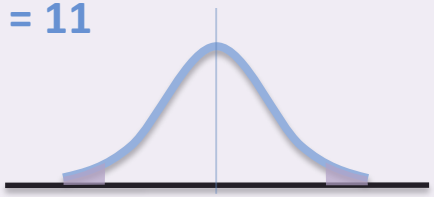
R-Square as Proportion of Variance Explained

Visual Guide

H_0 : Boxers live 11 years

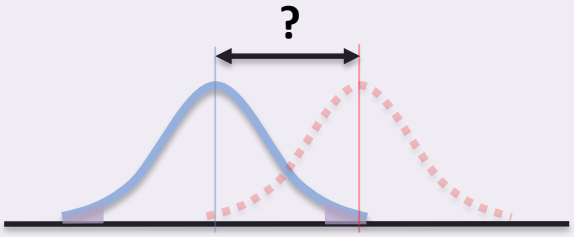
$H_0 : \mu = 11$



$\mu = 11$
$\sigma = 2.3$

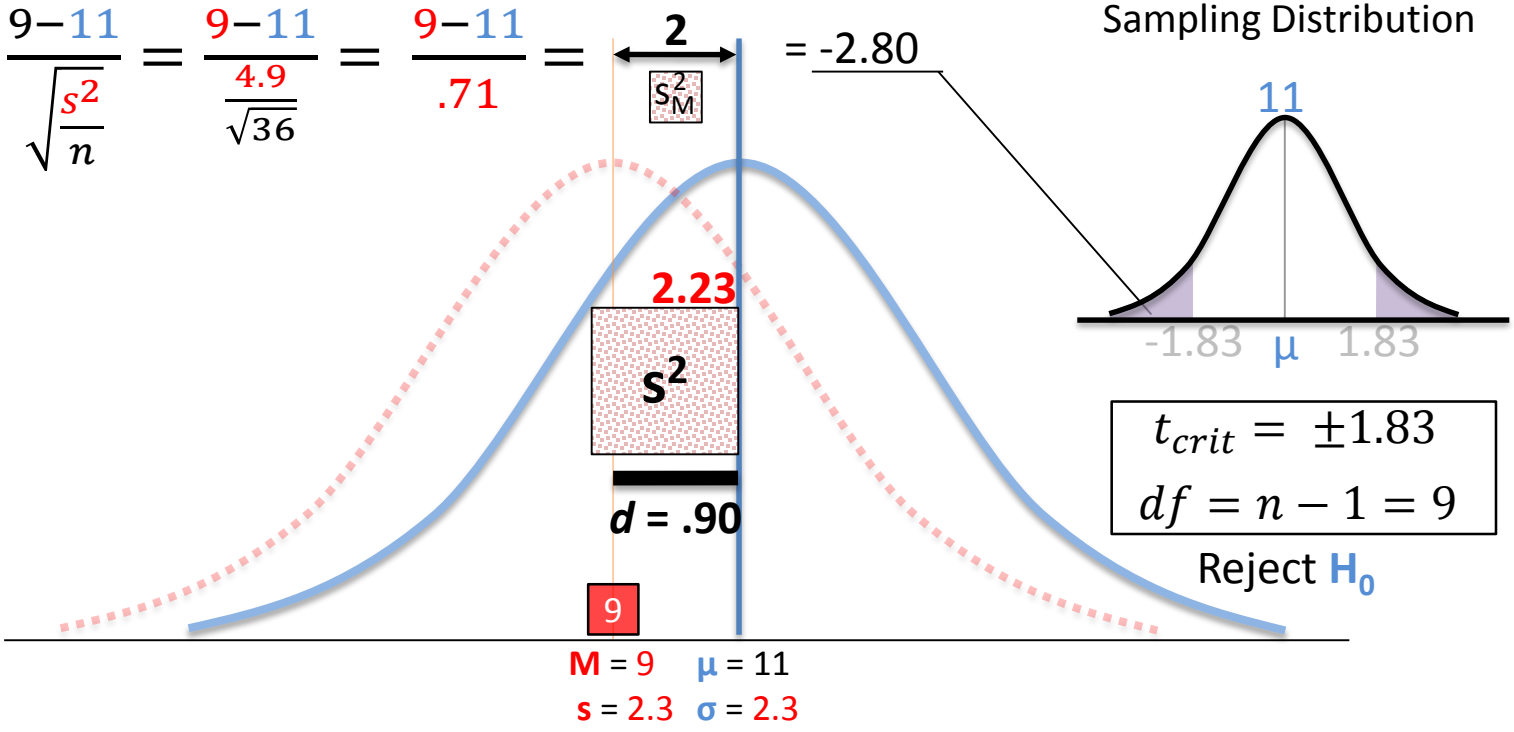
H_1 : No, something else

$H_1 : \mu \neq 11$



$\mu = 11$ $\bar{X} = 9$
$\sigma = 2.3$ $s = 2.3$

$$t = \frac{\bar{X} - \mu}{s_M} = \frac{9-11}{\sqrt{\frac{s^2}{n}}} = \frac{9-11}{\frac{4.9}{\sqrt{36}}} = \frac{9-11}{.71} = \frac{2}{s_M^2} = -2.80$$



Sampling Distribution

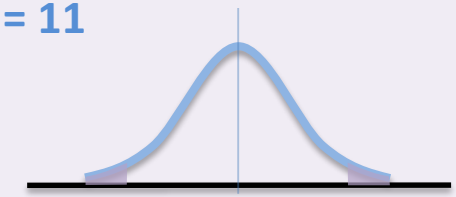
$t_{crit} = \pm 1.83$
$df = n - 1 = 9$

Reject H_0

One-sample t-test indicated that boxers (M = 9, s = 2.23, n = 10) live significantly less than 11 years, $t(9)$ = -2.80, p<.05, SEM=0.71, , Cohen's D =0.90.

