

Questions on 8.1 HW?

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4. Robin made it to the swimming finals for her state championship meet. The times in the finals were as follows:

$$\{2:10.3, 2:12.5, 2:12.7, 2:12.38, 2:20.45, 2:21.43\}$$

If Robin's time was a 2:12.7, what percent of her competitors did she beat?

5. Remember that in statistics,  $\mu$  is the symbol for mean and  $\sigma$  is the symbol for standard deviation. Using technology, identify the mean and standard deviation for the data set below:

$$\{1.23, 1.3, 1.1, 1.48, 1, 1.14, 5.21, 5.1, 4.63\}$$

$\mu = 2.5$   $\sigma = 1.8$  w/calc.

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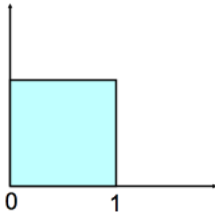
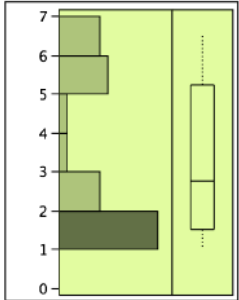
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**7. For each distribution, identify the properties that match with a Normal Distribution, and then decide if the distribution is Normal or not.**

<p><b>A.</b></p> 	<p>Normal Properties:  <i>symmetric, but doesn't have any other normal properties</i></p> <p>Normal? Yes or <u>No</u></p>
<p><b>B.</b></p> 	<p>Normal Properties:</p> <p>Normal? Yes or No</p>

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10. Several Normal curves are given below. Estimate the standard deviation of each one.

A 12-15 ok estimate

B \_\_\_\_\_

C \_\_\_\_\_

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6. For the data in number 5, what time would fall one standard deviation above the mean?

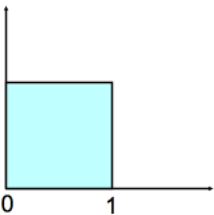
Three standard deviations below the mean?

$2.5 - 3(1.8) = \boxed{\phantom{00}}$

$\frac{2.5}{\bar{x}}$        $\frac{2.5 + 1.8}{\bar{x} + \sigma} = 4.3$

**Set**  
Topic: Properties of Normal Curves

7. For each distribution, identify the properties that match with a Normal Distribution, and then decide if the distribution is Normal or not.

<p>A.</p> 	<p>Normal Properties:</p>   <p>Normal? Yes or No</p>
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13.  $h(x) = 3 + \sqrt{2x-1}$   
 $y = 3 + \sqrt{2x-1}$   
 $x = 3 + \sqrt{2y-1}$   
 $(x-3)^2 = \sqrt{2y-1}^2$   
 $(x-3)^2 = 2y-1$   
 $(x-3)^2 + 1 = 2y$

14.  $\frac{(x-3)^2 + 1}{2} = y$   
 $\frac{(x-3)^2 + 1}{2} = h^{-1}(x)$

Determine if the following functions are inverses by finding  $f(g(x))$  and  $g(f(x))$ .

15.  $f(x) = 2x + 3$  and  $g(x) = \frac{1}{2}x - \frac{3}{2}$   
 $f(g(x)) = 2\left(\frac{1}{2}x - \frac{3}{2}\right) + 3$   
 $g(f(x)) = \frac{1}{2}(2x + 3) - \frac{3}{2}$

16.  $f(x) = 2x^2 - 3$  and  $g(x) = \sqrt{\frac{x^2}{2} + 3}$

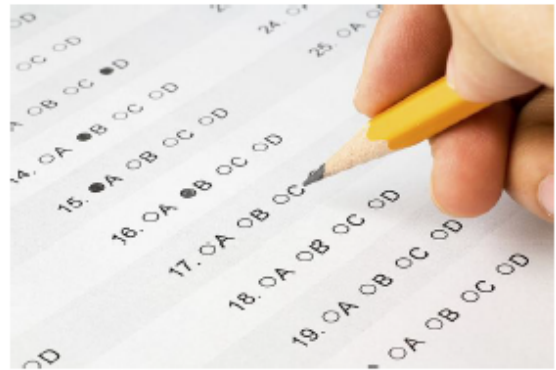
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# Illuminate Block 3 Benchmark

