HW#1

IMSOHYUN

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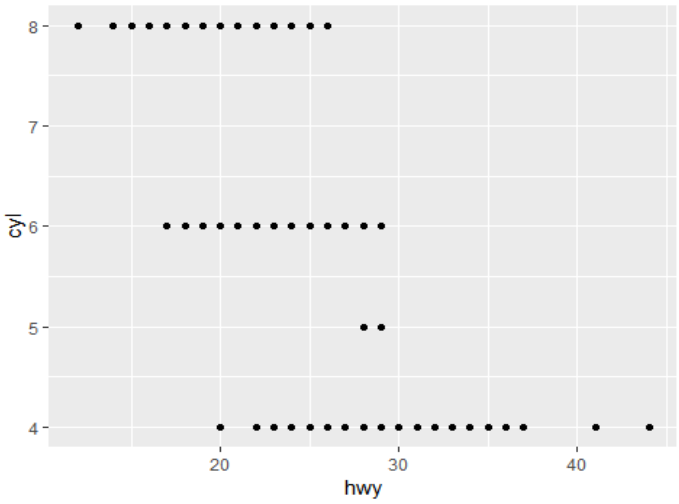
Use mpg data

- manufacturer: 자동차 제조사
- model : 자동차 모델명
- displ : 엔진크기 (liter)
- year : 연식
- cyl: 실린더 수
- `trans`: transmission 타입
- `drv`: f= front-wheel drive, r = rear wheel drive, 4 = 4wd
- `cty` : 도심도로 마일리지 (mile/gallon)
- `hwy` : 고속도로 마일리지 (mile/gallon)
- fl : fuel type
- class : 자동차 타입

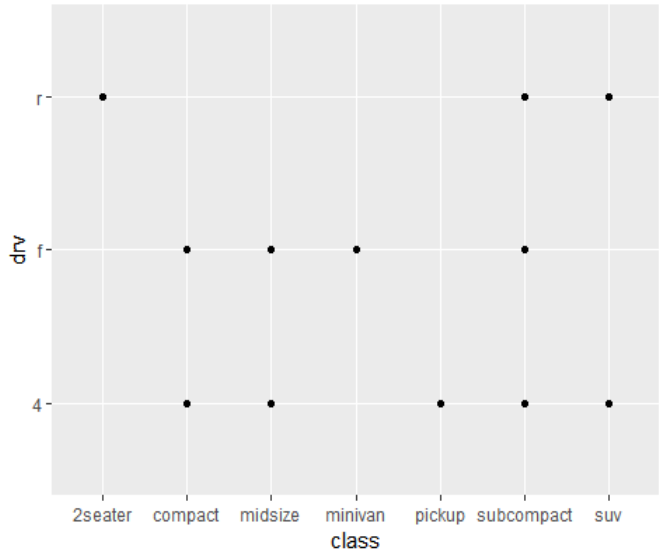
1. Make a scatterplot of hwy vs cyl.

```
ggplot(mpg,aes(hwy,cyl)) + geom_point()
```



2. What happens if you make a scatterplot of class vs drv. Why is the plot not useful?

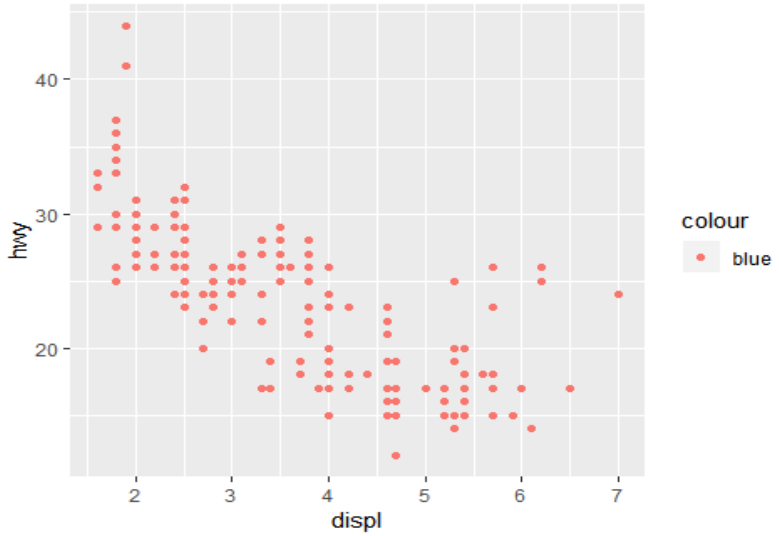
```
ggplot(mpg,aes(class,drv)) + geom_point()
```



Class 와 drv 는 범주형 자료이므로 왼쪽의 그래프는 x,y 의 관계를 효과적으로 보여주지 못한다.

