SURVEY: Example Master E

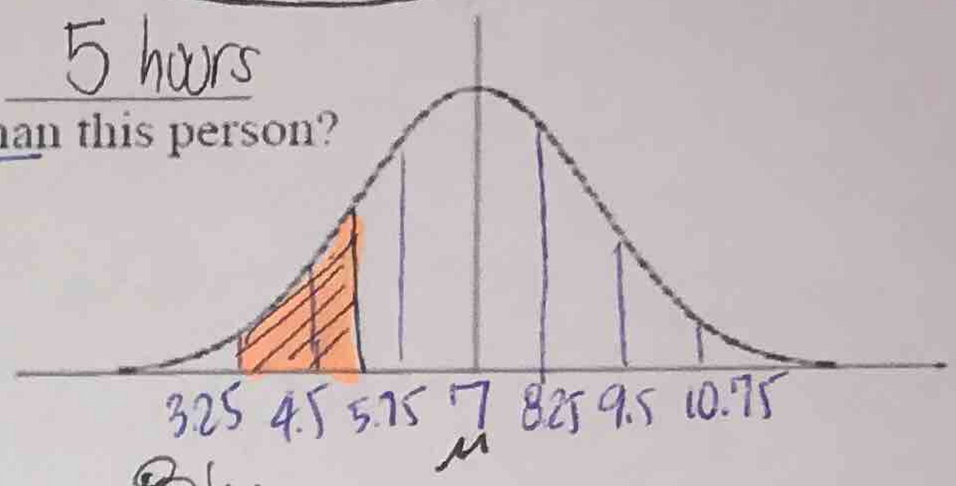
A previous survey administered to high school students showed that the amount of sleep (in hours) in a 24-hour period is normally distributed with a mean of 7 hours and a standard deviation of 1.25. = σ

How long did the person who slept the least in your group sleep? 5 hours
What percent of high school students from the survey slept less than this person?

$P(X<5)$

$z = \frac{5-7}{1.25} = \frac{-2}{1.25} = -1.6 \Rightarrow .0548$

5.48%



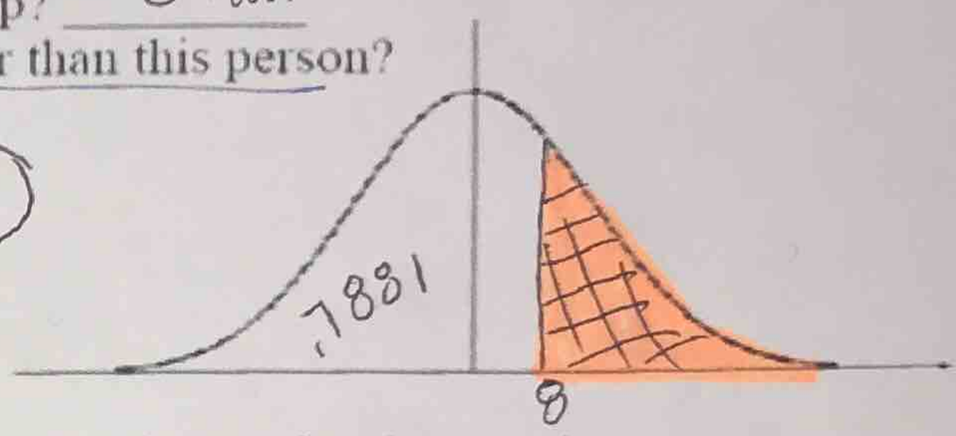
How long did the person who slept the longest in your group sleep? 8 hours
What percent of high school students from the survey slept longer than this person?

