Complete Solutions Manual

Statistics Companion
Support for Introductory Statistics

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Chapter 1: Getting Ready for Statistics

Section 1.1: Numbers and the Number Line – A Quick Review

1.1: $68 \div 34 = 2$

1.2: $25 \times (-9) = -225$

1.3: $-5 - (-9) = 4$

1.4: $-13 \times -16 = 208$

1.5: $-8 \div 4 = -2$

1.6: $-6 - 92 = -98$

1.7: $9 \div 3 = 3$

1.8: $5 \div 1 = 5$

1.9: $-14 - 3 = -17$

1.10: $-4 + (-3) = -7$

1.11: 6 is greater

1.12: 7 is greater

1.13: 47 is greater

1.14: 1 is greater

1.15: –64 is greater

1.16: 7 is greater

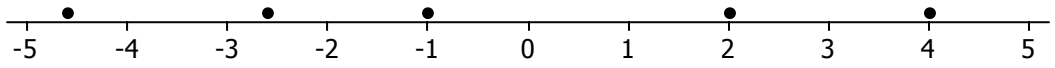
1.17: 1 is greater

1.18: 14 is greater

1.19: 36 is greater

1.20: 4 is greater

1.21:



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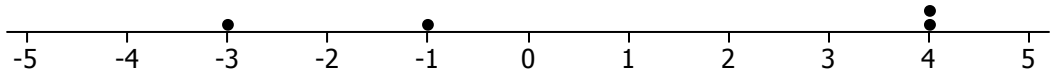

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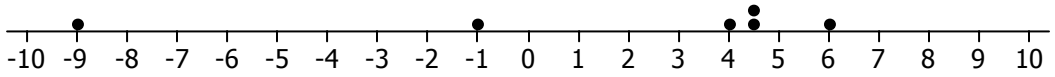

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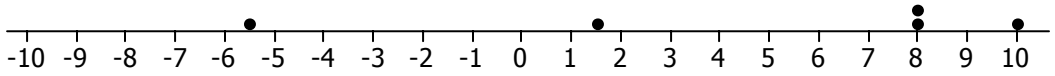
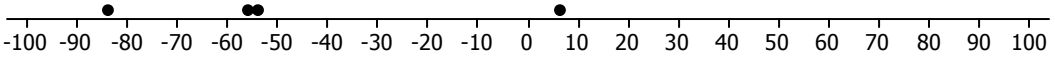


1.25:



Section 1.2: Rounding Decimal Numbers

1.26: –31.31757

1.27: 1220.238752

1.28: –69.967462

1.29: –60.3

1.30: –2.0

1.31: –2.3

1.32: 9366.9084

1.33: –7.49585786

1.34: –336.1

1.35: 8893.43

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Section 1.3: Ordering Decimal Numbers

1.36: –3.14975 is greater

1.37: –763.3134 is greater

1.38: –97.2 is greater

1.39: –44.2832 is greater

1.40: –97.99842 is greater

1.41: 1.168225 is greater

1.42: –2.6628751 is greater

1.43: 4.57297 is greater

1.44: 8808.33464 is greater

1.45: –9.50625 is greater

Section 1.4: Getting to Know Your Calculator – Order of Operations, Powers of Numbers, Square Roots, and Scientific Notation

1.46: $-25\times 6=-150$

1.47: $\left(2\times 6^3\right)^2=\left(2\times 216\right)^2=\left(432\right)^2=186,624$

1.48: $\sqrt{4}+(-6)=2+(-6)=-4$

1.49: $\sqrt{7^3\div 94}=\sqrt{343\div 94}=\sqrt{3.648936}=1.91$

1.50: $(39-29)\div\sqrt{4}=10\div 2=5$

1.51: $-\left(\sqrt{66}\times 4\right)\times 9=-292.47$

1.52: $6-(64+(-6))=6-58=-52$

1.53: $3^3-4-19=27-4-19=4$

1.54: $\left(\sqrt{99}-4-\sqrt{57}\right)^2=2.55987$

1.55: $\left(8\div 85\right)+\left(-72\right)=-71.91$

1.56: $\sqrt{3}\div\left(77+9\right)\div\left(-76\right)=-0.000265$

1.57: $4^2-\sqrt{5}+14^2\times(-5)=-966.24$

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1.58: $\left(8+\sqrt{9}+3^4\times 7\right)^3 = 193{,}100{,}552$