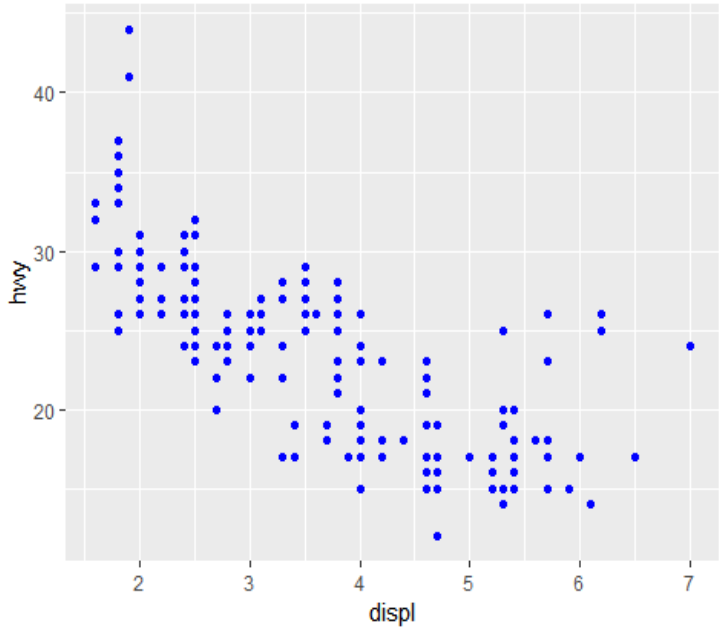
3. What's gone wrong with this code? Why are the points not blue?

```
ggplot(mpg) +geom_point(aes(displ,hwy, color = "blue"))
```



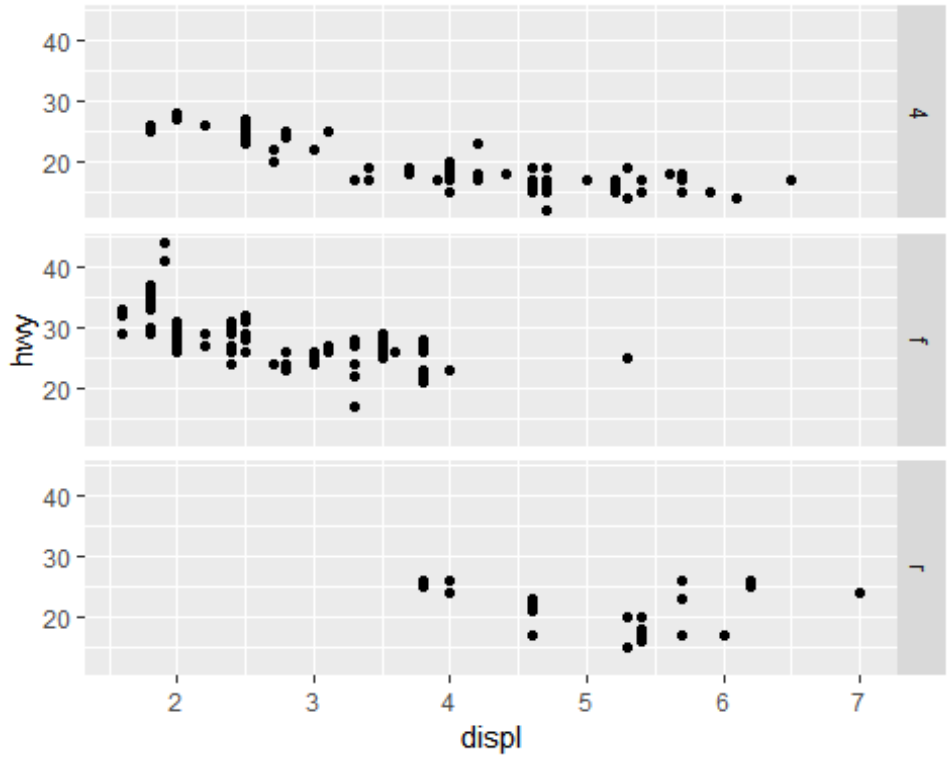
보통 aes 안에서 color 를 지정하는 경우에는 class 별로 색을 다르게 하고 싶을 때 사용한다. 전체 점을 파란색으로 지정하고 싶을 때의 코드는 다음과 같다.

```
ggplot(mpg) +geom_point(aes(displ,hwy), color = "blue")
```

