

S:25 Normal Curve Lecture Problems

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1. The midterm scores in Statistics 101 had a mean of 72 and an SD of 12. The exam scores in Psychology 101 had a mean of 72 and an SD of 20. For both exams, the scores followed the normal curve.

Both instructors gave the top 10% of the scores A's, the next 25% B's, and the next 40% C's.

John earned a score of 89 on both exams. On which exam did John receive the higher letter grade?

What was the minimum exam score required for a B in Statistics?

What was the minimum exam score required for a B in Psychology?

2. The median of any normal distribution is the same as its mean. We can use normal calculations to find the quartiles for normal distributions.

a) What is the area to the left of the first quartile? Use this to find the value of the first quartile for a standard normal distribution. Find the third quartile.

b) The heights of young women are approximately normal with mean 64.5 inches and standard deviation 2.5 inches. What are the quartiles of this distribution?

3. A physical fitness association is including the mile run in its secondary school fitness test for boys.

The time for this event for boys in secondary school is approximately normally distributed with mean 450 seconds and standard deviation 40 seconds. If the association wants to designate the fastest 10% as "excellent", what time should the association set for this criterion?

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4. The actual amount of instant coffee that a certain filling machine deposits into “6-ounce” jars varies from jar to jar, and may be looked upon as a random variable having a normal distribution with a standard deviation of 0.04 ounce.

If only 2% of the jars are to contain less than 6 ounces of coffee, what must be the **mean** fill of these jars?

5. The length of life of an ACME Deluxe hair dryer is approximately normally distributed with mean 96 months and standard deviation 18 months.

ACME decides to guarantee the Deluxe hairdryer for 5 years. What percentage of these hairdryers will fail during the warranty period?

ACME decides to reset the warranty period so that only 1% of the hairdryers will fail during the warranty period. What should be the length (in months) of the warranty?