


1.7 Exercises

FOR
EXTRA
HELP


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Math Tutor Center

 MathXL

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Round each number as indicated. See Examples 1–5.

- | | |
|---|---|
| 1. 624 to the nearest ten | 2. 509 to the nearest ten |
| 3. 855 to the nearest ten | 4. 946 to the nearest ten |
| 5. 6771 to the nearest hundred | 6. 5847 to the nearest hundred |
| 7. 86,813 to the nearest hundred | 8. 17,211 to the nearest hundred |
| 9. 28,472 to the nearest hundred | 10. 18,273 to the nearest hundred |
| 11. 5996 to the nearest hundred | 12. 4452 to the nearest hundred |
| 13. 15,758 to the nearest thousand | 14. 28,465 to the nearest thousand |
| 15. 78,499 to the nearest thousand | 16. 14,314 to the nearest thousand |
| 17. 7760 to the nearest thousand | 18. 49,706 to the nearest thousand |
| 19. 12,987 to the nearest ten thousand | 20. 6599 to the nearest ten thousand |
| 21. 595,008 to the nearest ten thousand | 22. 725,182 to the nearest ten thousand |
| 23. 4,860,220 to the nearest million | 24. 13,713,409 to the nearest million |

Round each number to the nearest ten, nearest hundred, and nearest thousand. See Examples 6 and 7.

- | | Ten | Hundred | Thousand | | Ten | Hundred | Thousand |
|----------|-------|---------|----------|----------|-------|---------|----------|
| 25. 4476 | _____ | _____ | _____ | 26. 6483 | _____ | _____ | _____ |
| 27. 3374 | _____ | _____ | _____ | 28. 7632 | _____ | _____ | _____ |
| 29. 6048 | _____ | _____ | _____ | 30. 7065 | _____ | _____ | _____ |

- | | Ten | Hundred | Thousand | | Ten | Hundred | Thousand |
|---|-------|---------|----------|---|-------|---------|----------|
| 31. 5343 | _____ | _____ | _____ | 32. 7456 | _____ | _____ | _____ |
| 33. 19,539 | _____ | _____ | _____ | 34. 59,806 | _____ | _____ | _____ |
| 35. 26,292 | _____ | _____ | _____ | 36. 78,519 | _____ | _____ | _____ |
| 37. 93,706 | _____ | _____ | _____ | 38. 84,639 | _____ | _____ | _____ |
| 39. Write in your own words the three steps that you would use to round a number when the digit to the right of the place to which you are rounding is 5 or more. | | | | 40. Write in your own words the three steps that you would use to round a number when the digit to the right of the place to which you are rounding is 4 or less. | | | |

\approx Estimate each answer by rounding to the nearest ten. Then find the exact answer. See Example 8.

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|--|--|
| <p>41. Estimate: Exact:</p> $\begin{array}{r} \leftarrow \text{Rounds to} \quad 25 \\ \leftarrow \quad \quad \quad \quad 63 \\ \leftarrow \quad \quad \quad \quad 47 \\ + \quad \quad \quad \quad + 84 \\ \hline \end{array}$ | <p>42. Estimate: Exact:</p> $\begin{array}{r} 56 \\ 24 \\ 85 \\ + 71 \\ \hline \end{array}$ |
| <p>43. Estimate: Exact:</p> $\begin{array}{r} 78 \\ - 43 \\ \hline \end{array}$ | <p>44. Estimate: Exact:</p> $\begin{array}{r} 57 \\ - 24 \\ \hline \end{array}$ |
| <p>45. Estimate: Exact:</p> $\begin{array}{r} 67 \\ \times 34 \\ \hline \end{array}$ | <p>46. Estimate: Exact:</p> $\begin{array}{r} 53 \\ \times 75 \\ \hline \end{array}$ |

\approx Estimate each answer by rounding to the nearest hundred. Then find the exact answer. See Example 9.

- | | |
|--|--|
| <p>47. Estimate: Exact:</p> $\begin{array}{r} \leftarrow \text{Rounds to} \quad 863 \\ \leftarrow \quad \quad \quad \quad 735 \\ \leftarrow \quad \quad \quad \quad 438 \\ + \quad \quad \quad \quad + 792 \\ \hline \end{array}$ | <p>48. Estimate: Exact:</p> $\begin{array}{r} 623 \\ 362 \\ 189 \\ + 736 \\ \hline \end{array}$ |
|--|--|

$$\begin{array}{r}
 \text{49. Estimate:} \\
 \underline{\quad} \\
 \end{array}
 \qquad
 \begin{array}{r}
 \text{Exact:} \\
 883 \\
 - 448 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 \text{50. Estimate:} \\
 \underline{\quad} \\
 \end{array}
 \qquad
 \begin{array}{r}
 \text{Exact:} \\
 614 \\
 - 276 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 \text{51. Estimate:} \\
 \times \underline{\quad} \\
 \end{array}
 \qquad
 \begin{array}{r}
 \text{Exact:} \\
 752 \\
 \times 375 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 \text{52. Estimate:} \\
 \times \underline{\quad} \\
 \end{array}
 \qquad
 \begin{array}{r}
 \text{Exact:} \\
 845 \\
 \times 396 \\
 \hline
 \end{array}$$

