

The weights of 1000 children were recorded on their first birthdays.
The weights are normally distributed with mean 10.3 kg and standard deviation 1.6 kg.

(Round answers to one decimal place.)

normalcdf

1. What percent of the children weigh between 8.7 kg and 11.9 kg?

68%

2. What percent of the children weigh between 9.5 kg and 11.5 kg?

46%

3. What percent of the children weigh between 9.2 kg and 11.3 kg?

49%

4. What percent of the children weigh between 8.3 kg and 12.3 kg?

79%

5. What percent of the children weigh less than 10 kg?

43%

6. What percent of the children weigh more than 13 kg?

4.5% normalcdf(13, 9999, 10.3, 1.6)

7. How many children weigh less than 7.9 kg? normalcdf(-9999, 7.9, 10.3, 1.6)

$0.0668(1000) = 66.8$

8. How many children weigh more than 8.7 kg?

$0.841(1000) = 841.3$

9. The heights of a group of 500 women are normally distributed with mean 65 inches and standard deviation 2.2 inches. Find the height for each of these z-scores. Round your answers to one decimal place.

a) $z = 2$ $\boxed{69.4 \text{ in}}$ b) $z = 0.5$ $\boxed{66.1 \text{ in}}$ c) $z = -1.5$ $\boxed{61.7 \text{ in}}$
 $2 = \frac{x - 65}{2.2}$ $0.5 = \frac{x - 65}{2.2}$ $-1.5 = \frac{x - 65}{2.2}$
d) $z = 1.7$ $\boxed{68.74 \text{ in}}$ e) $z = -2.3$ $\boxed{59.94 \text{ in}}$ f) $z = -3.4$ $\boxed{57.52 \text{ in}}$
 $1.7 = \frac{x - 65}{2.2}$ $-2.3 = \frac{x - 65}{2.2}$ $-3.4 = \frac{x - 65}{2.2}$

10. For a normal distribution, give the percentage of all data values that fall within each interval.

a) Within three standard deviations of the mean

99.7%

b) Between the mean and one standard deviation above the mean

~~48%~~ 34%

c) Between the mean and two standard deviations below the mean

~~95%~~ 47.5%

11. The mean commuting time for a resident of a certain metropolitan area is 38 minutes, with a standard deviation of 10 minutes. Assume that commuting times for this area are normally distributed.

a) Find the z-score for a 23-minute commute

$$z = \frac{23 - 38}{10} = -1.5$$

b) Find the z-score for a 60-minute commute

$$z = \frac{60 - 38}{10} = 2.2$$

c) What is the probability that a commute for a randomly chosen resident will be between 28 minutes and 58 minutes?

81.9%