H_0 : Boxers live 11 years

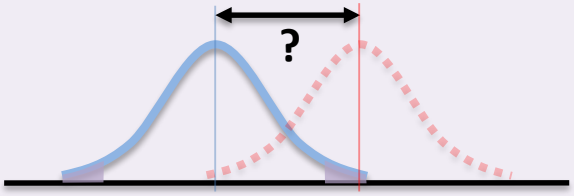
$H_0 : \mu = 11$



$\mu = 11$
$\sigma = ?$

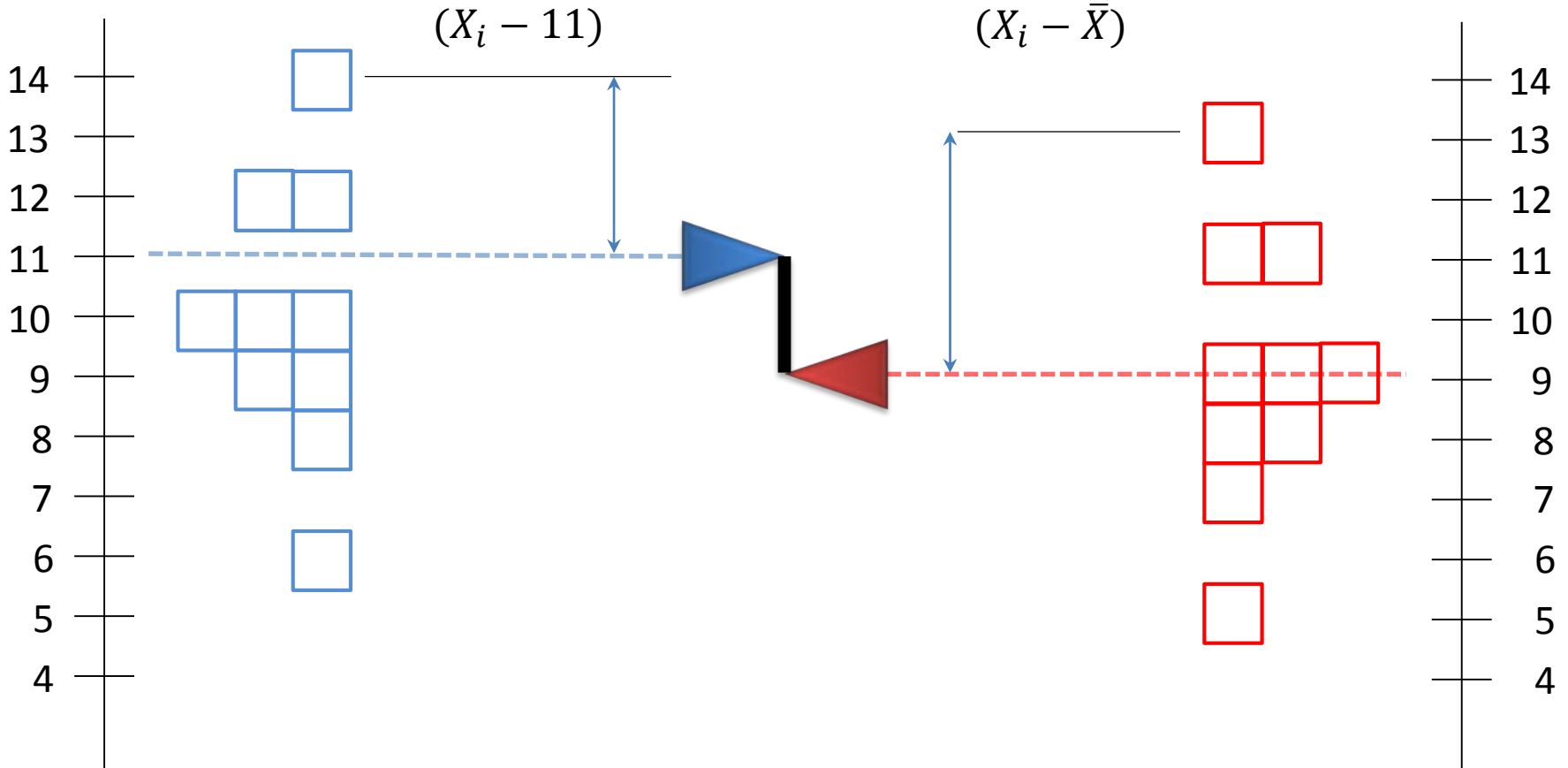
H_1 : No, something else

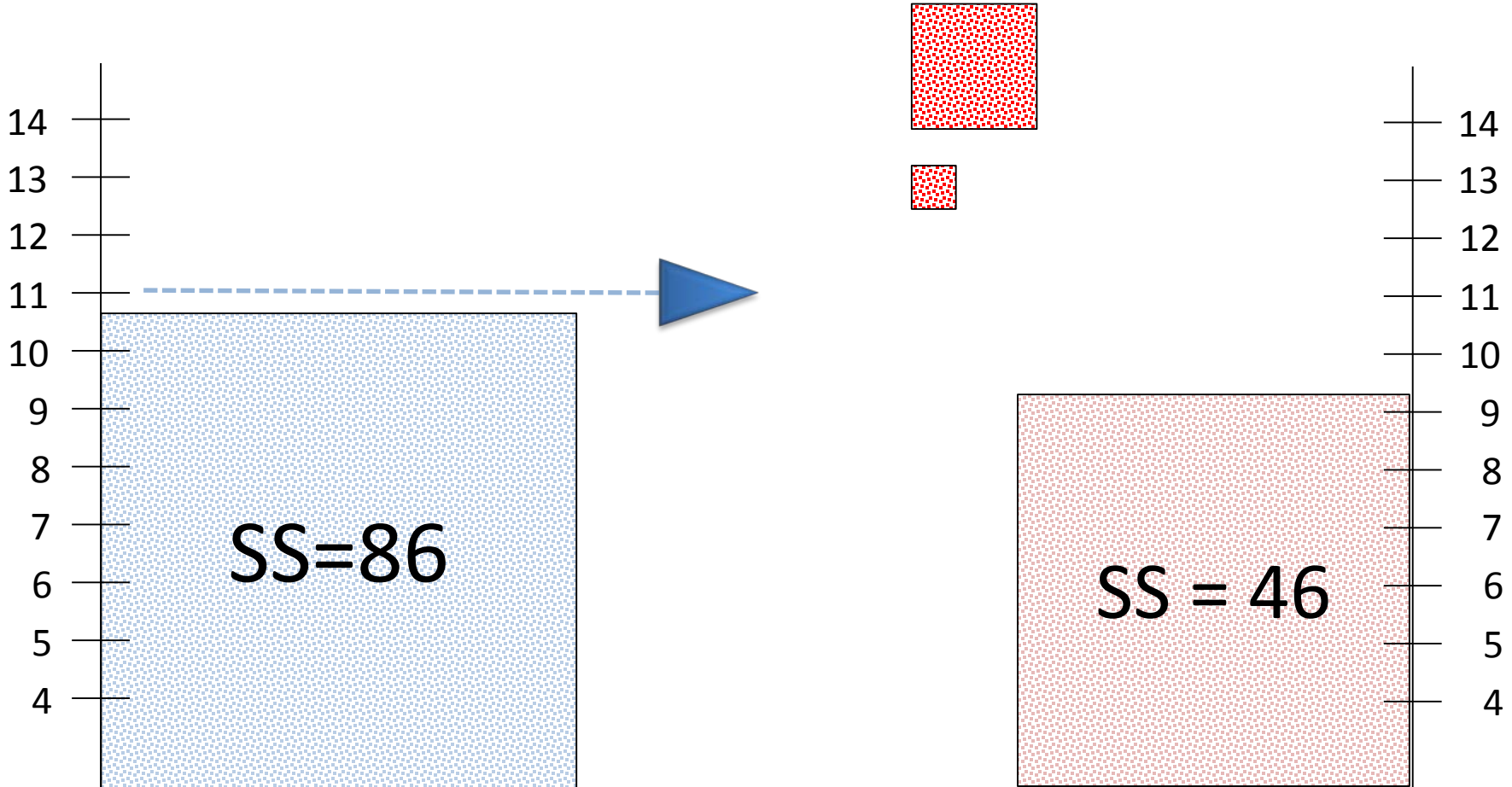
$H_1 : \mu \neq 11$

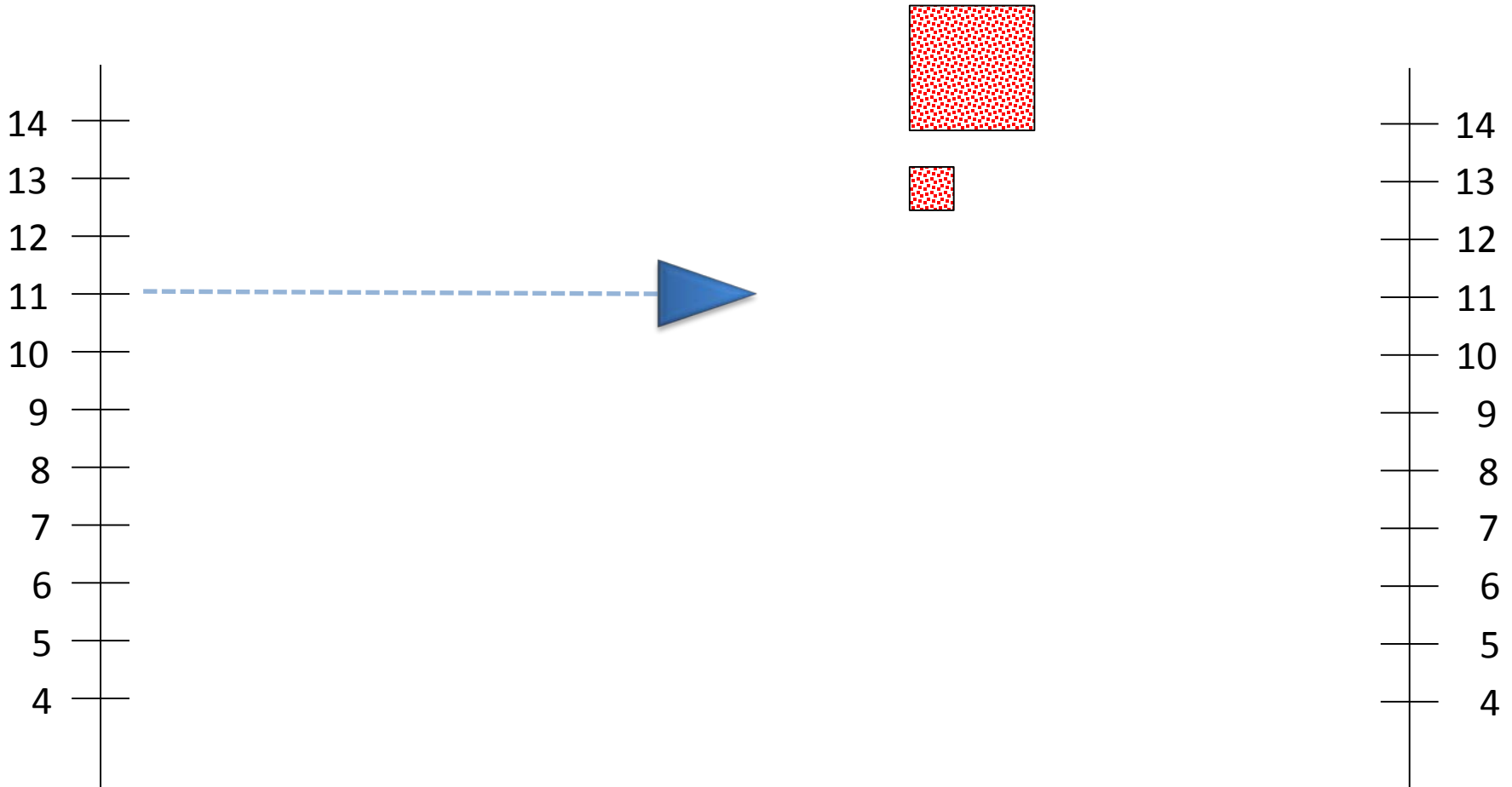