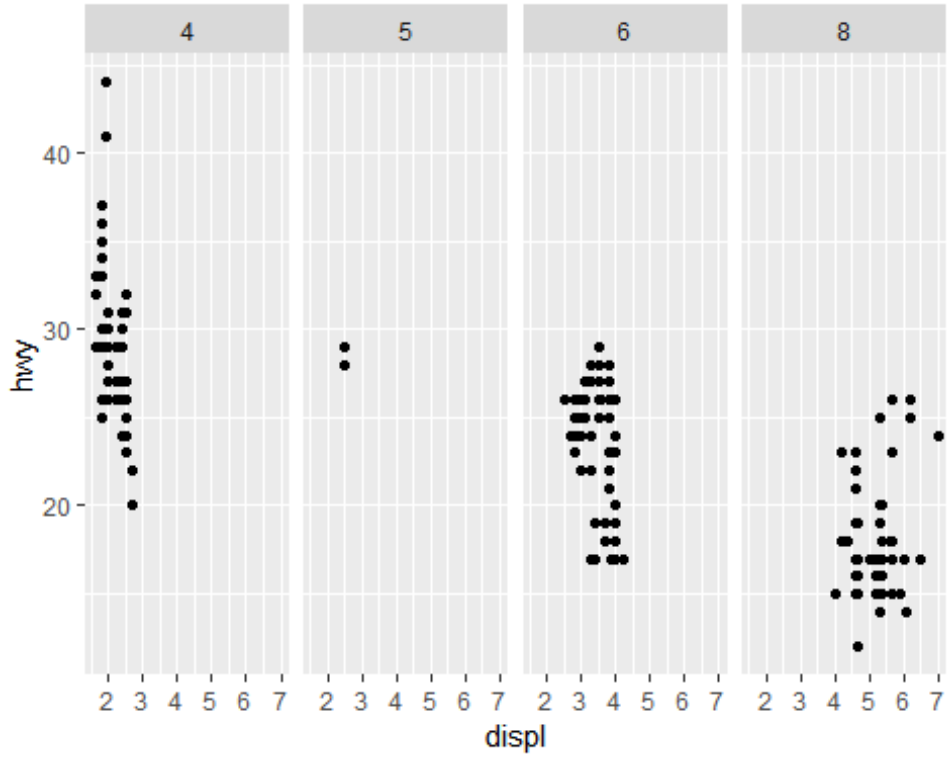


4. What plots does the following code make? What does '.' do?

```
ggplot(mpg) +
geom_point(aes(displ,hwy)) + facet_grid(drv ~ .)
```



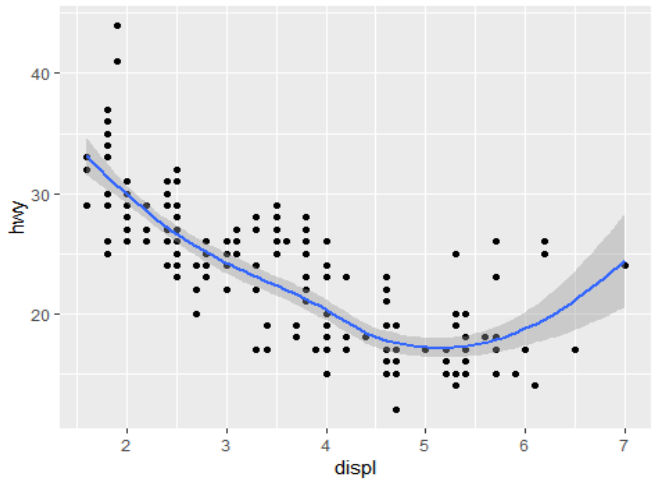
```
ggplot(mpg) +
geom_point(aes(displ,hwy)) + facet_grid(. ~ cyl)
```



"attribute ~ dot"표기법은 각 속성 값에 대해 여러 개의 행 방향 플롯을 표시하고 "dot ~ attribute"를 사용하면 행 속성이 누락되어 표시가 열 단위로 표시된다.