1.59: $-\left(7\div 61\div 2\times 6\right) = -0.34$

1.60: $\left((-4)-8-24\right)^2\times 4 = 5184$

1.61: $70\div(4-0)^2\times 88\times 9 = 3465$

1.62: $\left(\sqrt{94}-5^2\right)\times\left(5-(-65)\right)\div(-6) = 178.554$

1.63: $\left(5+83+\sqrt{9}+55\right)\div 4 = 36.5$

1.64: $\left(\sqrt{65}\div 6\right)^3-\sqrt{4}\div\sqrt{28}+(-3) = -0.951822$

1.65: $16\div 8^2\times 4\div 7^3\times(-1) = -0.003$

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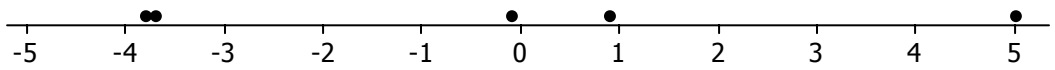
Chapter 2: Creating Graphical Displays – The Math You Need to Know

Section 2.1: Review – Rounding Decimal Numbers, Plotting Points on the Number Line

2.1: 0.89

2.2: 0.3

2.3:



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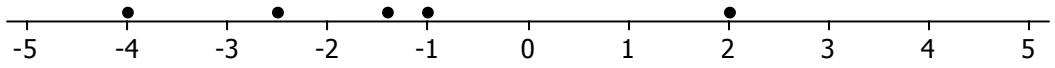

Section 2.2: Selecting an Appropriate Numerical Scale

2.5: The points are not plotted correctly; rather, they seem to be rounded to the nearest scale value ending in zero or five.

2.6: The zero and two of the sevens are not plotted.

2.7: The scale doesn't extend far enough in each direction to allow for plotting all the points. There are points plotted where there should not be any (7, 8, 11, 12, and 13), and there are points missing (4, 5, one of the 10s, and 15).

2.8: The scale does not extend far enough to the left to include points less than 1.0, and to the right to include 3.1. As such, the points 0.1, 0.2, 0.7, and 3.1 are missing from the dotplot.

2.9: The scale does not include any negative values. Additionally, the points that are negative are plotted as positive.

2.10: The spacing between the values that label the scale are not equal.

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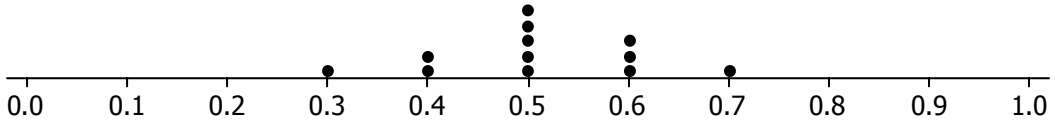
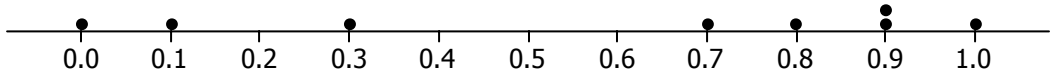
2.11:



2.12:



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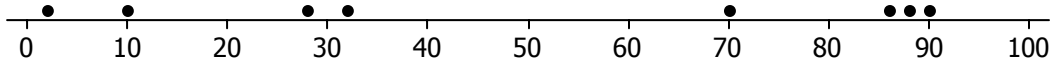

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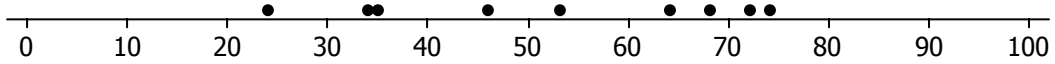

