

Review of Basic Math/ Time Varies by Student

Outcome: As needed, students will practice the basic math skills of addition, subtraction, multiplication, and division using packets focusing on discrete skills.

NOTE: Students are expected to have previously mastered these skills as part of fulfilling course pre-requisites. These materials are intended to assist students who need to refresh their basic math skills.

Materials: **Packets 1 through 5**

1. Place Value
2. Addition
3. Subtraction
4. Multiplication
5. Division

NOTE: Packets were developed by LINCS , a national electronic information and communication system for adult literacy (<http://lincs.ed.gov/lincs>) and the Center for Literacy Studies at the University of Tennessee. We have received written permission for the educational use of these materials.

Learning Standards:

Strand: Number and Operations Sense

Benchmarks:

M3N1 (Apply common types of mathematical information and concepts to problems involving whole numbers)

Description: Instructor assesses students' need for practice in the basic math skills of place value, addition, subtraction, multiplication, and division, either as a group or individually, and assigns these packets accordingly, either as part of a lesson or as independent study. The amount of time needed to complete each packet will vary by student.

Mathematics Skills for Health Care Providers

Lesson 1 of 7

Whole Numbers - Place Values of Digits

Learning Objectives

At the end of this lesson, you will be able to:

1. Understand the meaning of place values of digits.
2. Understand and apply the use of place value in numbers and how they impact your job.

You see and work with whole numbers on a daily basis. In this lesson, we will describe the positions of place value digits and some possible workplace situations you might encounter that would require the use of various whole number operations.

Vocabulary and Key Terms

place value - The position of each digit in a whole number, which determines its value.

digits - Numbers (0, 1, 2, 3, 4, 5, 6, 7, 8, 9) which are used to write whole numbers.
Example: 921 is a three-digit number. 7,777 is a four-digit number, even though all the numbers are the same.

Prescription for Understanding

The place value of a digit in a number depends on its place or order. The following chart identifies the first ten whole number places. We use a system based on counting in multiples of ten. Notice in the chart that the place value is based on counting in multiples of ten. Place values of whole numbers increase from right to left. Beginning at the right (units or ones place), a comma is used to separate every group of three places.

<u>Billions.</u>	<u>Hundred Millions</u>	<u>Ten Millions</u>	<u>Millions.</u>	<u>Hundred Thousands</u>	<u>Ten Thousands</u>	<u>Thousands.</u>	<u>Hundreds</u>	<u>Tens</u>	<u>units or ones</u>
10,	9	8	7,	6	5	4,	3	2	1

10,987,654,321

Examples

1. Let's look at the number given above (10,987,654,321). The digit 3 in this number is in the hundreds place. The value of the 3 in 10,987,654,321 is $3 \times 100 = 300$.

2. Let's look at the number 3 as it appears in three different numbers.

The digit 3 in the number 321 is in the hundreds place. The value of the 3 in 321 is $3 \times 100 = 300$.

The digit 3 in the number 3,210 is in the thousands place. The value of the 3 in 3,210 is $3 \times 1,000 = 3,000$.

The digit 3 in the number 32,210 is in the ten thousands place. The value of the 3 in 32,210 is $3 \times 10,000 = 30,000$.

3. What is the value of each digit in 9,432?

Step 1. 9 is in the thousands place. $9 \times 1,000 = 9,000$

Step 2. 4 is in the hundreds place. $4 \times 100 = 400$

Step 3. 3 is in the tens place. $3 \times 10 = 30$

Step 4. 2 is in the units (ones) place $2 \times 1 = 2$

4. What is the value of 4 in 5,487?

Step 1. Explain what place the 4 is in. 4 is in the third place from the right, the hundreds place.

Step 2. Multiply $4 \times 100 = 400$

Skill Check

1. What is the value of each digit in 7,561?

7 _____
5 _____
6 _____
1 _____

2. What is the value of each digit in 5,701?

5 _____
7 _____
0 _____
1 _____

3. What is the value of each underlined digit?

a. 3 <u>4</u> 5	<u>4</u> _____
b. <u>6</u> 98	<u>6</u> _____
c. 78 <u>0</u>	<u>0</u> _____
d. <u>4</u> ,310	<u>4</u> _____
e. <u>7</u> 7,777	<u>7</u> _____
f. 7 <u>7</u> ,777	<u>7</u> _____
g. 91, <u>6</u> 78,520	<u>6</u> _____

