$\frac{30 \cdot 90}{200} = E$

St. D

|  | 10 (13.5) | ( 18 ) | ( 18 ) | (22.5) | ( 18 ) | 90 |
|---|---|---|---|---|---|---|
| $\overline{M}$ |  |  |  |  |  |  |
| $\overline{F}$ | 20 (16.5) | ( 22 ) | ( 22 ) | (27.5) | ( 22 ) | 110 |
|  | 30 |  |  |  |  | 200 |

$\frac{30 \cdot 110}{200}$

2 var:

· Gender - categ / bin.
· Response - categ.
$X^2$ - ind.

**Hyp:**

$H_o$: Gender and response are independent
(no assoc.)

$H_a$:    ,,         ,,   are not ind.
(is an assoc.)

**test - stat / p-value**

$$X^2 = \frac{(10-13.5)^2}{13.5} + \frac{(15-18)^2}{18} + \cdots + \frac{(15-22)^2}{22}$$

$$X^2 = 8.92$$

$$p\text{-value} = Pr(X^2 > 8.92) = .0631$$

$$d.f. = \underset{(r-1)(c-1)}{(5-1)(2-1)}$$

$= 4$

**cond.**
· exp. values ≥ 5
Smallest is 13.5,
so this is met
· problem states "random
SRS from pop. of int
sample of 200
students"

**conc:**

the p-value of .0631 > .05,
so it's not sign. @ $\alpha = .05$.
Fail to reject $H_o$.
No, there is not suff. evid.
to say that response
depends on gender