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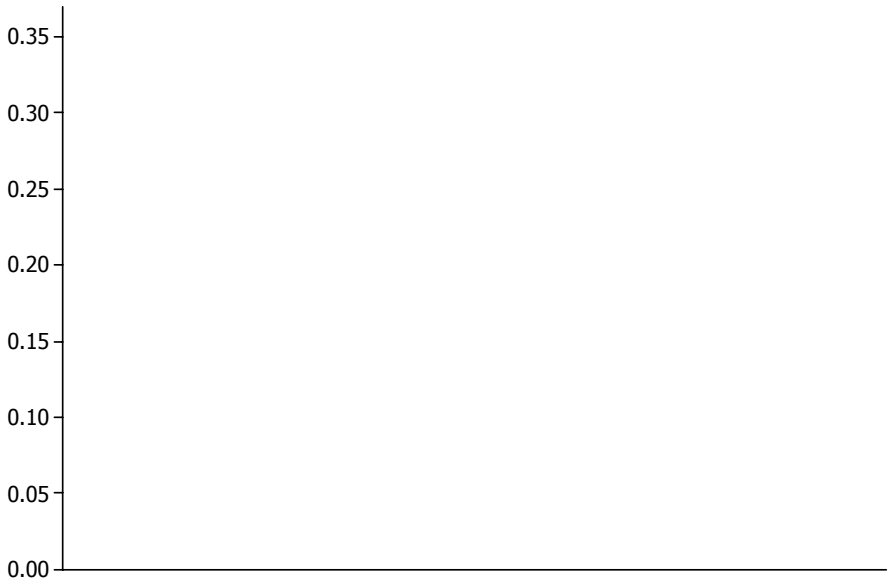

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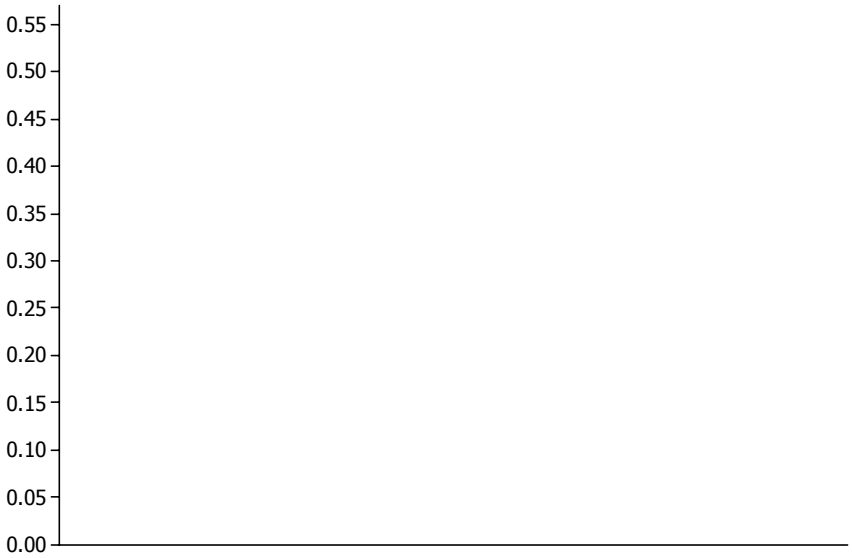
2.16:



Section 2.3: Intervals and Interval Widths

2.17: 9.0, and all the numbers between 7.5 and 9.0.

2.18: –4.6, and all the numbers between –4.6 and 9.4.

2.19: (9, 82]

2.20: [–4.8, 22.7]

2.21: $8-(-7.8)=15.8$

2.22: $26-6=20$

2.23: $51-35=16$

2.24: Intervals, from narrowest to widest:

$(0.8,3.9]$
$(3.9,8.0]$
$(3.0,8.9]$
$(-3.9,8.0]$

Section 2.4: Proportions, Decimal Numbers, and Percentages

2.25: $\frac{4}{12}=0.333$

2.26: $\frac{63}{85}=0.741$

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2.27: $\frac{3}{9} = 0.333$

2.28: $\frac{49}{298} = 0.164$

2.29: 47.4%

2.30: 0.5%

2.31: 91%

2.32: 33.5%

2.33: 0.001

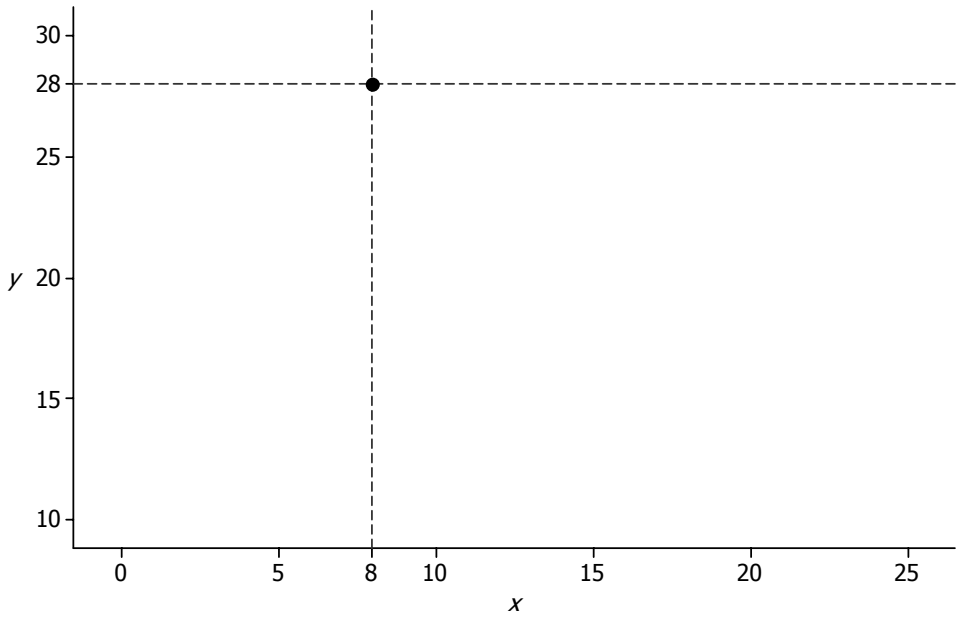
2.34: 0.582

2.35: 0.043

2.36: 0.364

Section 2.5: Plotting Points in Two Dimensions

2.37:



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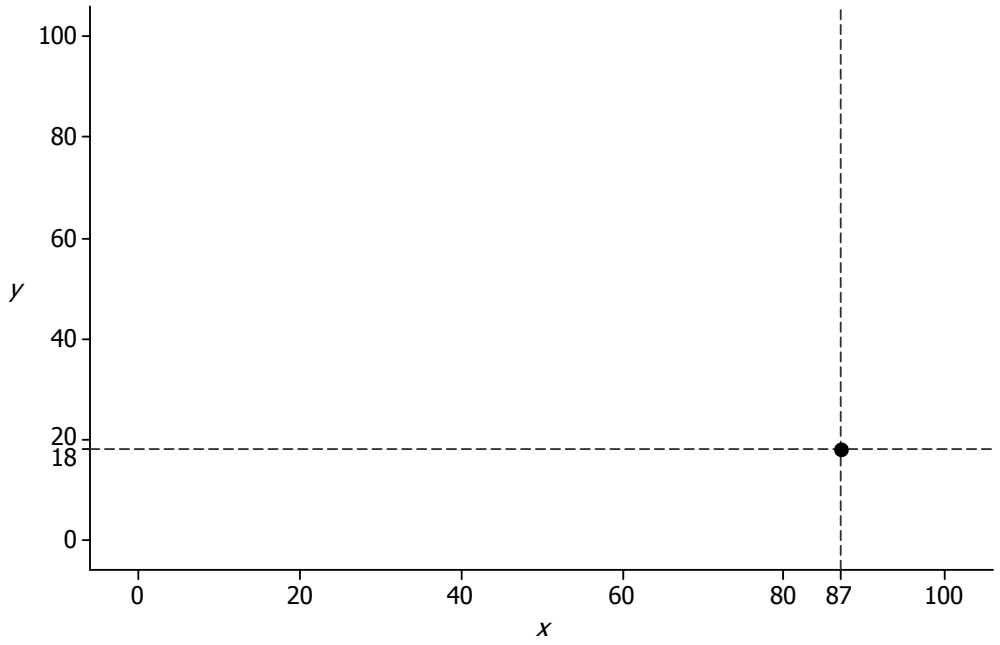
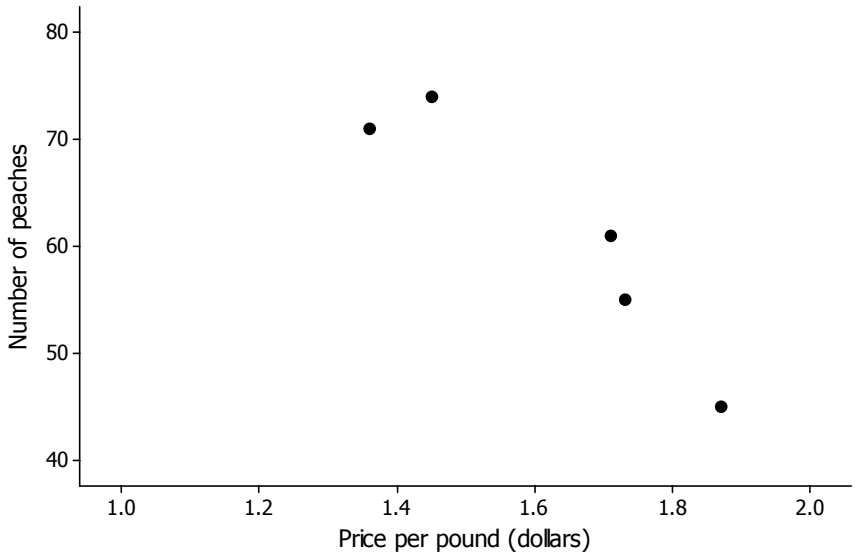
2.38:



2.39:



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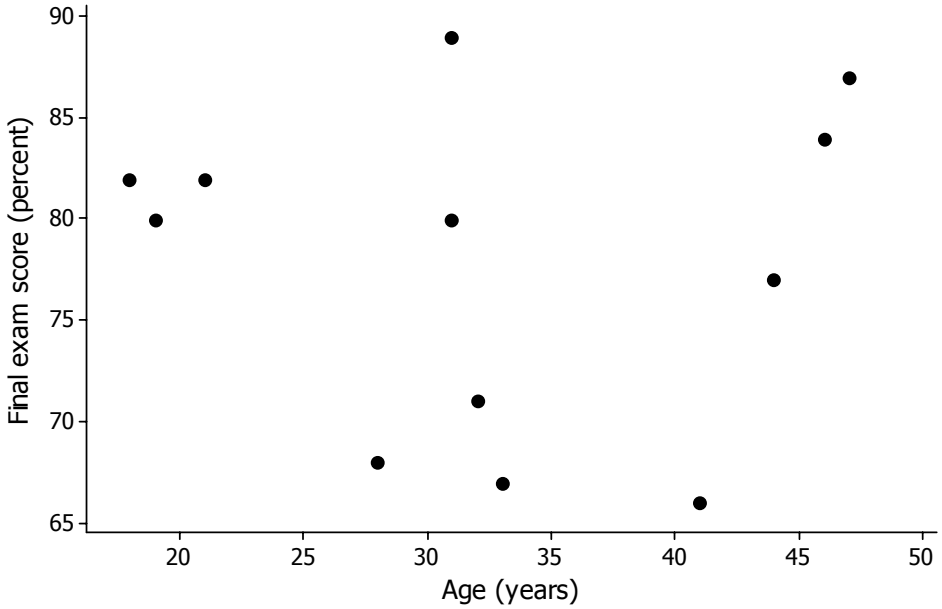
2.40:



2.41: As x increases, the values of y tend to decrease. That is, there is a negative linear pattern.

2.42: As x increases, the values of y tend to increase. There is also obvious curvature in the pattern. Therefore, there is a positive, nonlinear pattern.

2.43: There is no linear pattern in the plot. However, there is less spread in the y direction for smaller values of x than there is for larger values of x.

2.44: As x increases, the values of y tend to increase. That is, there is a positive linear pattern.

2.45: As x increases, the values of y tend to increase. That is, there is a positive linear pattern.

2.46: As x increases, the values of y tend to increase. Therefore, there is a positive, linear pattern.

2.47: No linear pattern

2.48: As x increases, the values of y tend to decrease. That is, there is a negative linear pattern.

Section 2.6: Evaluating Expressions

2.49: $\frac{46}{75} = 0.613$

2.50: $\frac{10}{83} = 0.120$

2.51: $\frac{7}{54} = 0.130$

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2.52: $\frac{13}{40} = 0.325$

2.53: $5.5 - 5.1 = 0.4$

2.54: $195 - 73 = 122$

2.55: $78 - 54 = 24$

2.56: $28.8 - 7.8 = 21.0$

2.57: Density is (relative frequency) / (interval width). The table below shows the original intervals and frequencies, with three additional columns: relative frequency, interval width, and density. Note that there are 107 observations.

Interval	Frequency	Relative frequency	Interval width	Density
0 to <1	11	$\frac{11}{107} = 0.103$	$1 - 0 = 1$	$\frac{0.103}{1} = 0.103$
1 to <10	36	$\frac{36}{107} = 0.336$	$10 - 1 = 9$	$\frac{0.336}{9} = 0.037$
10 to <50	8	$\frac{8}{107} = 0.075$	$50 - 10 = 40$	$\frac{0.075}{40} = 0.002$
50 to <100	52	$\frac{52}{107} = 0.486$	$100 - 50 = 50$	$\frac{0.486}{50} = 0.010$

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