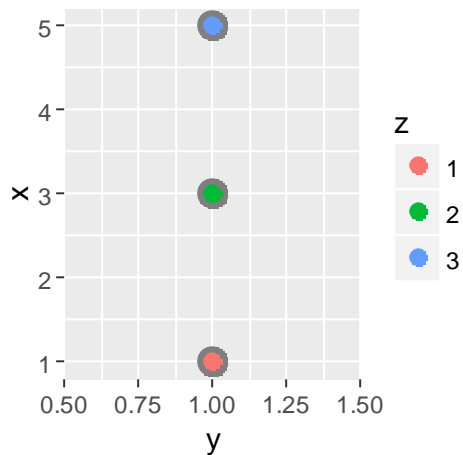


POTLAČENÍ / ZOBRAZENÍ LEGENDY

`show.legend =`

```
ggplot(dtf, aes(y, x)) +  
  geom_point(size= 5, colour= "grey50") +  
  geom_point(size= 3, aes(colour= z))
```

```
ggplot(dtf, aes(y, x)) +  
  geom_point(size= 5, colour= "grey50", show.legend = T) +  
  geom_point(size= 3, aes(colour= z))
```

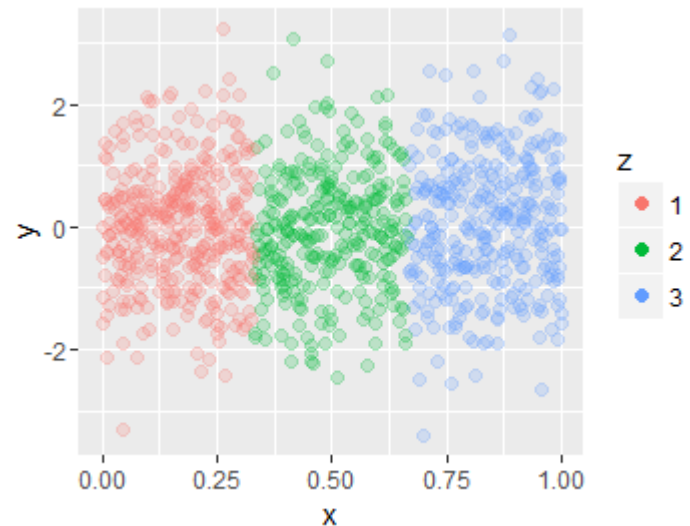
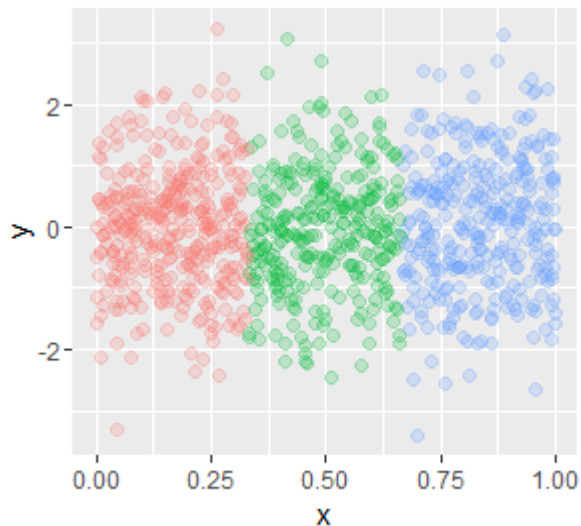


POTLAČENÍ / ZOBRAZENÍ LEGENDY

```
dtf<- data.frame(x= runif(1000), y= rnorm(1000))  
dtf$z<- cut(dtf$x, 3, labels= 1:3)
```

```
ggplot(dtf, aes(x, y)) +  
  geom_point(aes(colour= z), alpha= 0.2)
```

```
ggplot(dtf, aes(x, y)) +  
  geom_point(aes(colour= z), alpha= 0.2) +  
  guides(colour= guide_legend(override.aes = list(alpha= 1)))
```