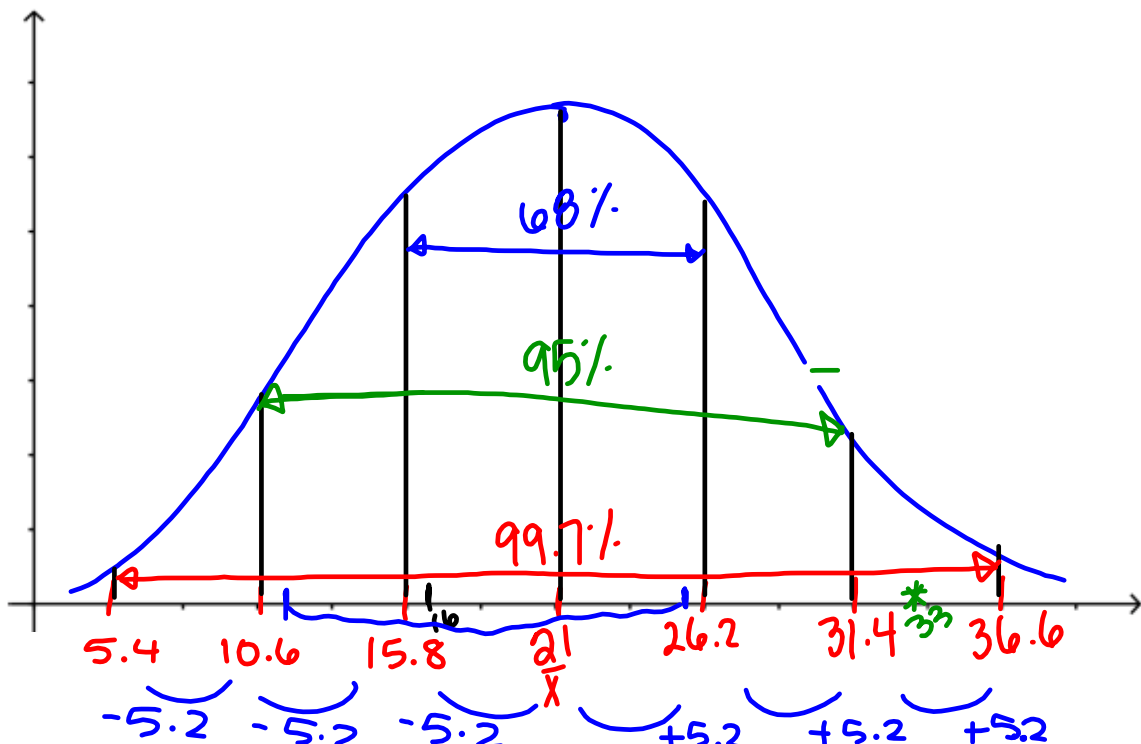
-for participation points-

# 8.2 Just ACT Normal

## A Solidify Understanding Task



1. One of the most common examples of a normal distribution is the distribution of scores on standardized tests like the ACT. In 2010, the mean score was 21 and the standard deviation was 5.2 (Source: National Center for Education Statistics). Use this information to sketch a normal distribution curve for this test.



2. Use technology to check your graph. Did you get the points of inflection in the right places? (Make adjustments, if necessary.)

3. In "What Is Normal", you learned that the 68 - 95 - 99.7 rule. Use the rule to answer the following questions:

- a. What percentage of students scored below 21? 50%
- b. About what percentage of students scored below 16? 16%
- c. About what percentage of students scored between 11 and 26?

$$\frac{1}{2}(95) + \frac{1}{2}(68) =$$

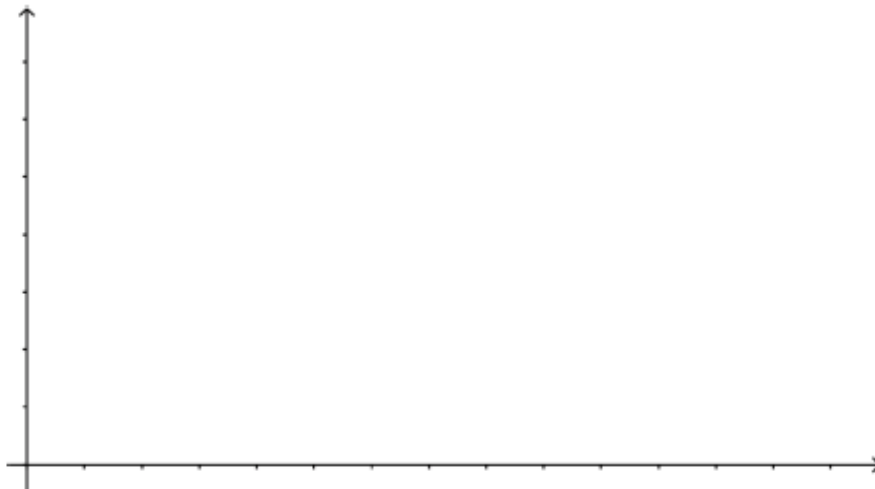
$$47.5 + 34 =$$

$$81.5\%$$



3. Your friend, Calvin, would like to go to a very selective college that only admits the top 1% of all student applicants. Calvin has good grades and scored 33 on the test. Do you think that Calvin's ACT score gives him a good chance of being admitted? Explain your answer.

4. Many students like to eat microwave popcorn as they study for the ACT. Microwave popcorn producers assume that the time it takes for a kernel to pop is distributed normally with a mean of 120 seconds and a standard deviation of 13 for a standard microwave oven. If you're a devoted popcorn studier, you don't want a lot of un-popped kernels, but you know that if you leave the bag in long enough to be sure that all the kernels are popped, some of the popcorn will burn. How much time would you recommend for microwaving the popcorn? Use a normal distribution curve and the features of a normal distribution to explain your answer.



Homework

Finish 8.2 "Ready, Set,  
Go"