

Name: _____ Block: _____ Date: _____

ACT Scores: Which school is better?



ACT scores at Ardrey Kell High School are Normally distributed with mean 26 and standard deviation 3. ACT scores at Providence HS are skewed to the right with mean 25 and standard deviation 5.



1. We randomly select 25 students from AKHS and 30 students from PHS. Use the information given to describe the sampling distributions of the average ACT scores for the two samples.

	AKHS	PHS
Shape:		
Mean:		
SD:		

2. Suppose we took a sample of 25 students from AKHS and a sample of 30 students from PHS and found the **difference in the sample means**. Describe the **sampling distribution of the difference in mean ACT scores** (AKHS – PHS).

Mean:

Standard Deviation:

Shape:

3. Calculate the probability that random sample of 25 AKHS students has a higher mean ACT score than the random sample of 30 PHS students.

Name: _____ Block: _____ Date: _____

The Sampling Distribution of $\bar{x}_1 - \bar{x}_2$

Important ideas:

Check Your Understanding

Is it more expensive to live in California or Florida? Monthly cost of living expenses for California are approximately Normal with mean $\mu_C = \$10,800$ and standard deviation $\sigma_C = \$3,200$. Monthly cost of living expenses for Florida are approximately Normal with mean $\mu_F = \$8,500$ and standard deviation $\sigma_F = \$2,700$. Suppose we select independent SRSs of 16 residents of California and 9 residents of Florida and calculate the sample mean monthly cost of living, \bar{x}_C and \bar{x}_F .

- What is the shape of the sampling distribution of $\bar{x}_C - \bar{x}_F$? Why?
- Find the mean and standard deviation of the sampling distribution of $\bar{x}_C - \bar{x}_F$.
- Calculate the probability that the average monthly cost of living expense of the 16 randomly selected California residents is less than the average monthly cost of living expense of the 9 randomly selected Florida residents.