$\mu = 11$ $\sigma = ?$ $\mu = ?$ $\sigma = ?$

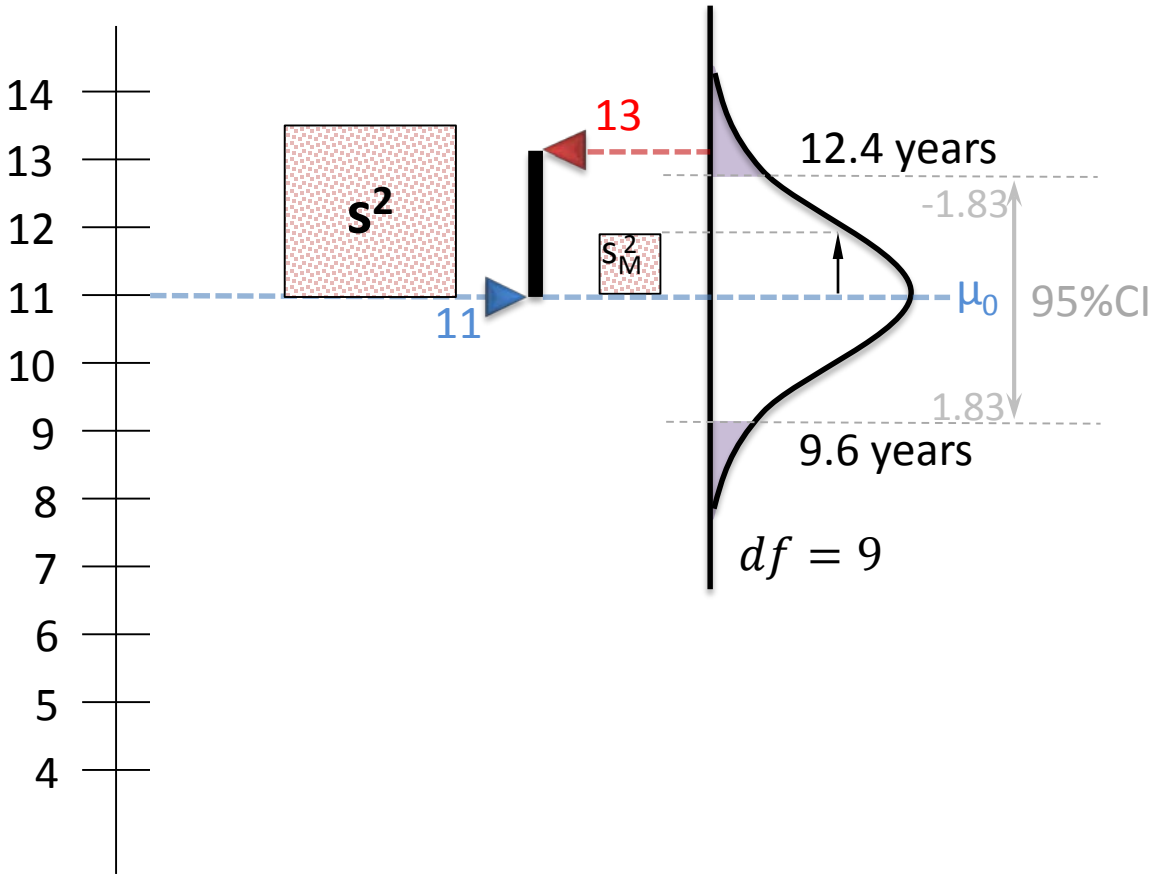
R^2




14
13
12
11
10
9
8
7
6
5
4
SS=86
SS = 46
14
13
12
11
10
9
8
7
6
5
4


14
13
12
11
10
9
8
7
6
5
4
14
13
12
11
10
9
8
7
6
5
4

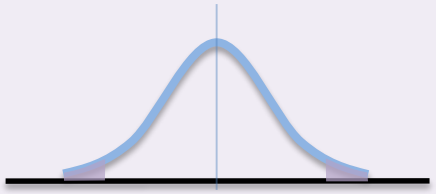
Do poodles live about 11 years?