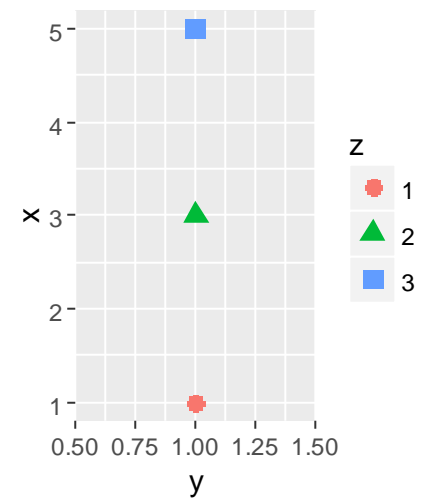
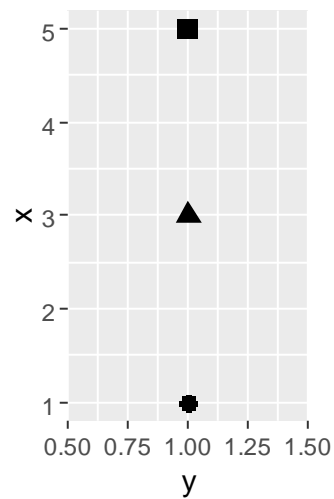
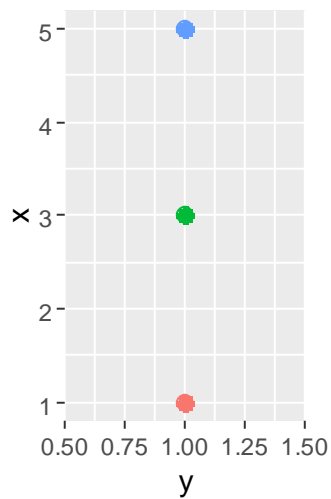
POTLAČENÍ / ZOBRAZENÍ LEGENDY

```
dtf<- data.frame(x= c(1,3,5), y= 1, z= factor(1:3))
```

```
ggplot(dtf, aes(y, x)) + geom_point(aes(colour= z))
```

```
ggplot(dtf, aes(y, x)) + geom_point(aes(shape= z))
```

```
ggplot(dtf, aes(y, x)) + geom_point(aes(colour= z, shape= z))
```



UMÍSTĚNÍ LEGENDY

```
theme(legend.position = )
```

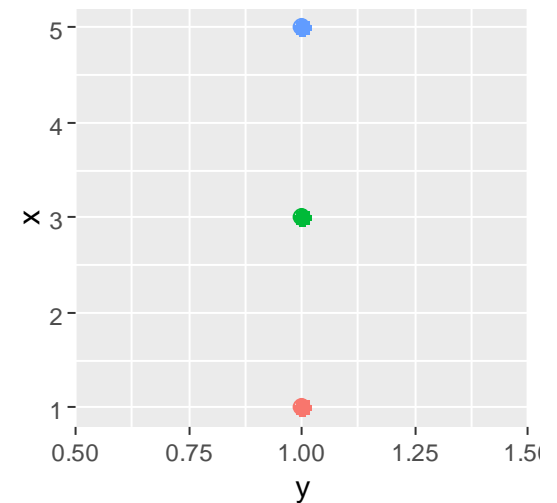
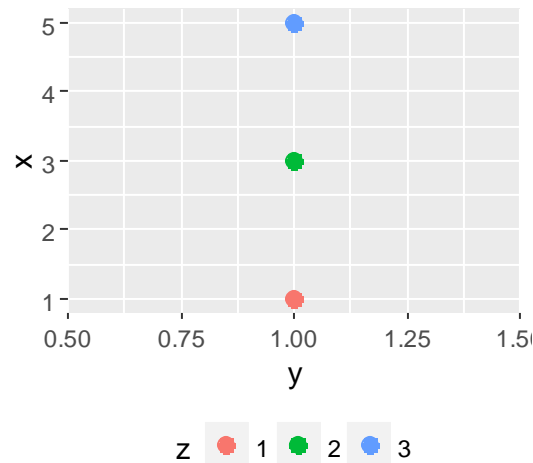
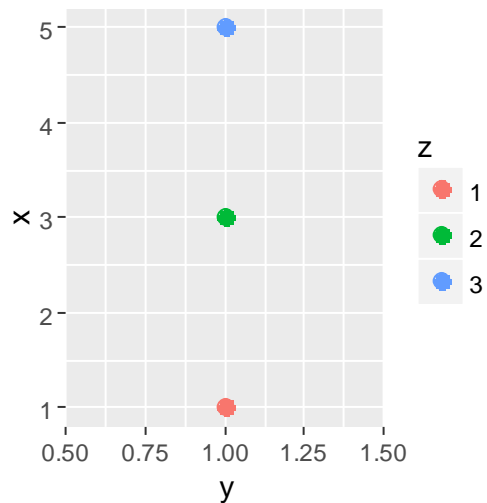
```
"right", "left", "bottom", "top", "none",
```

```
p <- ggplot(dtf, aes(y, x)) + geom_point(aes(colour= z), size= 3)
```

```
p + theme(legend.position= "right")
```

```
p + theme(legend.position= "bottom")
```

```
p + theme(legend.position= "none")
```



