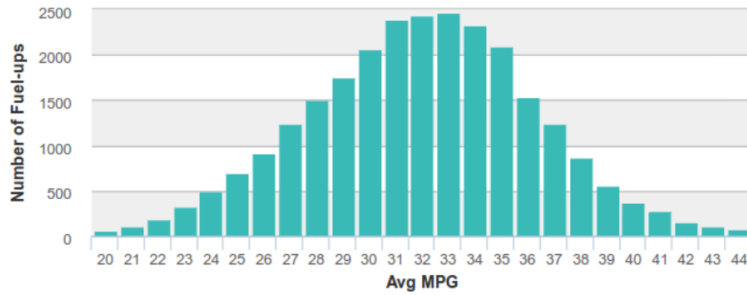


1. The summer monsoon brings 80% of India's rainfall and is essential for the country's agriculture. Records going back more than a century show that the yearly amount of monsoon rainfall varies from year to year according to a distribution that is approximately Normal with mean $\mu = 852$ millimeters (mm) and standard deviation $\sigma = 82$ mm.

What is the approximate probability that rainfall this year will be more than 1005 mm?

- A. The probability that the yearly amount of rainfall this year will be more than 1005 mm is about 0.0747.
- B. The probability that the yearly amount of rainfall this year will be more than 1005 mm is about 0.0307.
- C. The probability that the yearly amount of rainfall this year will be more than 1005 mm is about 0.1047.
- D. The probability that the yearly amount of rainfall this year will be more than 1005 mm is about 0.0827.
- E. The probability that the yearly amount of rainfall this year will be more than 1005 mm is about 0.1187.
- F. The probability that the yearly amount of rainfall this year will be more than 1005 mm is about 0.0427.
- G. The probability that the yearly amount of rainfall this year will be more than 1005 mm is about 0.0467.
- H. The probability that the yearly amount of rainfall this year will be more than 1005 mm is about 0.0507.

2. The histogram below shows the distribution average fuel efficiency for 26,225 fuel ups in miles per gallon for 352 cars of the same year and model of car that Mr. Holt owns.



From this histogram it is reasonable to assume that fuel efficiency at fuel up is normally distributed with a mean of about $\mu = 32.5$ MPG with a standard deviation of about $\sigma = 5$ MPG.

Using this information, approximately what percentage of fuel-ups for cars of this year and model are 23 MPG or more?

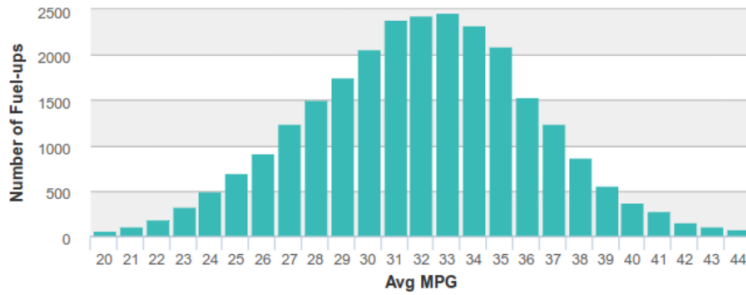
- A. Approximately 79.93% of fuel-ups for cars of this model and year are 23 MPG or more.
- B. Approximately 97.53% of fuel-ups for cars of this model and year are 23 MPG or more.
- C. Approximately 99.13% of fuel-ups for cars of this model and year are 23 MPG or more.
- D. Approximately 95.13% of fuel-ups for cars of this model and year are 23 MPG or more.
- E. Approximately 85.33% of fuel-ups for cars of this model and year are 23 MPG or more.
- F. Approximately 89.93% of fuel-ups for cars of this model and year are 23 MPG or more.
- G. Approximately 90.13% of fuel-ups for cars of this model and year are 23 MPG or more.
- H. Approximately 97.13% of fuel-ups for cars of this model and year are 23 MPG or more.

