

Exploring Statistics: Tales of Distributions (13th edition)

Appendix A, Getting Started, Online Portion

Appendix A, Getting Started, Online Portion goes with Appendix A of the textbook, *Exploring Statistics: Tales of Distributions* (13th ed.). The textbook portion of Appendix A has instructions for rounding numbers and reducing complex expressions to a single number. These two topics are troublesome for many students.

This online supplement has a broader focus. Its purpose is to offer practice, if you need it, on arithmetic and algebra problems like those you will encounter as you work through the examples and problems in the textbook. Students who enroll in statistics courses range from well prepared to not so well prepared. Fortunately, for those who are less than well prepared, acquiring the skills needed commonly occurs as you progress through the course.

For some students, all the problems that follow are shoulder-shrugging easy and this supplement is unnecessary. For others, some of the problems produce eyebrow-raising uncertainty, perhaps followed by, "Oh yeah, I remember I knew this once." For them, there are probably two or three places that provide useful reminders and valuable practice on topics they haven't used recently. And for some, several places will prove helpful. We hope you use this online portion of *Appendix A* how best helps you.

The remainder of *Appendix A, Getting Started, Online Portion* has two features:

1. **Pretest** with answers
2. **Additional Problems and Explanations**

We recommend that you start by looking at each Pretest question and asking yourself, "Can I work this problem?"

1. If the problems all look shoulder-shrugging easy, conclude that your skill set for arithmetic and algebra is up to date. Close the browser and work on some other skill set that could use some attention. (Or, perhaps, offer to tutor fellow class members.)
2. If your examination of pretest items produced some uncertainty, work those items and check your answers against the key that follows the pretest.
3. If your work on the **Pretest** leaves you wanting additional practice on particular categories of problems, find the categories in the **Additional Problems and Explanations** section and work the problems there.
4. For additional problems, consider spending some time with the online *Study Guide*.

Finally, a suggestion: As you look at a problem that you are going to work, begin by estimating the answer. Estimates don't necessarily prevent errors, but they are enormously helpful in identifying them once you make an error. (To encourage estimation, We arranged some of the elements so that whole-number estimates emerge easily.)

Pretest

Round to a whole number

A.1 4.5

A.2 3.4

A.3 6.49

A.4 8.9

Round to two decimal places

A.5 13.614

A.6 0.675

A.7 1.6248

A.8 0.0551

Addition (Round answers to two decimal places.)

A.9 $3.87 + 6.667$

A.10 $\frac{1}{9} + \frac{1}{8}$

A.11 $4.314 + 6.821$

Subtraction

A.12 $13 - 3$

A.13 $4.9 - 3.1$

A.14 $7.40 - 6.59$

Multiplication

A.15 $(4 - 1)(3 - 1)$

A.16 9×25

A.17 $(0.48)(0.72)$

Division

A.18 $\frac{398}{10}$

A.19 $\frac{4.12}{2.01}$

A.20 $0.25/0.51$

Square

A.21 8^2

A.22 $(0.8)^2$

A.23 $(0.51)^2$

Square Root

A.24 $\sqrt{9.30}$

A.25 $\sqrt{0.93}$

A.26 $\sqrt{145}$

Absolute Value

A.27 $|-42|$

A.28 $|8 - 15|$

A.29 $|-3.21|$

Complex Expressions
(State answers with
two decimal places.)

A.30 $14 - \frac{6^2}{4}$

A.31 $\frac{(10 - 6)^2}{6}$

A.32 $\frac{(2.16)(0.13)}{14}$

A.33 $(0.42) \left(\frac{3.16}{2.17} \right)$

A.34 $\frac{(8)(14 - 10)^2}{(2)(3)(4)(5)}$

A.35 $\frac{(8)(2.5) + (7)(3.6) + (6)(4.0)}{(8)(7)(6)}$

A.36 $1 - \frac{(6)(18)}{(10)(10^2 - 1)}$

A.37 $(13)(14) + \frac{(13)(13 + 1)}{2} - 18$

A.38 $\sqrt{\frac{3.78}{12}}$

A.39 $\sqrt{\frac{(8 - 1)(10) + (6 - 1)(11)}{8 + 6 - 2}}$

A.40 $\sqrt{\frac{50 - \frac{14^2}{6}}{6 - 1}}$

A.41 $\sqrt{\left(\frac{42}{10 + 11 - 2} \right) \left(\frac{1}{10} + \frac{1}{11} \right)}$

Simple Algebra

A.42 $8 = \frac{x}{\sqrt{12}}$

A.43 $11x = 30$

A.44 $\frac{3}{x} = 14$

Pretest Answers

A.1 5
A.2 3
A.3 6
A.4 9
A.5 13.61
A.6 0.68
A.7 1.62
A.8 0.06
A.9 10.54
A.10 0.24
A.11 11.14
A.12 10.00
A.13 1.80
A.14 0.81
A.15 6.00
A.16 225.00
A.17 0.35
A.18 39.80
A.19 2.05
A.20 0.49
A.21 64.00
A.22 0.64

A.23 0.26
A.24 3.05
A.25 0.96
A.26 12.04
A.27 42
A.28 7
A.29 3.21
A.30 5.00
A.31 2.67
A.32 0.02
A.33 0.61
A.34 1.07
A.35 0.21
A.36 0.89
A.37 255.00
A.38 0.56
A.39 3.23
A.40 1.86
A.41 0.65
A.42 27.71
A.43 2.73
A.44 0.21

Additional Problems and Explanations

Rounding

As a reminder,

If the task is to round to whole numbers, examine the digit in the tenths place. For rounding to tenths, examine the hundredths place digit and for hundredths, examine the thousandths place digit. And so forth. The rules that *Exploring Statistics* uses follow:

1. If the examined number is 5 or greater, increase the number to its left by 1 and drop the examined number and all numbers to the right of it.
2. If the examined number is 4 or less, drop the examined number and all numbers to the right of it.