1.83

H_0 : Males Boxers live as long as Females

$H_0 : \mu_{male} = \mu_{female}$

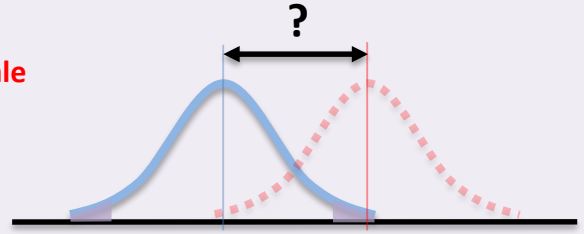


$\mu = 9$

$\sigma = 2.3$

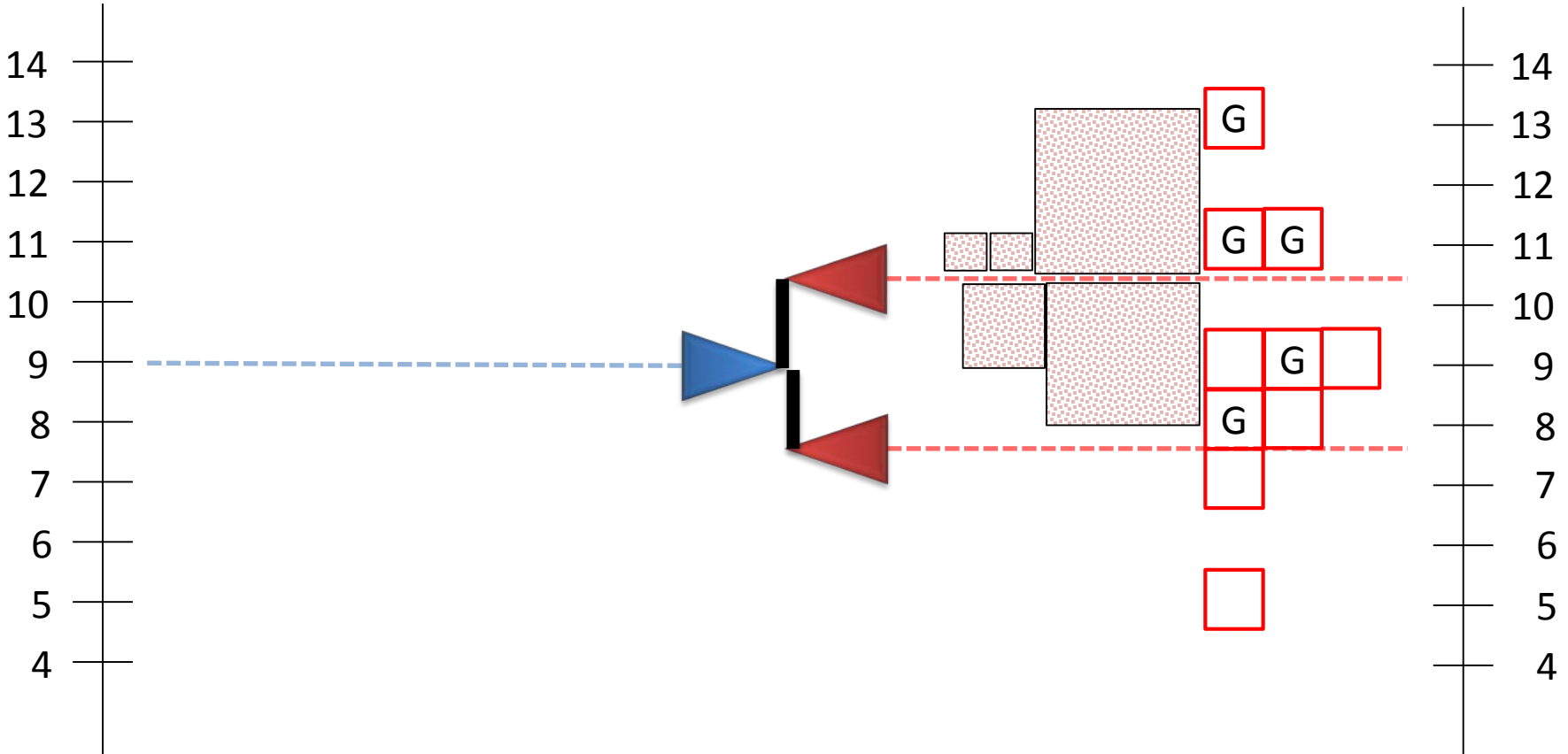
H_1 : No, they are different

$H_1 : \mu_{male} \neq \mu_{female}$



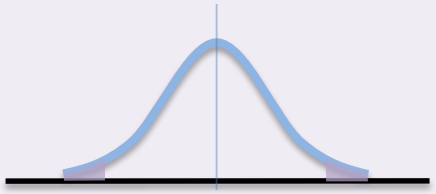
$\bar{X} = 10.4$ $\bar{X} = 9.6$

$s = 1.81$ $s = 1.81$



H_0 : Males Boxers live as long as Females

$H_0 : \mu_{male} = \mu_{female}$