3. The common fruit fly *Drosophila melanogaster* is the most studied organism in genetic research because it is small, easy to grow, and reproduces rapidly. The length of the thorax (where the wings and legs attach) in a population of male fruit flies is approximately Normal with mean $\mu = 0.8$ millimeters (mm) and standard deviation $\sigma = 0.078$ mm.

About what percentage of thorax lengths in fruit flies are between 0.74 mm and 0.766 mm?

- A. About 2.13% of fruit fly thorax lengths are between 0.74 mm and 0.766.
- B. About 22.53% of fruit fly thorax lengths are between 0.74 mm and 0.766.
- C. About 8.93% of fruit fly thorax lengths are between 0.74 mm and 0.766.
- D. About 4.53% of fruit fly thorax lengths are between 0.74 mm and 0.766.
- E. About 10.93% of fruit fly thorax lengths are between 0.74 mm and 0.766.
- F. About 5.73% of fruit fly thorax lengths are between 0.74 mm and 0.766.
- G. About 0.93% of fruit fly thorax lengths are between 0.74 mm and 0.766.
- H. About 17.13% of fruit fly thorax lengths are between 0.74 mm and 0.766.

4. The histogram below shows the distribution average fuel efficiency for 26,225 fuel ups in miles per gallon for 352 cars of the same year and model of car that Mr. Holt owns.



From this histogram it is reasonable to assume that fuel efficiency at fuel up is normally distributed with a mean of about $\mu = 32.5$ MPG with a standard deviation of about $\sigma = 5$ MPG.

Using this information, approximately what percentage of fuel-ups for cars of this year and model fall between 27 MPG and 37 MPG??

- A. Approximately 50.23% of fuel-ups for cars of this model and year fall between 27 MPG and 37 MPG.
- B. Approximately 79.23% of fuel-ups for cars of this model and year fall between 27 MPG and 37 MPG.
- C. Approximately 75.03% of fuel-ups for cars of this model and year fall between 27 MPG and 37 MPG.
- D. Approximately 61.03% of fuel-ups for cars of this model and year fall between 27 MPG and 37 MPG.
- E. Approximately 77.23% of fuel-ups for cars of this model and year fall between 27 MPG and 37 MPG.
- F. Approximately 74.03% of fuel-ups for cars of this model and year fall between 27 MPG and 37 MPG.
- G. Approximately 68.03% of fuel-ups for cars of this model and year fall between 27 MPG and 37 MPG.
- H. Approximately 62.43% of fuel-ups for cars of this model and year fall between 27 MPG and 37 MPG.

5. The data below is the yealy salary (in thousand's of dollars) of 32 randomly chosen graphic designers in Martiniville U.S.A.

42.7 45.2 47.8 50.8 51.3 51.1 52.9 54.5 54.4

54.6 54.7 55.1 56.7 57.2 56.6 57.8 58.4

58.5 58.4 58.2 59.1 59.9 60.7 61.7 62.3

61.8 62.3 62.4 63.6 65.8 65.7 69

Use the Holt.Blue Descriptive Statistics Calculator, or your TI-84 to make a histogram of these data and to convince yourself these data are normally distributed. (Use a bin width of 5.) From the data, then estimate the mean μ and the standard deviation σ of the distribution.

What is the approximate probability that a randomly chosen graphic designer in Martiniville makes less than 46 thousand dollars per year?

A. The probability that a randomly chosen graphic designer in Martiniville makes less than 46 thousand dollars is about 0.0207.

B. The probability that a randomly chosen graphic designer in Martiniville makes less than 46 thousand dollars is about 0.2087.

C. The probability that a randomly chosen graphic designer in Martiniville makes less than 46 thousand dollars is about 0.2227.

D. The probability that a randomly chosen graphic designer in Martiniville makes less than 46 thousand dollars is about 0.1607.

E. The probability that a randomly chosen graphic designer in Martiniville makes less than 46 thousand dollars is about 0.1047.