4. What is the value of each digit in 34,789?

3 _____
4 _____
7 _____
8 _____
9 _____

Now select your area of work and then turn to the appropriate page for "Let's Apply to Your Workplace" questions:

Nursing Assistant ----- Page 69 - 70

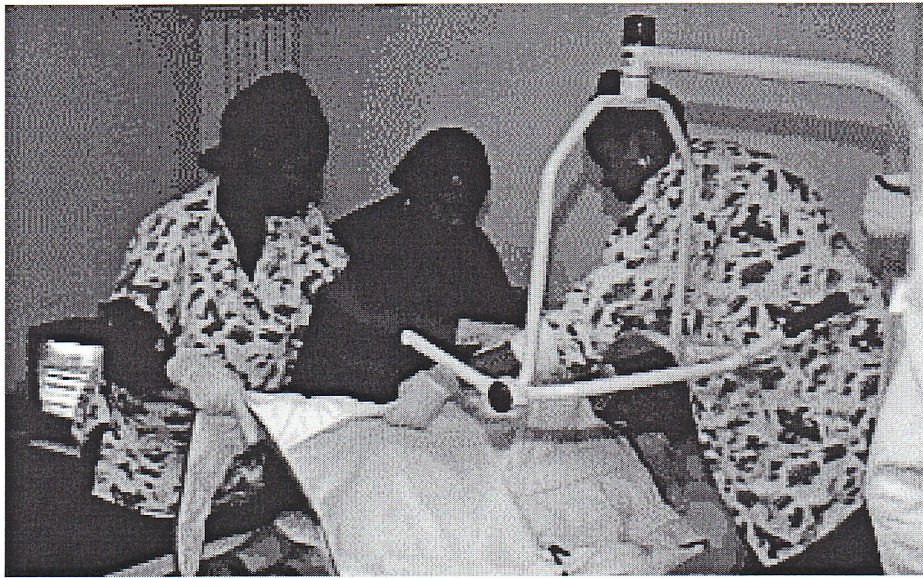
Dietary Services ----- Page 71 - 72

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Let's Apply to Nurse Assistant **Mathematics – Lesson 1 of 7**

NOTE: Remember that some whole numbers you will encounter in your workplace may be separated with slash (/) marks, multiplication symbols (x), and dashes (-).

Nurse assistants must have an understanding of the place value of digits. Knowing the difference between 16 packets per carton and 160 packets per carton is one example of the importance of this skill.



Example

If you have a case of sterile gloves with 65 pairs of gloves, the value of the 6 is sixty and the value of the 5 is five. The six is in the ten position and has a value of sixty and the 5 is in the ones position and has a value of five.

Exercise

1. You have 26 residents in your care. What place value position is the 6 in?
 - a. ones
 - b. tens
 - c. hundreds
 - d. thousands

2. You have just weighed a resident. The recorded weight is 175 pounds. What place value position is the 1 in?
 - a. ones
 - b. tens
 - c. hundreds
 - d. thousands

3. The blood pressure reading that you recorded for a resident was 120 over 70. What place value position is the 7 in?
 - a. ones
 - b. tens
 - c. hundreds
 - d. thousands

Mathematics Skills for Health Care Providers

Lesson 2 of 7

Addition of Whole Numbers

Learning Objectives

At the end of this lesson, you will be able to:

1. Understand and use the basic operation of addition of whole numbers on a daily basis.
2. Understand and use the process of combining two or more numbers to find a total.
3. Apply addition skills to your job.

The four operations (addition, subtraction, multiplication, and division) of single and multi-digit numbers form the basis of arithmetic.

As an employee, you will most likely have plenty of opportunities to use these four basic operations.

Vocabulary and Key Terms

addition - The process of combining two or more numbers to find a total.

equations - The basic facts are written as equations.

Example: $8 + 2 = 10$, $0 + 5 = 5$, and $7 + 3 = 10$

An equation shows that the numbers on both sides of the equal signs (=) are equal.

signs - (+) plus sign means to add

(=) shows that the number on both sides of the equal sign (=) are equal.

Example: $2 + 8 = 10$

sum - An answer solved by addition is called a sum.

