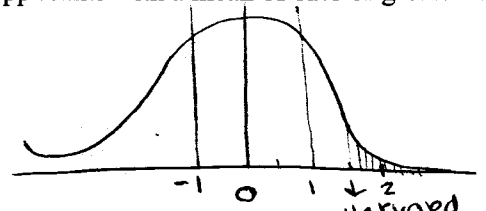
The last four questions use information from this statement, but each question is separate (i.e. you can get the first one wrong and it won't affect the others): The Medical College Admissions Test is constructed to be normally distributed with a mean of 9 and a standard deviation of 2. Approximately 20,000 people take the test every year. SHOW YOUR WORK FOR FULL CREDIT.

6. Harvard Medical School only considers applicants with a mean of 12.1 or greater. How many of the test takers qualify for Harvard? (6 points)

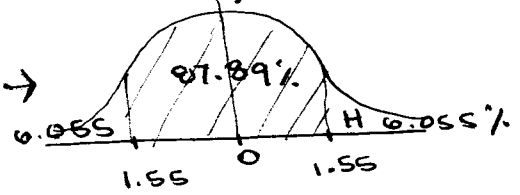
TEST
$\bar{x} = 9$
$SD = 2$
total = 20,000

HARVARD
$\bar{x} \geq 12.1$



$\frac{12.1 - 9}{2} = 1.55(z)$

$1.55 = 87.89\%$ →

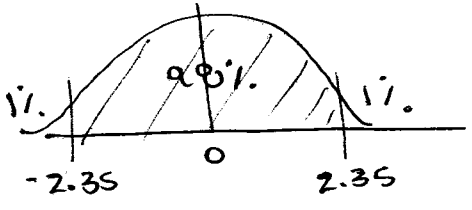


$\frac{100 - 87.89}{2} = 6.055\%$

$6.06\% \times 20{,}000 = 12120$

6.06 qualify

7. The lowest 1% of test takers enroll at Dr. Nick Riviera's School of Medicine. At and below what score is the lowest 1%? (6 points)



$100\% - 1\% - 1\% = 98\% = 2.35(z)$

$-2.35 = \frac{x - 9}{2}$

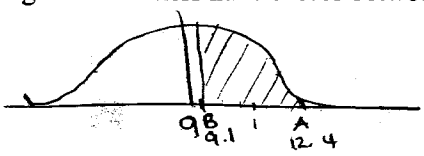
$-4.7 = x - 9$

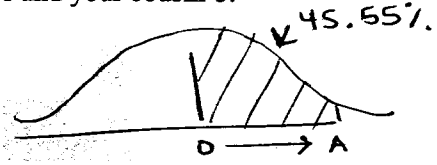
$x = 4.3$

lowest 1% score at or below 4.3

8. You decided to take the MCAT and got an 12.4. Your cousin, who went to USC, also took the MCAT got a 9.1. What percentage of test takers have scores between yours and your cousin's? (6 points)

A = 12.4
B = 9.1
$\bar{X}$ = 9
SD = 2
total = 20,000





① $\frac{12.4-9}{2}$ = 1.7 (Z) = 91.09% ÷ 2 = 45.55%

② $\frac{9.1-9}{2}$ = .05 (Z) = 3.99% ÷ 2 = 2.0

A − B = % btwn two scores

45.55% − 2.0% = 43.55% ≈ 43.6%

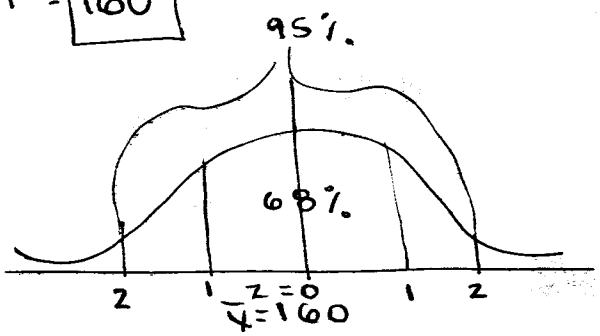
9. After thinking it over, you decide not to apply to Medical School, but apply to Law School instead. And to your surprise, the UCLA Law School is willing to consider applicants with a valid MCAT score – with the following condition: All applicants must add 23 to their MCAT Score first and then multiply that score by 5. So for example, you got a 12.4, your new score is 177.

If you apply UCLA rules to ALL the MCAT scores, what are the new mean, median and standard deviation? (6 points)

5 (ADD 23 to MCAT)

$\bar{X}$ = (9 + 23)5 = 160

m = 160



$\frac{285-160}{125}$ = 1 = Z

$\frac{177-160}{125}$ = .136 = 11.92%

SD → 177 = $\frac{177-160}{X}$ = 1.7

9 → 160
12.4 → 177
SD = ?
Z = 1.7

177 − 160 = 1.7X
17 = 1.7X
X = 10