UMÍSTĚNÍ LEGENDY

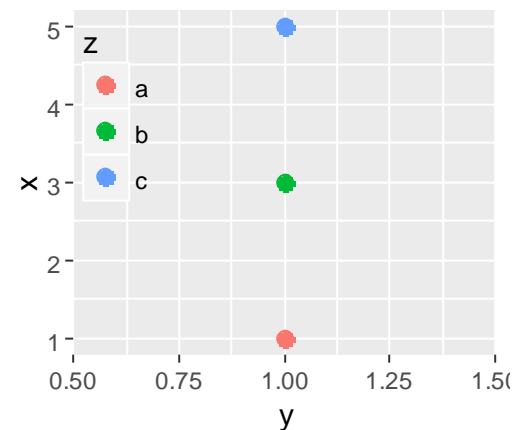
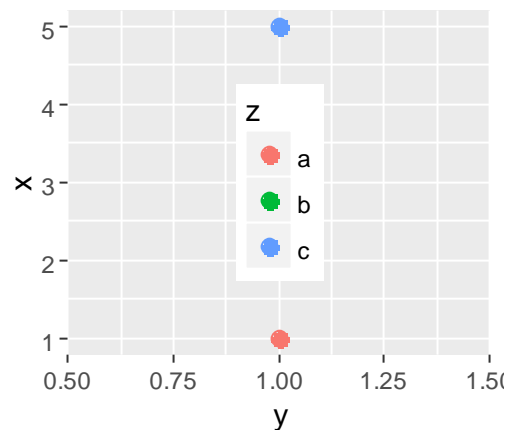
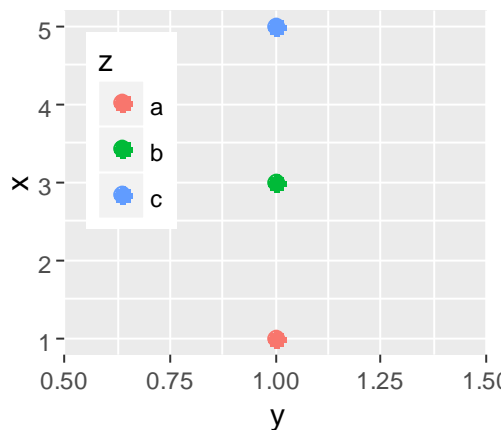
```
theme(legend.position = (x, y), legend.justification = (x, y))
```

x, y {0-1}

```
p + theme(legend.position= c(0,1), legend.justification= c(0,1))
```

```
p + theme(legend.position= c(0.5,0.5), legend.justification= c(0.5,0.5))
```

```
p + theme(legend.position= c(0.1,0.7), legend.background= element_rect("transparent"))
```



