

R Competency #5

Scott Dolan

10/8/2020

Use R to calculate the following probabilities under the given conditions.

1. X Binomial (x ,10, 0.40)

a. $P(X=5)$

```
dbinom(5, 10, 0.40)
```

```
## [1] 0.2006581
```

b. $P(X > 5)$

```
1-pbinom(5,10,.40)
```

```
## [1] 0.1662386
```

c. $P(3 < X \leq 7)$

```
sum(dbinom(4:7, 10, 0.40))
```

```
## [1] 0.6054248
```

2. X Geometric (x , .40)

a. $P(X=5)$

```
dgeom(5, 0.40)
```

```
## [1] 0.031104
```

b. $P(X > 5)$

```
1-pgeom(5, 0.40)
```

```
## [1] 0.046656
```

c. $P(3 < X \leq 7)$

```
sum(dgeom(4:7, 0.40))
```

```
## [1] 0.1128038
```

3. X NegativeBinomial (x ,2, .40)

a. $P(X=5)$

```
dnbinom(5,2,.4)
```

```
## [1] 0.0746496
```

b. $P(X > 5)$

```
1-pnbinom(5,2,.4)
```

```
## [1] 0.1586304
```

c. $P(3 < X \leq 7)$

```
sum(dnbinom(4:7,2,.4))
```

```
## [1] 0.2664161
```

4. X HyperGeometric (x , 20,20,10)

a. $P(X=5)$

```
dhyper(5,20,20,10)
```

```
## [1] 0.2835734
```

b. $P(X > 5)$

```
1-phyper(5,20,20,10)
```

```
## [1] 0.3582133
```

c. $P(3 < X \leq 7)$

```
sum(dhyper(4:7,20,20,10))
```

```
## [1] 0.8309119
```

5. X Poisson (x , 2)

a. $P(X=5)$

```
dpois(5,2)
```

```
## [1] 0.03608941
```

b. $P(X > 5)$

```
1-ppois(5,2)
```

```
## [1] 0.01656361
```

c. $P(3 < X \leq 7)$

```
sum(dpois(4:7,2))
```

```
## [1] 0.1417798
```