Round to a whole number

A.45 4.4

A.46 5.5

A.47 7.48

A.48 0.4

Round to two decimal places

A.49 10.845

A.50 0.554

A.51 3.5149

A.52 0.01644

Addition

Round answers to two decimal places. An answer to an addition problem is called a *sum*.

A.53
 $6.413 + 2.282$

A.54 $\frac{1}{7} + \frac{1}{12}$

A.55
 $2.784 + 2.243 + 3.0$

Subtraction

An answer to a subtraction problem is called a *difference*.

A.56 $21 - 13$

A.57 $7.3 - 3.7$

A.58 $4.49 - 4.06$

Multiplication

An answer to a multiplication problem is called a *product*. The two symbols that indicate multiplication are back-to-back parentheses and \times . Thus, $(2)(4)$ and 2×4 both call for multiplication.

A.59 $(7 - 3)(5 - 2)$

A.60 11×7

A.61 $(0.62)(0.45)$

Division

An answer to a division problem is called a *quotient*. In *Exploring Statistics*, two symbols indicate division. They are a horizontal line, $\frac{\quad}{\quad}$, with a number above and a number below, and $/$, a forward slash mark. Thus, $\frac{6}{2}$ and $6/2$ both call for dividing 6 by 2.

A.62 $\frac{160}{80}$

A.63 $\frac{3.97}{1.94}$

A.64
 $0.89/0.30$

Square

The 2 in the expression, 5^2 is called the *exponent*. It means that you should multiply the 5 by itself. This multiplication produces the square of the number.

A.65 6^2

A.66 40^2

A.67 $(0.21)^2$

Square Root

The square root of a number is a value that, when multiplied by itself, produces the number. The symbol for square root is $\sqrt{\quad}$.

A.68 $\sqrt{98}$

A.69 $\sqrt{1000}$

A.70 $\sqrt{0.50}$

Absolute Value

The absolute value of a number ignores the sign of the number. The symbol for absolute value is vertical lines around the number. Thus, $|-6|$ is expressed as "the absolute value of negative six is six."

A.71 $|-12|$

A.72 $|12 - 17|$

A.73 $|31 - 51|$

Complex Expressions

The complex expressions in this text can be reduced to a single number in this text by using the following rules.

1. Perform the operations within the parentheses first. If there are brackets as well in the expression, perform the operations within the parentheses first and then the operations within the brackets.
2. For any fraction, perform operations in the numerator separately from those in the denominator.
3. After a fraction is reduced to two numbers, carry out the division.
4. If there is a square root sign over an expression or portion of an expression, perform the operations under the square root sign and then take the square root.

Provide two decimal places in your answers.

A.74 $18 - \frac{4^2}{5}$

A.75 $\frac{(12 - 3)^2}{7}$

A.76 $\frac{(0.54)(10.21)}{10}$

$$\text{A.77} \quad (0.74) \left(\frac{4.02}{0.96} \right)$$

$$\text{A.78} \quad \frac{(7)(15-9)^2}{(3)(4)(5)(6)}$$

$$\text{A.79} \quad \frac{(4)(6.5) + 5(7.0) + (6)(8.2)}{(4)(5)(6)}$$

$$\text{A.80} \quad 1 - \frac{(6)(41)}{(11)(11^2 - 1)}$$

$$\text{A.81} \quad (9)(8) + \frac{(9)(9+1)}{2} - 98$$

$$\text{A.82} \quad \sqrt{\frac{4.03}{20}}$$

$$\text{A.83} \quad \sqrt{\frac{(6-1)(8) + (9-1)(9)}{6+9-2}}$$

$$\text{A.84} \quad \sqrt{\frac{62 - \frac{11^2}{4}}{4-1}}$$

$$\text{A.85} \quad \sqrt{\left(\frac{30}{8+9-2} \right) \left(\frac{1}{5} + \frac{1}{7} \right)}$$

Simple Algebra

To solve a simple algebra problem, isolate the x to one side of the equal mark and combine the numbers on the other side. To accomplish this, remember that the same number can be added to or subtracted from both sides of the equation without affecting the value of x . Similarly, both sides of the equation can be multiplied or divided by the same number without affecting the value of x .

$$\text{A.86} \quad 4 = \frac{x}{\sqrt{8}}$$

$$\text{A.87} \quad 21 = 11x$$

$$\text{A.88} \quad \frac{13}{x} = 12$$

Answers to Additional Problems

A.45	4	A.67	0.04
A.46	6	A.68	9.90
A.47	7	A.69	31.62
A.48	0	A.70	0.71
A.49	10.85	A.71	12
A.50	0.55	A.72	5
A.51	3.51	A.73	20
A.52	0.02	A.74	14.80
A.53	8.70	A.75	11.57
A.54	0.23	A.76	0.55
A.55	8.03	A.77	3.10
A.56	8.00	A.78	0.70
A.57	3.60	A.79	0.92
A.58	0.43	A.80	0.81
A.59	12.00	A.81	19.00
A.60	77.00	A.82	0.45
A.61	0.28	A.83	2.94
A.62	2.00	A.84	3.25
A.63	2.05	A.85	0.83
A.64	2.97	A.86	11.31
A.65	36.00	A.87	1.91
A.66	1600.00	A.88	1.08