Handout 15: Confidence interval for proportion supporting gay marriage

```
table(politics$gaymarriage)
```

```
##
## No legal recognition          Civil union Support gay marriage
##                 1543                 1989                 2382
```

```
#sum up to get n
1543+1989+2382
```

```
## [1] 5914
```

```
#estimate p-hat
round(2382/5914,2)
```

```
## [1] 0.4
```

```
#t-stat
qt(0.975, 5914-1)
```

```
## [1] 1.960365
```

$$\texttt{standard error} = \sqrt{\hat{p} * (1 - \hat{p})/n} = \quad \text{sqrt(.4*.6/5914)=0.0064}$$

$$\texttt{confidence interval} = \hat{p} \pm t * (\texttt{standard error}) = \begin{array}{l} \text{0.4+1.960365*.0064=0.413} \\ \text{0.4-1.960365*.0064=0.387} \end{array}$$

We are 95% confident that the true population percentage supporting gay marriage in the US in 2012 is between 38.7% and 41.3%.

Name (Print and Sign): _____