Section 7.1

Empirical Rule

1 standard deviation on both sides of the mean is about _____ of the area under the curve.

2 standard deviations on both sides of the mean is about _____ of the area under the curve.

3 standard deviations on both sides of the mean is about _____ of the area under the curve.

If the total area under the curve is 1, then

1 SD on both sides has an area of about _____

2 SD on both sides has an area of about _____

3 SD on both sides has an area of about _____

- -

Area for other than memorized z-values

_____ finds the area between a & b

For _____ we use -10 and for _____ we use 10

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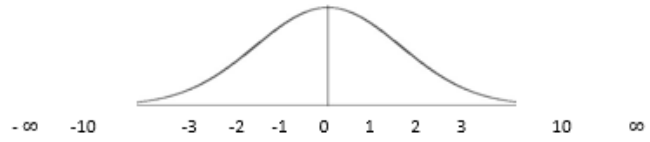


Find the 4-decimal area between the values

.46 & 2

-∞ & .35

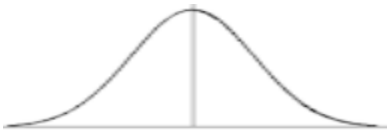
3 & ∞

-2.3 & 1.1

Right of -1.1

Left of 2.6

Find the area to the left of z = -1.47



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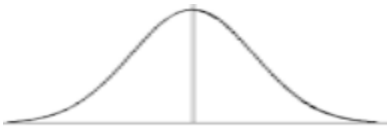
Find the area to the right of z = 1.86



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Find the area between the z-scores 0 and 1

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To find the z-value if you have an area

_____ finds z

Find z for each left area (always ___-decimals)

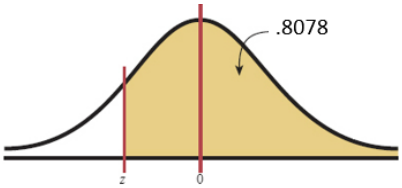
Area left of z is .0032

Area left of z is .1515

Area left of z is .7422

Area left of z is .9959

What z-value corresponds to the shaded area?



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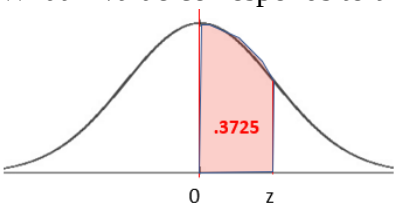
What z-value corresponds to the shaded area?



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Finding a Percentage or Probability

for a normally distributed variable

1. Sketch the normal curve and _____ region you are interested in.
2. Use _____ to find the area
3. _____ the area to a percent or probability.

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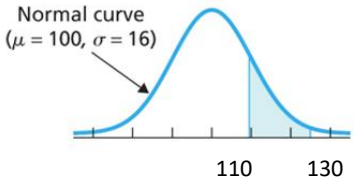
Find the 2-decimal percentage of people that have an IQ between 110 and 130



_____ % of the people have an IQ between 110 and 130

If the mean of a normally distributed variable is 12 & the SD = 3, what are the quartiles?

What is the 70th percentile?

What number represents negative infinity?

What number represents positive infinity?

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If the mean of a normally distributed variable is 12 and the SD = 3, what 2-decimal values divide the region into a symmetric middle area of 92%?

A study found that an animal's distance to water is normally distributed with a mean of 5.33 and SD = .85. Find P(Y> 6) as a percentage

Find P(3 < Y < 7) as a percentage

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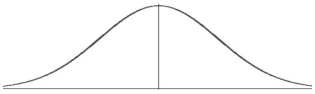
Ch 6.3 & 7.1 Review

A normally distributed variable has a mean of 13 and SD=2

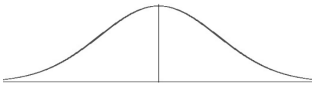
Find the area between 12 & 15.



Find the number that represents negative infinity.

Find the number that represents infinity.

Find the value of the 80th percentile.



= A multiple-choice test has 9 questions with P(s)=.53, find each 2-decimal answer

$P(f) =$

Probability of getting at most 4 correct.

Probability of getting exactly 5 correct.

The mean.

The Variance

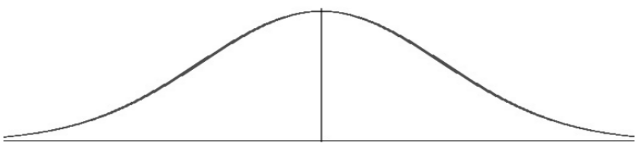
The Standard Deviation

Section 7.2

Recap of Area and Values

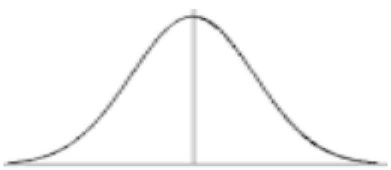
To find Area, Probability, Percentage's use

To find z-values or other numbers use

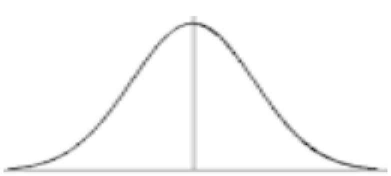


Applications

To qualify for the police academy, there is a fitness test. Scores are normally distributed with a mean of 58 and SD of 12. What is the cutoff score if only the top 22% of the applicants are selected?

