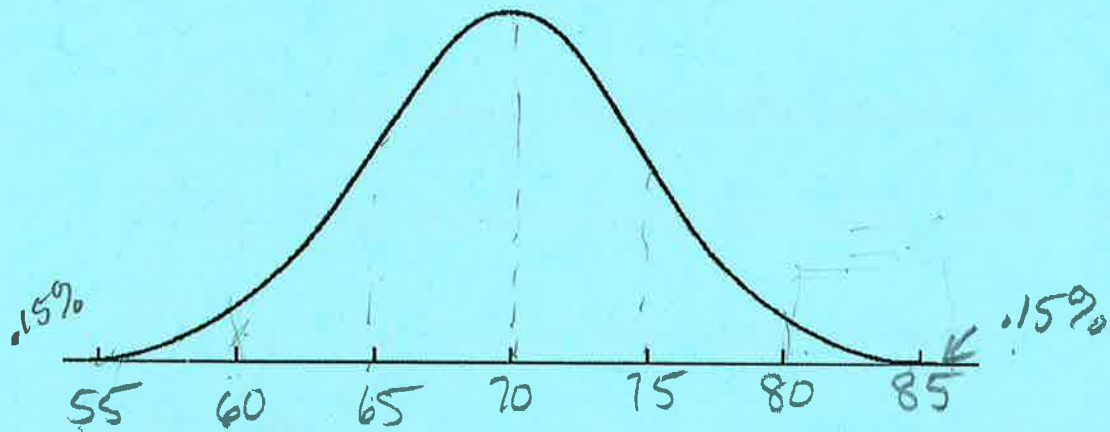


Name Key Date _____ Period _____

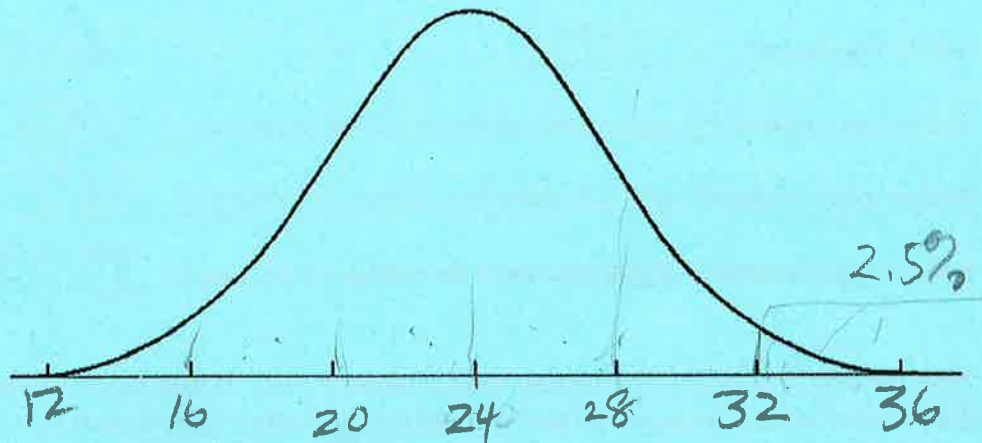
In a normal distribution, what percent of the values lie:

1. below the mean? 50%
2. above the mean? 50%
3. within approximately one standard deviation of the mean? 68%
4. within approximately two standard deviation of the mean? 95%
5. within approximately three standard deviation of the mean? 99.7%
6. 2000 freshmen at State University took a biology test. The scores were normally distributed with a mean of 70 and a standard deviation of 5. Label the mean and three standard deviations from the mean.



7. What percentage of the scores are between 65 and 75? 68%
8. What percentage of the scores are between 60 and 70? 47.5%
9. What percentage of the scores are less than a score of 55? .15%
10. What percentage of the scores are greater than a score of 80? 2.5%
11. Approximately how many biology students scored between 60 and 70? 950 students
 $2000(.475)$
12. Approximately how many biology students scored between 55 and 60? 47 students
 $(.0235)2000$

13. 500 juniors at Central High School took the ACT last year. The scores were normally distributed with a mean of 24 and a standard deviation of 4. Label the mean and three standard deviations from the mean.



14. What percentage of the scores are between 20 and 28? 68%
15. What percentage of the scores are between 16 and 32? 95%
16. What percentage of the scores are between 16 and 28? 81.5%
17. What percentage of the scores are less than a score of ~~15~~ ¹⁶? 2.5%
18. What percentage of the scores are greater than a score of 24? 50%
19. Approximately how many juniors scored between 24 and 28? 170 jrs
 $(.34)(500)$
20. Approximately how many juniors scored between 20 and 28? 340 jrs.
 $(.68)(500)$
21. Approximately how many juniors scored between 24 and 32? 237 jrs. 238 jrs
 $(.475)(500)$
22. Approximately how many juniors scored between 16 and 20? 67 jrs
 $(.135)(500)$
23. Approximately how many juniors scored higher than 32? 12 jrs or 13 jrs
 $(.025)(500)$

Adult Height (inches)		
	Male	Female
MEAN	68.8	63.6
Standard Deviation	2.65	2.5

Adult Shoulder Width (inches)		
	Male	Female
MEAN	17.7	16.0
Standard Deviation	0.85	0.85

z-score

$$z = \frac{\text{value} - \bar{x}}{s}$$

24. How tall is a male with a z-score of 1.6?

73.04"

$$z = 1.6 = \frac{x - 68.8}{2.65}$$

25. If a female is 5'5" tall and a male has a z-score of 0.3, who is taller?

male

60 + 5
65"

$$0.3 = \frac{x - 68.8}{2.65}$$

$$x = 69.595"$$

26. Jimbo (a male) has a standardized value of -1.2 for shoulder width. Can he walk between two poles that are set 16.5 inches apart without turning sideways?

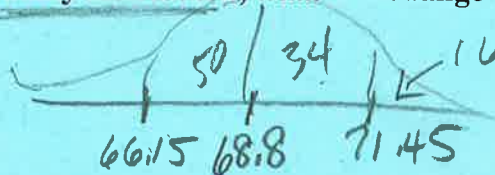
16.5"

$$-1.2 = \frac{x - 17.7}{0.85}$$

$$x = 16.68$$

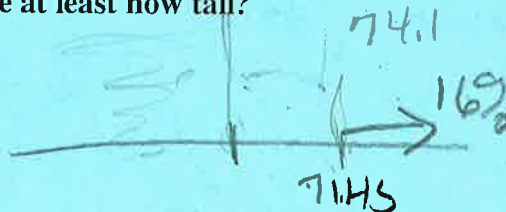
No

27. If this data is normally distributed, what is the range of heights that represents 68% of all the men?



min max
[66.15, 71.45]

28. 95% of male badminton players are in the top 16% of height. This means that 95% of male badminton players are at least how tall?



71.45"

29. How tall is Jenny (a female) if 2.5% of women are shorter than her?

58.6"

$$63.6 - 2(2.5)$$