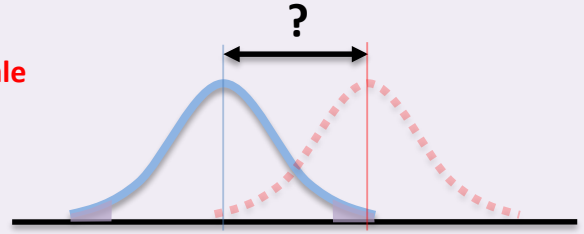


$\mu = 9$

$\sigma = 2.3$

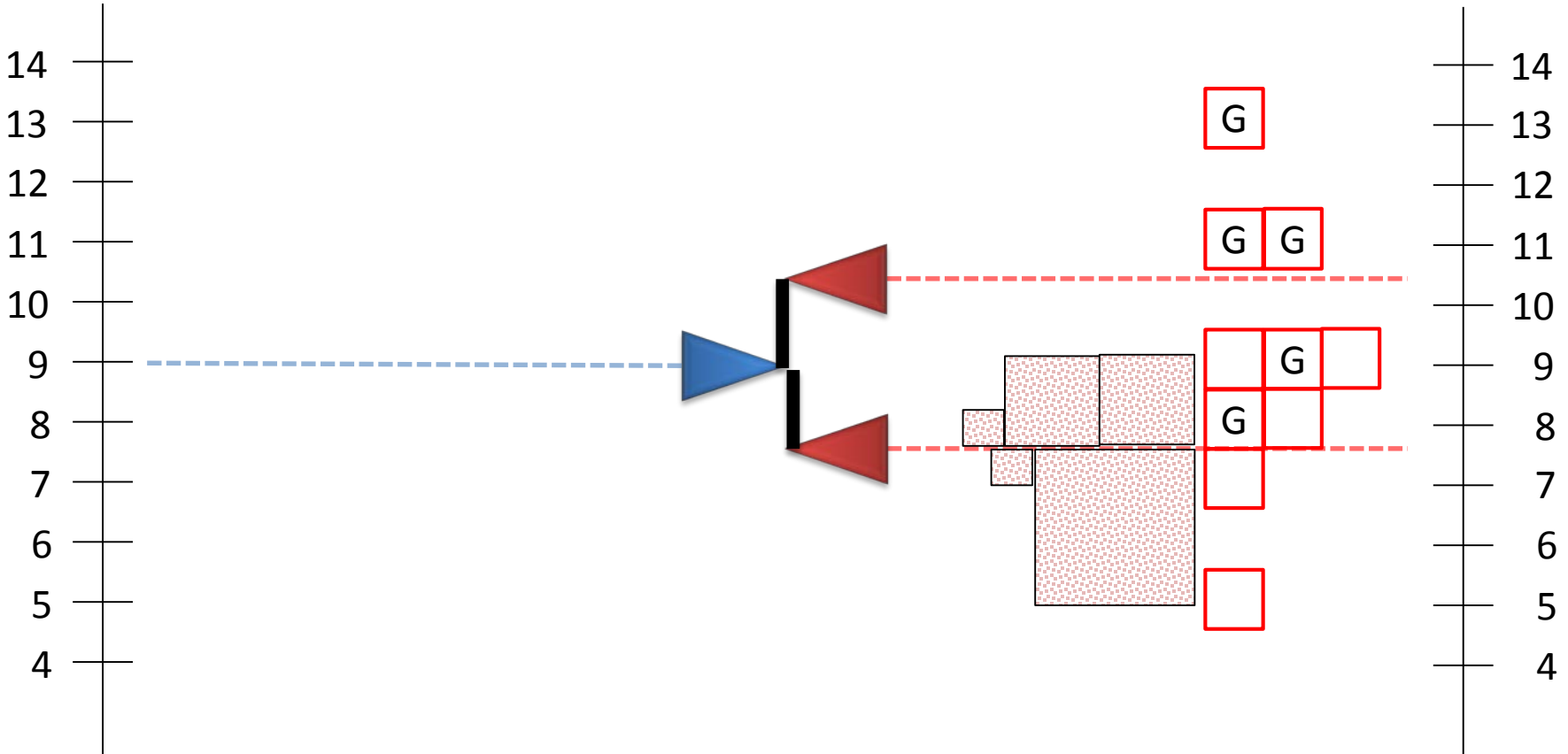
H_1 : No, they are different

$H_1 : \mu_{male} \neq \mu_{female}$



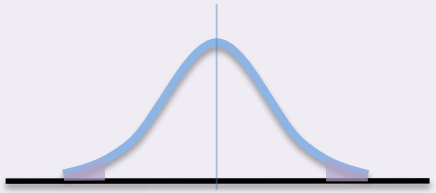
$\bar{X} = 10.4$ $\bar{X} = 9.6$

$s = 1.81$ $s = 1.81$



H_0 : Males Boxers live as long as Females

$H_0 : \mu_{male} = \mu_{female}$

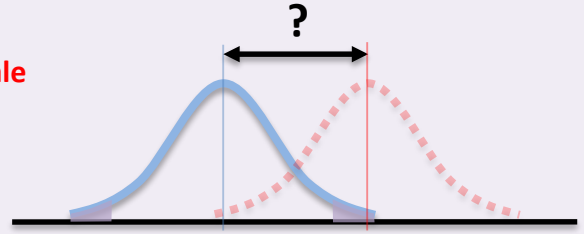


$\mu = 9$

$\sigma = 2.3$