\approx Estimate each answer using front end rounding. Then find the exact answer. See Example 10.

$$\begin{array}{r}
 \text{53. Estimate:} \\
 \begin{array}{l}
 \leftarrow \text{Rounds to} \\
 \leftarrow \\
 \leftarrow \\
 \leftarrow \\
 \leftarrow
 \end{array}
 \end{array}
 \qquad
 \begin{array}{r}
 \text{Exact:} \\
 8215 \\
 56 \\
 729 \\
 + 3605 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 \text{54. Estimate:} \\
 \underline{\quad} \\
 \end{array}
 \qquad
 \begin{array}{r}
 \text{Exact:} \\
 2685 \\
 73 \\
 592 \\
 + 7183 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 \text{55. Estimate:} \\
 \underline{\quad} \\
 \end{array}
 \qquad
 \begin{array}{r}
 \text{Exact:} \\
 687 \\
 - 529 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 \text{56. Estimate:} \\
 \underline{\quad} \\
 \end{array}
 \qquad
 \begin{array}{r}
 \text{Exact:} \\
 543 \\
 - 174 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 \text{57. Estimate:} \\
 \times \underline{\quad} \\
 \end{array}
 \qquad
 \begin{array}{r}
 \text{Exact:} \\
 939 \\
 \times 29 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 \text{58. Estimate:} \\
 \times \underline{\quad} \\
 \end{array}
 \qquad
 \begin{array}{r}
 \text{Exact:} \\
 864 \\
 \times 74 \\
 \hline
 \end{array}$$

59. The number 3492 rounded to the nearest hundred is 3500, and 3500 rounded to the nearest thousand is 4000. But when 3492 is rounded directly to the nearest thousand it becomes 3000. Why is this true? Explain.

60. The use of rounding is helpful when estimating the answer to a problem. Why is this true? Give an example using either addition, subtraction, multiplication, or division to show how this works.

61. In 1900, the population of the United States was 76 million. Today it's 296 million. Round each of these numbers to the nearest ten million. (Source: Reiman Publications.)

62. In 1900, the average workweek in the United States was 59 hours. Today it's 38 hours. Round each of these numbers to the nearest ten. (Source: Reiman Publications.)

63. In 1900, the life expectancy in the United States was 47 years. Today it's 76 years. Round these numbers to the nearest ten. (Source: Reiman Publications.)

64. In 1900, the average age of the population in the United States was 23. Today it's 35. Round these numbers to the nearest ten. (Source: Reiman Publications.)

65. In Chicago, the Sears Tower tenants recycled 1,667,300 pounds of paper last year. Round this number to the nearest ten thousand, nearest hundred thousand, and nearest million.
(Source: Trizec Properties.)
66. Round 621,999,652 to the nearest thousand, nearest ten thousand, and nearest hundred thousand.
67. American pharmaceutical companies spent \$25,765,475,000 last year to develop new products. Round this amount to the nearest hundred thousand, nearest hundred million, and nearest billion.
(Source: American Demographics.)
68. In one year the U.S. Federal Food Assistance Program paid out \$18,915,762,568 in food stamps. Round this amount to the nearest hundred thousand, nearest hundred million, and nearest ten billion.
(Source: U.S. Department of Agriculture.)

RELATING CONCEPTS (EXERCISES 69–75) For Individual or Group Work

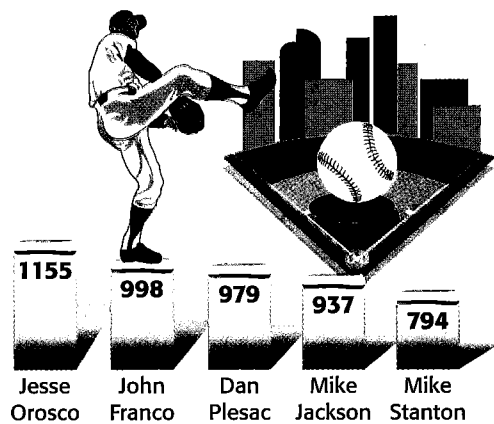
To see how both rounding and front end rounding are used in solving problems, work Exercises 69–75 in order.

69. A number rounded to the nearest thousand is 72,000. What is the *smallest* whole number this could have been before rounding?
70. A number rounded to the nearest thousand is 72,000. What is the *largest* whole number this could have been before rounding?
71. When front end rounding is used, a whole number rounds to 8000. What is the *smallest* possible original number?
72. When front end rounding is used, a whole number rounds to 8000. What is the *largest* possible original number?

The graph below shows the greatest number of pitching appearances for active professional baseball pitchers.

ON THE MOUND

Active pitchers with the most appearances include the following:



Source: Major League Baseball.

73. Round the number of appearances given for each pitcher to the nearest ten.
74. Use front end rounding to round the number of appearances for each pitcher.
75. (a) What is one advantage of using front end rounding instead of rounding to the nearest ten?
- (b) What is one disadvantage?