F. The probability that a randomly chosen graphic designer in Martiniville makes less than 46 thousand dollars is about 0.1807.

G. The probability that a randomly chosen graphic designer in Martiniville makes less than 46 thousand dollars is about 0.0287.

H. The probability that a randomly chosen graphic designer in Martiniville makes less than 46 thousand dollars is about 0.1727.

6. The common fruit fly *Drosophila melanogaster* is the most studied organism in genetic research because it is small, easy to grow, and reproduces rapidly. The length of the thorax (where the wings and legs attach) in a population of male fruit flies is approximately Normal with mean $\mu = 0.8$ millimeters (mm) and standard deviation $\sigma = 0.078$ mm.

About what percentage of thorax lengths in fruit flies are shorter than 0.654 mm?

- A. About 8.67% of fruit fly thorax lengths are shorter than 0.654 mm.
- B. About 3.07% of fruit fly thorax lengths are shorter than 0.654 mm.
- C. About 16.87% of fruit fly thorax lengths are shorter than 0.654 mm.
- D. About 10.07% of fruit fly thorax lengths are shorter than 0.654 mm.
- E. About 18.67% of fruit fly thorax lengths are shorter than 0.654 mm.
- F. About 5.47% of fruit fly thorax lengths are shorter than 0.654 mm.
- G. About 9.07% of fruit fly thorax lengths are shorter than 0.654 mm.
- H. About 17.27% of fruit fly thorax lengths are shorter than 0.654 mm.

7. The data below is the yealy salary (in thousand's of dollars) of 32 randomly chosen graphic designers in Margaritaville.

49.1 51.6 54.2 57.2 57.7 57.5 59.3 60.9 60.8

61 61.1 61.5 63.1 63.6 63 64.2 64.8

64.9 64.8 64.6 65.5 66.3 67.1 68.1 68.7

68.2 68.7 68.8 70 72.2 72.1 75.4

Use the Holt.Blue Descriptive Statistics Calculator, or your TI-84 to make a histogram of these data and to convince yourself these data are normally distributed. (Use a bin width of 5.) From the data, then estimate the mean μ and the standard deviation σ of the distribution.

About what percentage of graphic designers in Margaritaville makes more than 60.6 thousand dollars per year?

- A. About 85.9% of graphic designers in Margaritaville make more than 60.6 thousand dollars.
- B. About 55.9% of graphic designers in Margaritaville make more than 60.6 thousand dollars.
- C. About 79.5% of graphic designers in Margaritaville make more than 60.6 thousand dollars.
- D. About 69.5% of graphic designers in Margaritaville make more than 60.6 thousand dollars.
- E. About 57.7% of graphic designers in Margaritaville make more than 60.6 thousand dollars.
- F. About 62.5% of graphic designers in Margaritaville make more than 60.6 thousand dollars.
- G. About 71.1% of graphic designers in Margaritaville make more than 60.6 thousand dollars.
- H. About 56.1% of graphic designers in Margaritaville make more than 60.6 thousand dollars.

8. The volume of liquid in a 12-oz (355 mL) can of soda is Normal with mean $\mu = 355.2$ mL and standard deviation $\sigma = 0.5$ mL.

What is the approximate probability that the next 12-oz can of soda you buy will contain more than 355.7 mL?

- A. The probability that the can will contain more than 355.7 mL is about 0.2847.
- B. The probability that the can will contain more than 355.7 mL is about 0.3487.
- C. The probability that the can will contain more than 355.7 mL is about 0.1367.
- D. The probability that the can will contain more than 355.7 mL is about 0.2487.
- E. The probability that the can will contain more than 355.7 mL is about 0.0027.
- F. The probability that the can will contain more than 355.7 mL is about 0.3067.
- G. The probability that the can will contain more than 355.7 mL is about 0.2627.
- H. The probability that the can will contain more than 355.7 mL is about 0.1587.