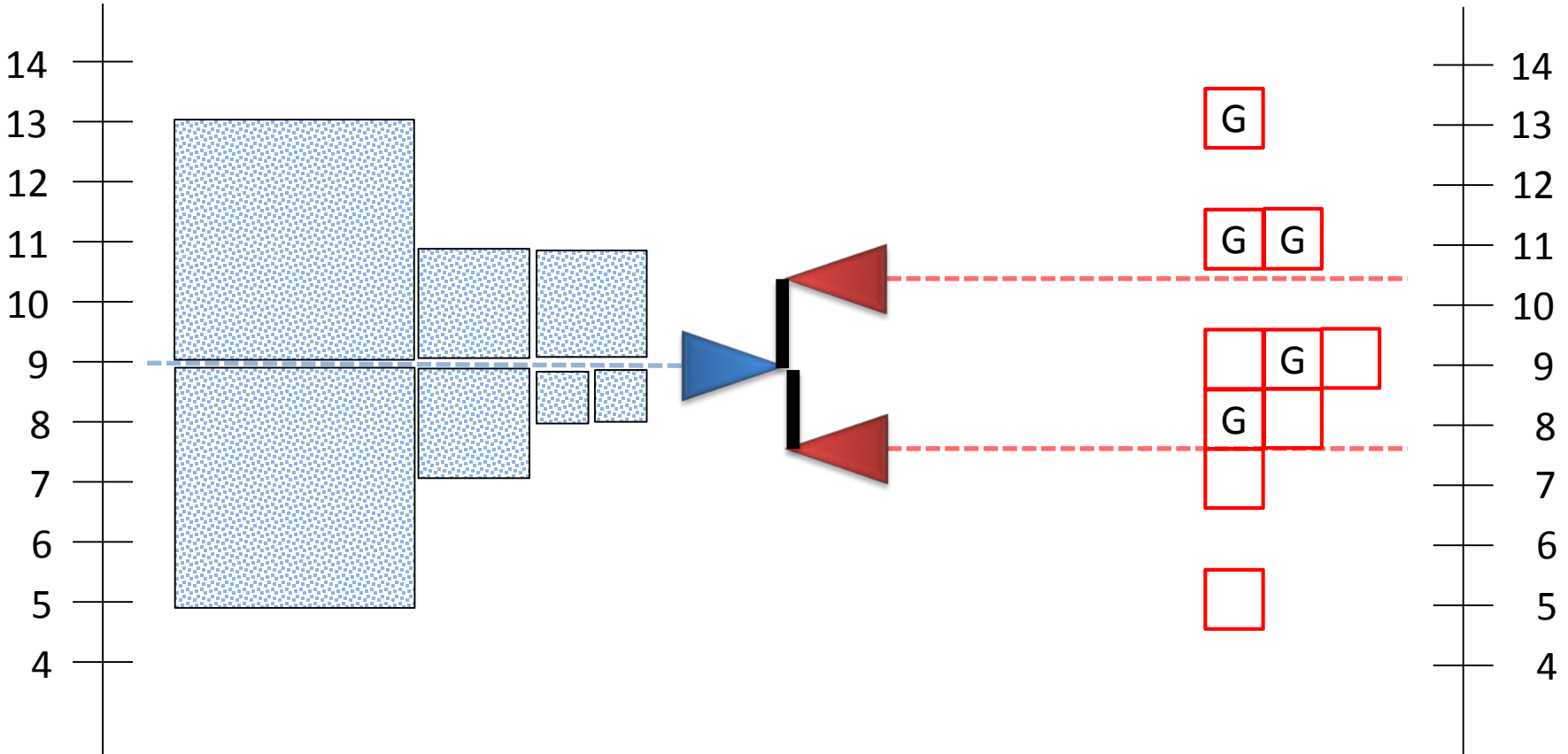
H_1 : No, they are different

$H_1 : \mu_{male} \neq \mu_{female}$



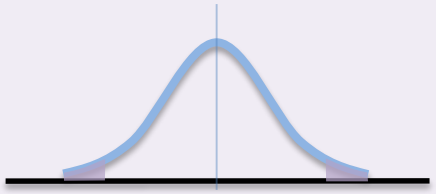
$\bar{X} = 10.4$ $\bar{X} = 9.6$

$s = 1.81$ $s = 1.81$



H_0 : Males Boxers live as long as Females

$H_0 : \mu_{male} = \mu_{female}$

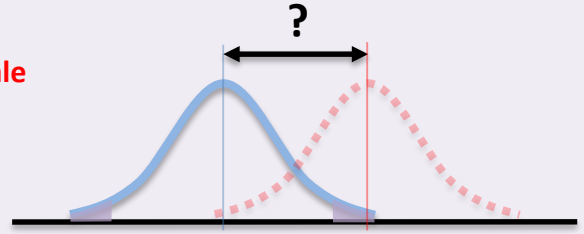


$\mu = 9$

$\sigma = 2.3$

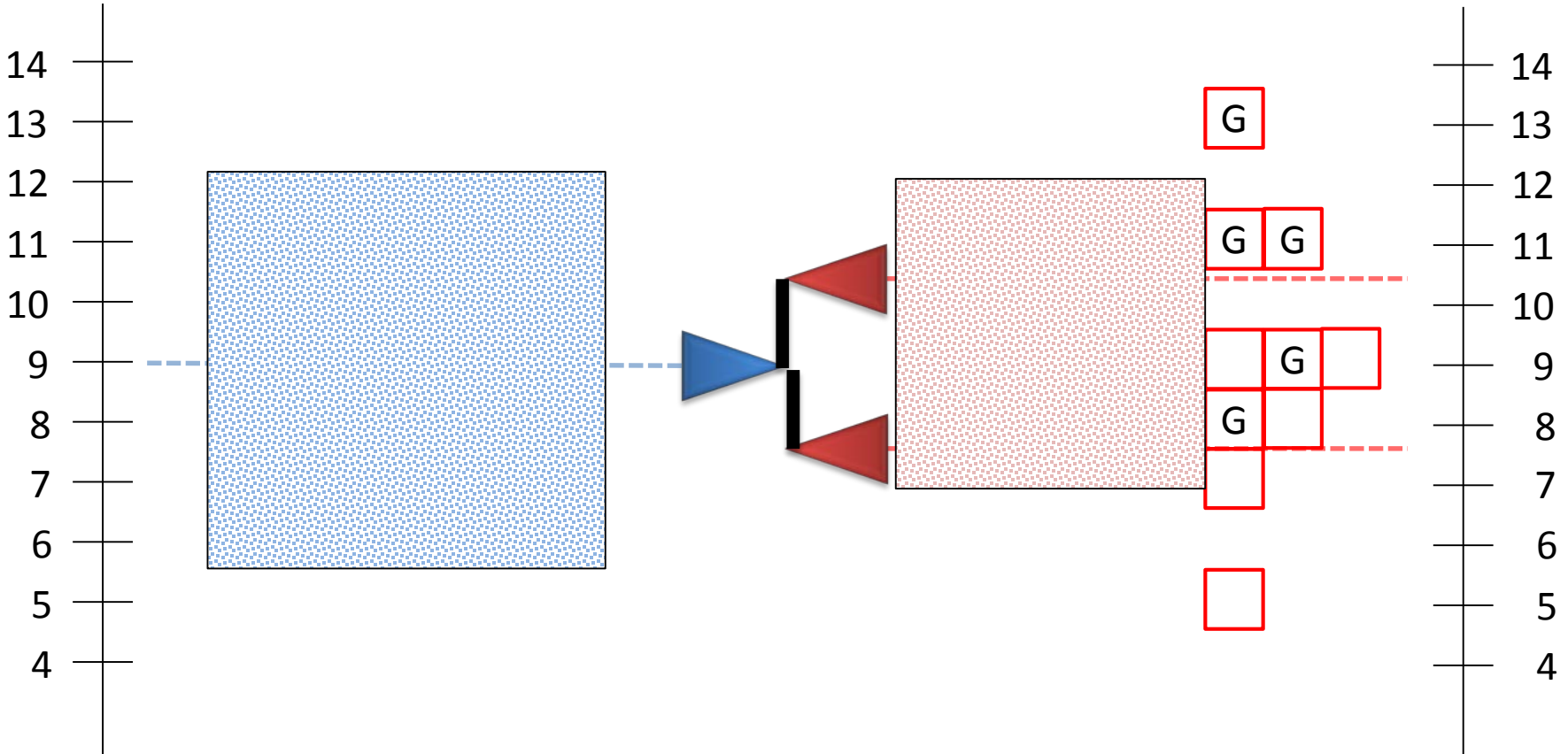
H_1 : No, they are different

$H_1 : \mu_{male} \neq \mu_{female}$