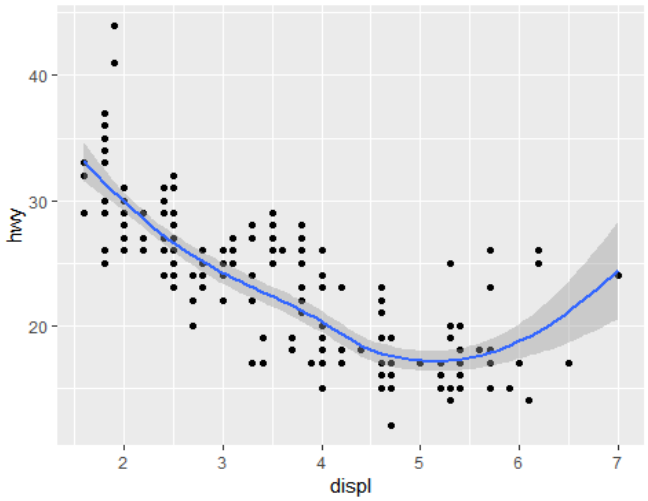
5. Will these two graphs look different? Why/why not?

```
ggplot(mpg, aes(displ,hwy)) +geom_point() + geom_smooth()
```



```
ggplot(mpg) + geom_point(aes(displ, hwy)) + geom_smooth(aes(displ, hwy))

## `geom_smooth()` using method = 'loess' and formula 'y ~ x'
```

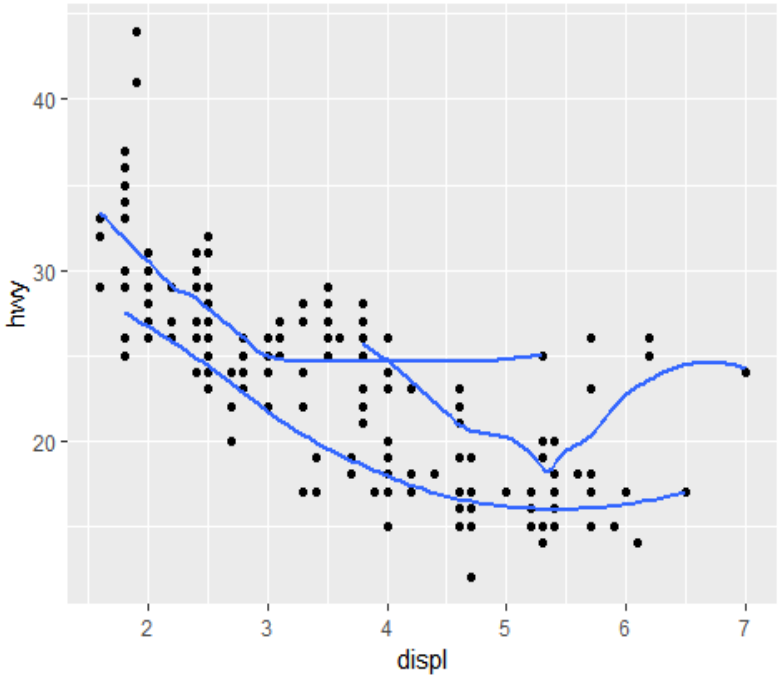


geom_point 와 geom_smooth 에서 지정된 x,y 축이 모두 같기 때문에 두 그래프는 같다.

6. Recreate the R code necessary to generate the following graphs

```
ggplot(mpg, aes(displ,hwy)) +
  geom_point() +
  geom_smooth(aes(group=drv),se = FALSE)

## `geom_smooth()` using method = 'loess' and formula 'y ~ x'
```



```r
ggplot(mpg, aes(displ, hwy)) +
  geom_point(aes(color=drv)) +
  geom_point(shape = 21, color = "white", stroke = 2)
```