

## The Central Limit Theorem

## Math Academy 1 Worksheet 8-B

### 1. Fill in the blanks.

a) The central limit theorem states that distributions of sample means tend to be \_\_\_\_\_ and tend to have a standard deviation of \_\_\_\_\_.

b) The above statement is more valid the larger the \_\_\_\_\_ is and the closer to \_\_\_\_\_ the underlying distribution is.

### 2. Circle which sample would be more likely to turn out as stated, assuming the samples are random.

- |                                                      |                         |                     |
|------------------------------------------------------|-------------------------|---------------------|
| a) Most people have black hair.                      | a) a classroom          | b) a stadium        |
| b) Isaiah makes all of his free throws.              | a) one game             | b) one month        |
| c) Trump gets a favorable rating in a Texas poll.    | a) 100 people           | b) 200 people       |
| d) Fewer than two thirds of nickels land on heads.   | a) a handful of nickels | b) a jar of nickels |
| e) More than 40% of 6-sided dice roll higher than 4. | a) 40 dice              | b) 60 dice          |
| f) Nate comes out ahead after gambling in Las Vegas. | a) one night            | b) one week         |

3. Placement exam scores at Ingesson University are approximately normally distributed with a mean of 180 and a standard deviation of 48. Calculate the probability of each of the following for students at IU. For each problem, sketch a curve and shade the area representing the answer.

- |                                                   |                                                   |
|---------------------------------------------------|---------------------------------------------------|
| a) The next person scores over 200                | b) The next 10 people average over 200            |
| c) The next 20 people average between 160 and 200 | d) The next 40 people average between 160 and 200 |