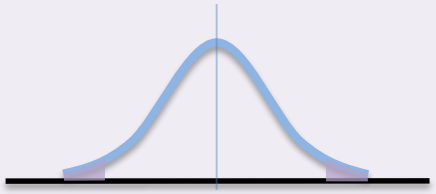
$X = 10.4$ $\bar{X} = 9.6$

$s = 1.81$ $s = 1.81$



H_0 : Males Boxers live as long as Females

$H_0 : \mu_{male} = \mu_{female}$

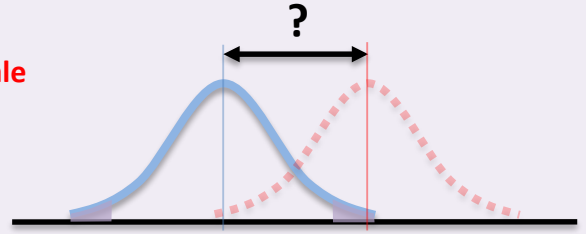


$\mu = 9$

$\sigma = 2.3$

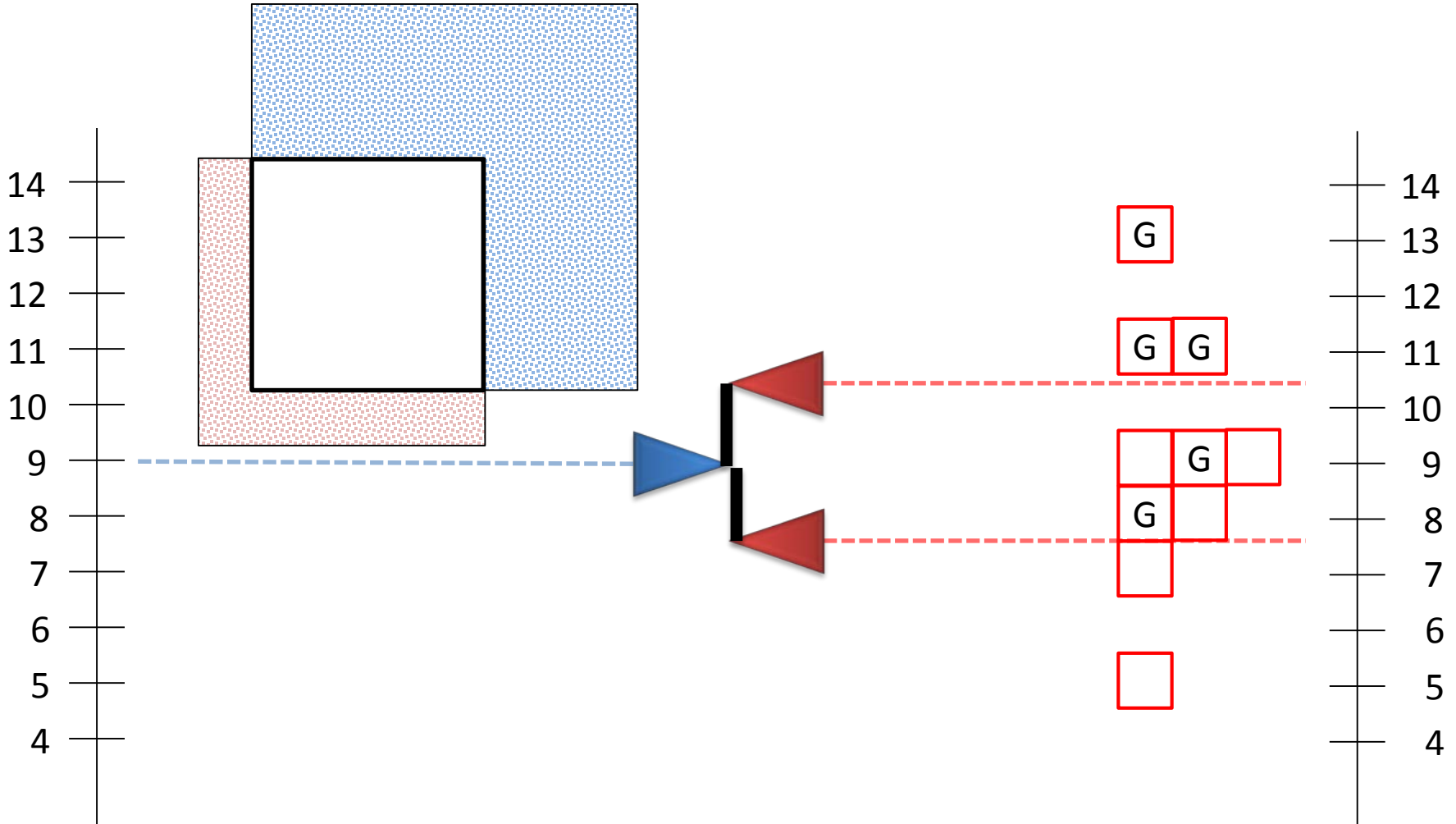
H_1 : No, they are different

$H_1 : \mu_{male} \neq \mu_{female}$



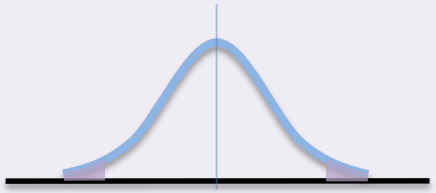
$\bar{X} = 10.4$ $\bar{X} = 9.6$

$s = 1.81$ $s = 1.81$