JEMNÉ LADĚNÍ LEGENDY

check
?guides

`guide_legend()`

```
p + scale_color_discrete(guide= guide_legend(nrow= 2))
```

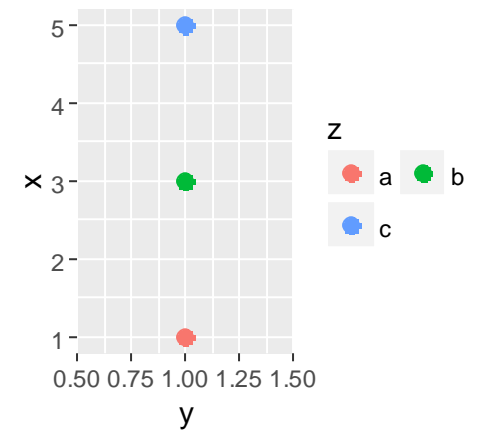
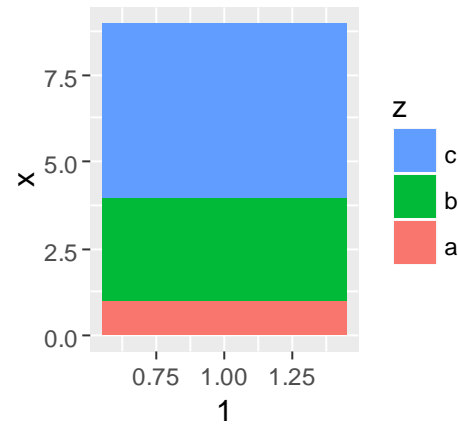
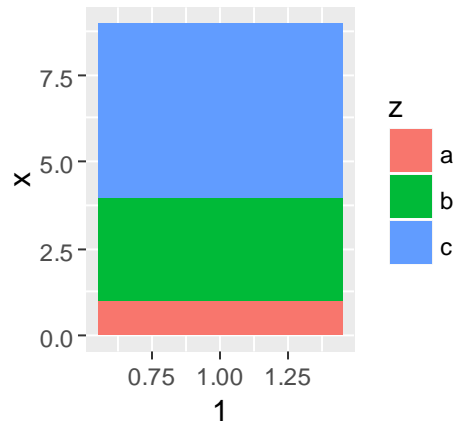
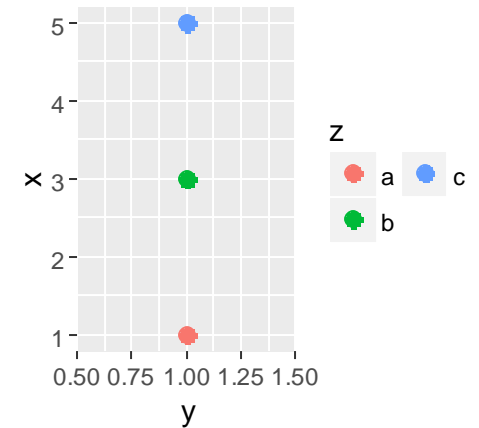
```
p + guides(colour= guide_legend(nrow= 2))
```

```
p + guides(colour= guide_legend(nrow= 2, byrow= T))
```

```
p<- ggplot(dtf, aes(1, x)) + geom_bar(stat= "identity", aes(fill= z))
```

```
p
```

```
p + guides(fill= guide_legend(reverse= T))
```



JEMNÉ LADĚNÍ LEGENDY

guide_legend()

```
p + guides(colour= guide_legend(keywidth= unit(0, "mm"), keyheight= unit(5, "mm")))
```

```
p + guides(fill= guide_legend(reverse= T,  
          keywidth= unit(15, "mm"), keyheight= unit(15, "mm")))
```

guide_colourbar()

barwidth, barheight, nbin, reverse