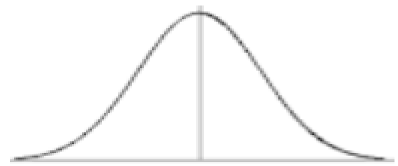


The average out-of-pocket payment at a clinic is $456 and the payments are normally distributed with a standard deviation of $87. What are the limits of the middle 52% of the payments? (2-decimal places)

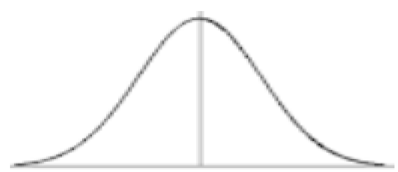


The average income for teachers in Texas is $49,560 with a standard deviation of $4750. If income is normally distributed, find

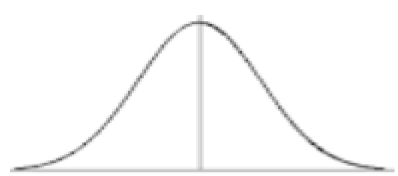
P($41,500 ≤ x ≤ $51,270)



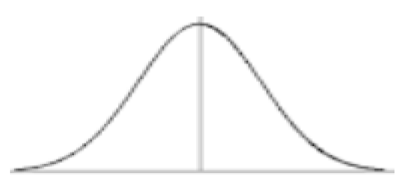
The national average on the ACT test is 20.8. Assuming it is normally distributed with a standard deviation of 9.4, find the 91st percentile score.



Find P(x > 28)

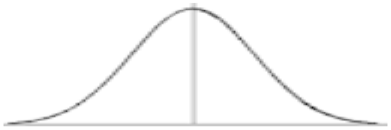


Find P(x < 18)



Review

A town finds the average number of homes in new subdivisions is 432 with SD = 22. Find P(x > 400)



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Section 7.3

Central Limit Theorem

A teacher gives a class of 4 students a test & the grades are 6, 4, 8, 2

What is the population mean: $\bar{x}$= ___________

Population Standard Deviation: σ_x= ________

z-formulas

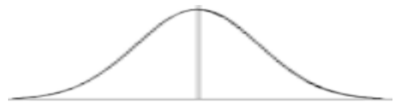
If you have a normally distributed population and want information about a _____________ member use:

If you have a sample of size _____ and want information about the sample mean ________ use:

The average time spent by construction workers on weekends is 7.93 hours. Assume normally distributed with a standard deviation of 0.8 hour.

Probability an individual works fewer than 8 hours

Probability that the mean of a sample of 40 workers < 8



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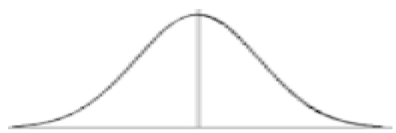
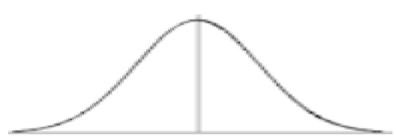
The average age of SHSU faculty is 44.2 with a SD of 5.6. Assume normally distributed, for an individual find P(39 < x < 46).

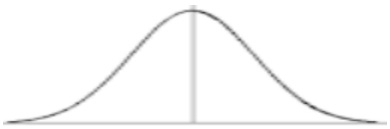


Probability that the mean of a sample of 35 workers is greater than 46

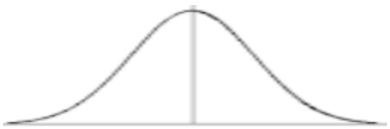


A study found that American families generate an average of 37.4 lbs of plastic garbage per year. If the standard deviation is 6.1 lbs, find each

Probability an individual generates < 29.8 lb



Probability the mean of a sample of 33 is between 35 & 38



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Ch 6&7 Test Review Questions

Find each area:

Left of z = 2.58

Right of z = -2.34

Between z = 1.34 and -2.11

= =

Students at a school have an average weight of 113 lb with a standard deviation of 5.7 lb.

What value represents $-\infty$

What value represents ∞

The average height of students in a school is 87" with SD = 4.8"

What is the z-value for a height of 82"

What is the z-value for a height of 102"

What height gives a z-value of -2.57

= =

A team plays 17 games with P(s) = .43
Write each answer as a 2-decimal percent

What is the probability of exactly 7 wins?

What is the probability of at most 4 wins?

= =

Find each z-value for the given information

z	x	Mean	SD	n
	18	22	3.4	31
	20	17	1.6	42
	64	72	4.5	140