H_0 : Males Boxers live as long as Females

$H_0 : \mu_{male} = \mu_{female}$

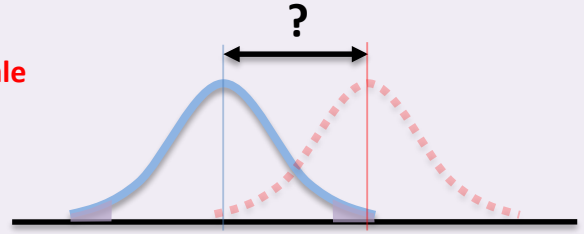


$\mu = 9$

$\sigma = 2.3$

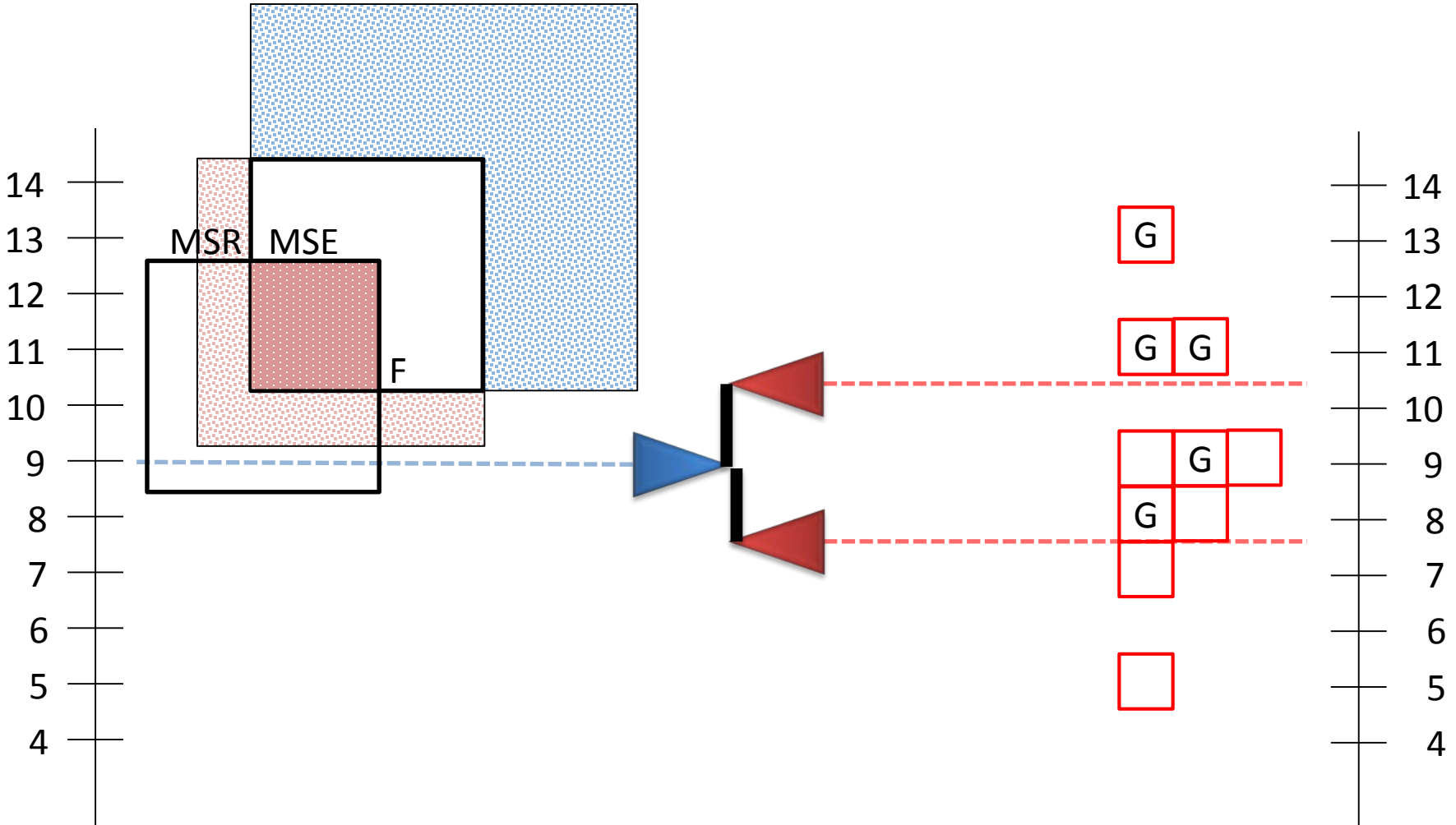
H_1 : No, they are different

$H_1 : \mu_{male} \neq \mu_{female}$

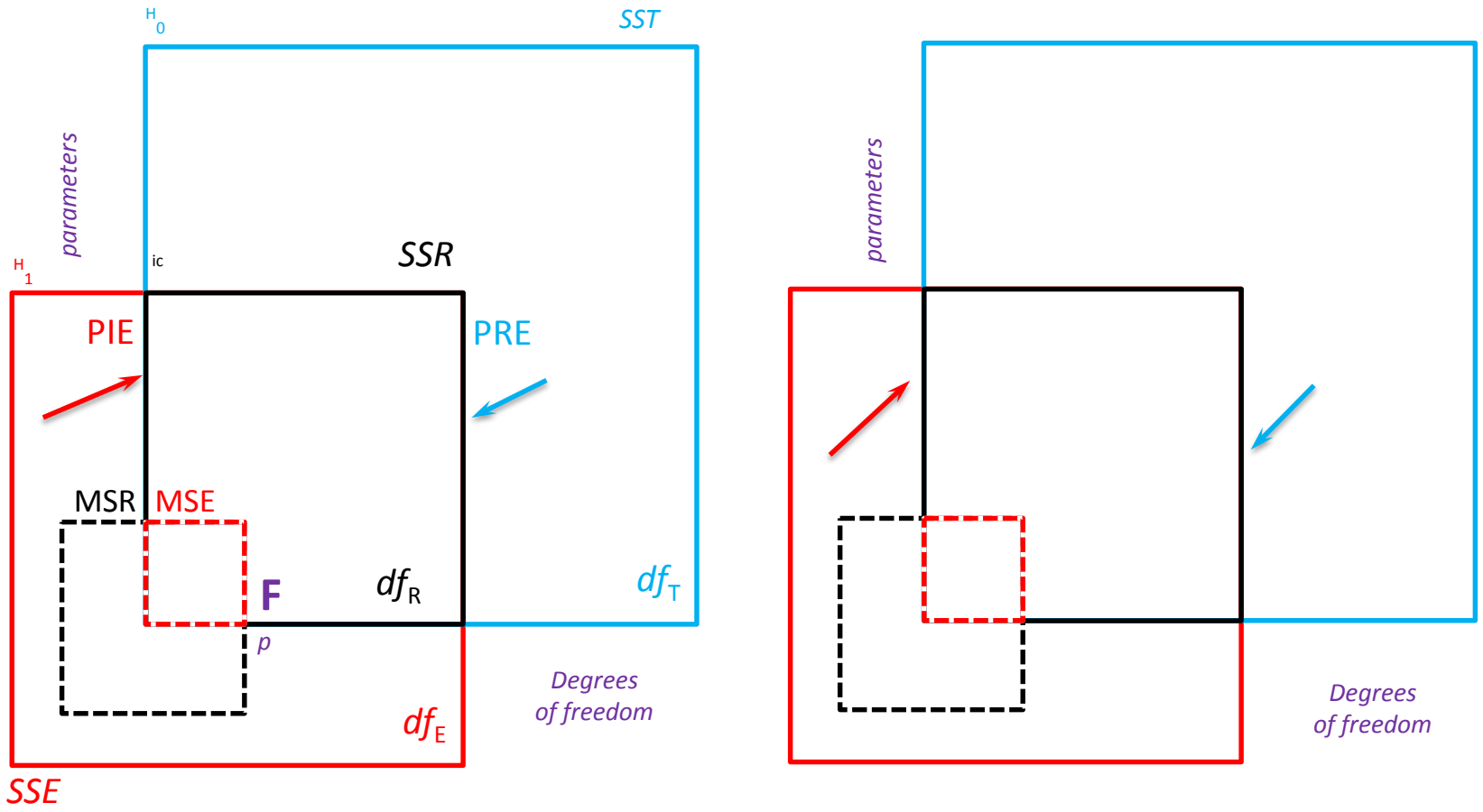


$\bar{X} = 10.4$ $\bar{X} = 9.6$

$s = 1.81$ $s = 1.81$



ANOVA results table



Schematics. Print out and fill in with your own numbers