$P(X>8)$

$z = \frac{8-7}{1.25} = \frac{1}{1.25} = .8 \Rightarrow .7881$

$1-.7881 = .2119$

21.19%

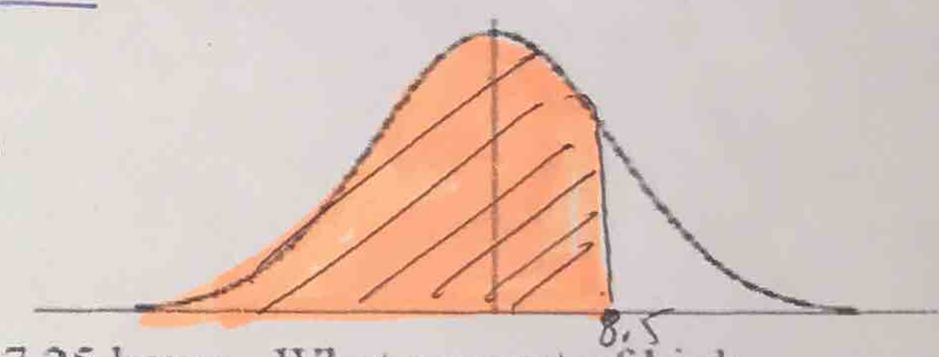


Another student, Kyle, is late to class and is assigned to your group. Kyle says he slept 8.5 hours.
What percent of high school students from the survey slept less than Kyle?

$P(X<8.5)$

$z = \frac{8.5-7}{1.25} = \frac{1.5}{1.25} = 1.2 \Rightarrow .8849$

88.49%



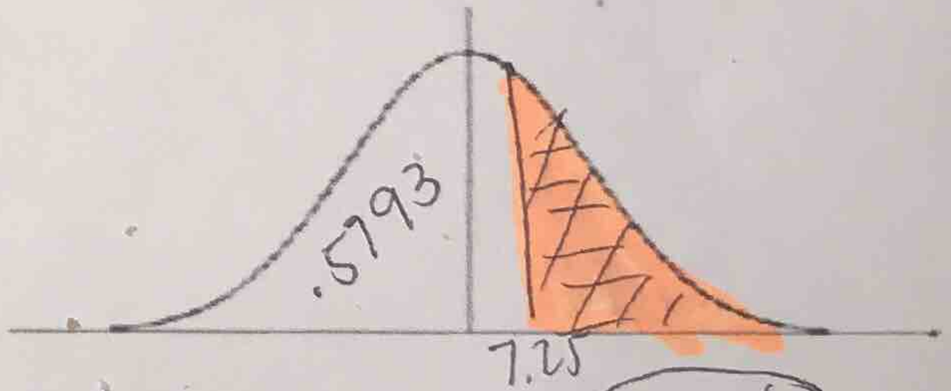
Your Principal comes into your class and announces that he slept 7.25 hours. What percent of high school students from the survey slept longer than the Principal?

$P(X>7.25)$

$z = \frac{7.25-7}{1.25} = \frac{.25}{1.25} = .2 \Rightarrow .5793$

$1-.5793 = .4207$

42.07%



What percent of the data in the survey lies in the interval from 5.75 to 8.25 hours?

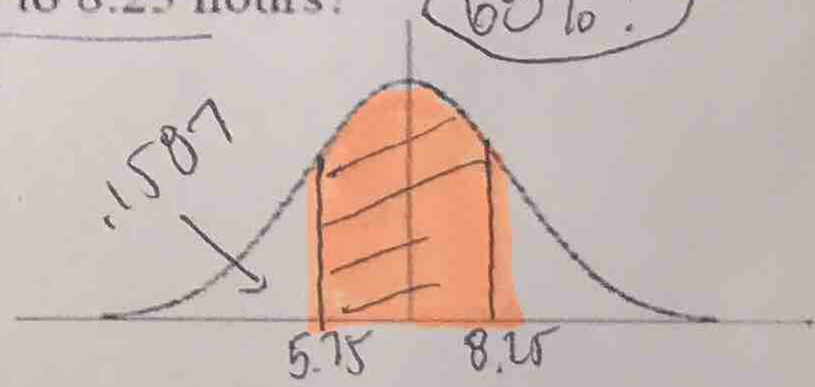
68%!

$z = \frac{5.75-7}{1.25} = \frac{-1.25}{1.25} = -1 \Rightarrow .1587$

68.26%

$z = \frac{8.25-7}{1.25} = \frac{1.25}{1.25} = 1 \Rightarrow .8413$

$.8413 - .1587 = .6826$



☺ If 250 students were surveyed, HOW MANY students slept between 5.75 to 8.25 hours?