

**Which grade is more likely to go to Prom?**

At many high schools, Prom is an annual dance that only Juniors and Seniors can purchase tickets for. The student council at a large high school is wondering if Juniors or Seniors are more likely to attend Prom. They take a random sample of 50 Juniors and find that 28 are planning on attending Prom. They select a random sample of 45 Seniors and 29 are planning on attending. Construct and interpret a 95% confidence interval for the difference in proportions of Juniors and Seniors who are planning on attending Prom.

1. What is the **point estimate** for...

the proportion of Juniors planning on attending prom?  $\hat{p}_1 =$  \_\_\_\_\_

the proportion of Seniors planning on attending prom?  $\hat{p}_2 =$  \_\_\_\_\_

the difference in the proportion of Jrs and Srs planning on attending prom?  $\hat{p}_1 - \hat{p}_2 =$  \_\_\_\_\_

2. Check the conditions needed in order to construct a confidence interval.

Random:

10%:

Large Counts:

3. Construct and interpret a 95% confidence interval for the difference in proportions of Juniors and Seniors who are planning on attending prom.

General Formula:

Specific Formula:

Work:

Conclude:

4. Does the interval provide convincing evidence that Juniors have a lower proportion planning on going to prom or is it plausible that there is no difference between the two classes? Explain.

Name: \_\_\_\_\_ Hour: \_\_\_\_\_ Date: \_\_\_\_\_

## Constructing a Confidence Interval for $p_1 - p_2$

Important ideas:

### Check Your Understanding

In a social study, a random sample of 150 teachers were selected and an independent random sample of 100 nurses were selected. Each person was asked if they currently have a second job. The results showed that 48 of the 150 teachers and 21 of the 100 nurses had a second job. Construct and interpret a 95% confidence interval for the difference in the proportion of all teachers and nurses that have a second job.

**STATE:** Parameter:

Confidence level:

**PLAN:**

Name of procedure:

Check conditions:

**DO:**

General Formula:

Specific Formula:

Answer:

**CONCLUDE:**