8. a. k = 6, n = 100, p = 0.04

```
1 - pbinom(5, 100, 0.04)
```

```
## [1] 0.2116251
```

8. b. p = 0.04

```
sqrt(0.04*0.96/100)
```

```
## [1] 0.01959592
```

sd = 0.0196

```
1 - pnorm(0.06, 0.04, 0.0196)
```

```
## [1] 0.1537675
```

8. c. k = 57, n = 100, p = 0.51

```
1 - pbinom(56, 100, 0.51)
```

```
## [1] 0.1355477
```

8. d. p = 0.51

```
sqrt(0.51*0.49/100)
```

```
## [1] 0.04999
```

sd = 0.05

```
1 - pnorm(0.57, 0.51, 0.05)
```

```
## [1] 0.1150697
```

8. e. The percent difference between the answers to a) and b), in which np and nq are less than 10, is greater than the percent difference between the answers to c) and d), in which np and nq are greater than 10. np and nq being greater than 10 results in more similar Binomial and Normal distributions.

9. a. p = 0.07

```
sqrt(0.07*0.93/200)
```

```
## [1] 0.01804162
```

sd = 0.018 21. b. Bernoulli trials and np and nq are greater than 10

Bernoulli trials: success/failure: yes; success = don't pay back loan on time; failure = pay back loan on time independent: no, drawing without replacement OR 200 < 10% of all borrowers; most likely true constant probability of success: yes because the 200 are drawn at random

np >= 10: 200 * 0.07 = 14 nq >= 10: 200 * 0.93 = 186 21. c.

```
1 - pnorm(0.1, 0.07, 0.018)
```

```
## [1] 0.04779035
```

22. a. Both the Binomial and Normal distributions are appropriate.

We have Bernoulli trials: success/failure: yes; success = use phone to connect; failure = does not use phone to connect independence: no, drawing without replacement OR 100 < 10% of all teens, yes constant probability of success: yes, drawn at random

np >= 10: 100 * 0.84 = 84 nq >= 10: 100 * 0.16 = 16

p = 0.84

```
sqrt(0.84*0.16/100)
```

```
## [1] 0.03666061
```

sd = 0.037

22. b.

```
1 - pnorm(0.9, 0.84, 0.037)
```

```
## [1] 0.0524422
```