Example:
$$\begin{array}{rcl} 8 + 12 & = & 20 \\ \text{Add} & & \text{Sum} \end{array}$$

Prescription for Understanding

1. Procedures:

- | | |
|--------|--|
| Step 1 | Line up the problems with units under units, ten under tens, and hundreds under hundreds, etc. |
| Step 2 | Start with units (ones) and add down each column. If the sum of any column is a two-digit number, put the right side digit under the column you are adding and place or carry forward the left side digit to the top of the next column. |

2. Checking:

To check an addition problem, reverse the top and bottom numbers and add again. You should get the same sum.

Original problems:

$$\begin{array}{r} 55 \\ + 23 \\ \hline 78 \end{array}$$

$$\begin{array}{r} 28 \\ + 21 \\ \hline 49 \end{array}$$

Check the original problems:

$$\begin{array}{r} 23 \\ + 55 \\ \hline 78 \end{array}$$

$$\begin{array}{r} 21 \\ + 28 \\ \hline 49 \end{array}$$

Examples

1. Add the following numbers:

$$1,641 + 298 + 922 + 81$$

$$\begin{array}{r} 1\ 2\ 1 \\ 1,641 \\ 298 \\ 922 \\ +\ 81 \\ \hline 2,942 \end{array}$$

2. Addition begins as a counting of objects and moves into "adding on."

$$3 + 4 = 7$$

Sometimes problems are written this way:

$$\begin{array}{r} 3 \\ +\ 4 \\ \hline 7 \end{array}$$

3. Adding three or more numbers can be simplified through pairing numbers whose sum is ten.

$$\begin{array}{r} 5 \\ 7 \\ 2 \\ 6 \\ 3 \\ +\ 4 \\ \hline 27 \end{array}$$

The sum at the left can be rearranged to pair numbers whose sum is ten. Add "7 + 3" and "6 + 4" (two 10's = 20). Now add the remaining numbers. "2 + 5" = 7 and you have 27 as the answer.

Skill Check

Add the following numbers:

$$\begin{array}{r} 1. \quad 23 \\ 22 \\ 14 \\ + 64 \\ \hline \end{array}$$

$$\begin{array}{r} 2. \quad 17 \\ 28 \\ 23 \\ + 91 \\ \hline \end{array}$$

$$\begin{array}{r} 3. \quad 64 \\ 55 \\ 29 \\ + 82 \\ \hline \end{array}$$

$$\begin{array}{r} 4. \quad 7 \\ 4 \\ 3 \\ + 12 \\ \hline \end{array}$$

$$\begin{array}{r} 5. \quad 28 \\ 19 \\ 61 \\ + 4 \\ \hline \end{array}$$

$$\begin{array}{r} 6. \quad 2 \\ 6 \\ 9 \\ + 22 \\ \hline \end{array}$$

$$\begin{array}{r} 7. \quad 2 \\ 4 \\ 9 \\ 8 \\ 7 \\ + 4 \\ \hline \end{array}$$

$$\begin{array}{r} 8. \quad 2,942 \\ 4,321 \\ 698 \\ 231 \\ 132 \\ + 101 \\ \hline \end{array}$$

$$\begin{array}{r} 9. \quad 6,984 \\ 5,722 \\ 4,321 \\ 3,968 \\ 2,423 \\ + 1,988 \\ \hline \end{array}$$

$$\begin{array}{r} 10. \quad 16 \\ 22 \\ 4 \\ + 9 \\ \hline \end{array}$$

$$\begin{array}{r} 11. \quad 28 \\ 9 \\ 6 \\ + 98 \\ \hline \end{array}$$

$$\begin{array}{r} 12. \quad 62 \\ 29 \\ 8 \\ + 43 \\ \hline \end{array}$$

$$\begin{array}{r} 13. \quad 10,986,430 \\ 69,322 \\ 28,421 \\ 9,423 \\ 8,621 \\ + 10 \\ \hline \end{array}$$

$$\begin{array}{r} 14. \quad 22,000 \\ 10,000 \\ 11,000 \\ 8,000 \\ 7,000 \\ + 5,000 \\ \hline \end{array}$$

$$\begin{array}{r} 15. \quad 64,320 \\ 29,780 \\ 42,580 \\ 33,333 \\ 43,780 \\ + 15,745 \\ \hline \end{array}$$

$$\begin{array}{r} 16. \quad 68 \\ + \quad 4 \\ \hline \end{array}$$

$$\begin{array}{r} 17. \quad 17 \\ + \quad 2 \\ \hline \end{array}$$

$$\begin{array}{r} 18. \quad 64 \\ + \quad 99 \\ \hline \end{array}$$

$$\begin{array}{r} 19. \quad 69 \\ \quad 96 \\ \quad 43 \\ + \quad 34 \\ \hline \end{array}$$

$$\begin{array}{r} 20. \quad 28 \\ \quad 82 \\ \quad 48 \\ + \quad 84 \\ \hline \end{array}$$

$$\begin{array}{r} 21. \quad 19 \\ \quad 91 \\ \quad 28 \\ + \quad 82 \\ \hline \end{array}$$

$$\begin{array}{r} 22. \quad 61 \\ \quad 16 \\ \quad 24 \\ + \quad 42 \\ \hline \end{array}$$

$$\begin{array}{r} 23. \quad 92 \\ \quad 29 \\ \quad 39 \\ + \quad 93 \\ \hline \end{array}$$

$$\begin{array}{r} 24. \quad 22 \\ \quad 18 \\ \quad 42 \\ + \quad 18 \\ \hline \end{array}$$

$$\begin{array}{r} 25. \quad 69 \\ \quad 22 \\ + \quad 2 \\ \hline \end{array}$$

$$\begin{array}{r} 26. \quad 72 \\ \quad 23 \\ + \quad 1 \\ \hline \end{array}$$

Now select your area of work and then turn to the appropriate page for "Let's Apply to Your Workplace" questions:

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Dietary Services ----- Page 83 - 84

Environmental Services ----- Page 85 - 86

Exercise

1. John Winner was weighed initially on January 27, 1997. His weight was 183 pounds. On February 22, 1997, his weight was 187 pounds. How many pounds did John gain?
 - a. 8 pounds
 - b. 6 pounds
 - c. 3 pounds
 - d. 4 pounds

2. On April 23, 1997, Mr. Winner weighed 191 pounds. How much weight did Mr. Winner gain since February 22, 1997, when he weighed 187 pounds?
 - a. 4 pounds
 - b. 6 pounds
 - c. 3 pounds
 - d. 8 pounds

3. Over the past five years, Mr. Winner has had the following weight gains:
1993 - 5 pounds
1994 - 2 pounds
1995 - 1 pound
1996 - 4 pounds
1997 - 3 pounds

How much weight did Mr. Winner gain over the five-year period?

- a. 20 pounds
- b. 10 pounds
- c. 12 pounds
- d. 15 pounds

Mathematics Skills for Health Care Providers

Lesson 3 of 7

Subtraction of Whole Numbers

Learning Objectives

At the end of this lesson, you will be able to:

1. Understand and use the basic operation of subtraction of whole numbers.
2. Apply subtraction to your job.

Just as with addition, you will most likely use subtraction of whole numbers on a daily basis. Subtraction is the opposite of addition. Therefore, if you can add, you can subtract.

Vocabulary and Key Terms

borrow - When you cannot subtract a larger number from a smaller number, you must borrow. Borrowing does not change the value of a number, but does enable you to take a higher place value and add to a lower place value number.

difference - When you subtract, you take one number away from another to find the difference.

minuend - The number being subtracted from is called the minuend. The minuend is placed above the subtrahend.

subtrahend - The number being subtracted is called the subtrahend. The subtrahend is placed below the minuend.

Prescription for Understanding

Subtracting and Borrowing:

1. $3,019 - 1,292 =$ _____

<u>Step 1.</u>	<u>Step 2.</u>	<u>Step 3.</u>	<u>Step 4.</u>
$\begin{array}{r} 3,019 \\ - 1,292 \\ \hline \end{array}$	$\begin{array}{r} 3,019 \\ - 1,292 \\ \hline 7 \end{array}$	$\begin{array}{r} 2\ 9 \\ 3,019 \\ - 1,292 \\ \hline 27 \end{array}$	$\begin{array}{r} 2\ 9 \\ 3,019 \\ - 1,292 \\ \hline 1,727 \end{array}$

Step 1. Put the larger number (3,019) on top. Line up the digits with units under ones, tens under tens, hundreds over hundreds, etc.

Step 2. Starting with the ones (units) subtract. Since you cannot take 9 away from 1, you must borrow.

Step 3. You cannot borrow from 0. Therefore, you must go one more place to the left. Borrow 1 from the 3 to make 2 in the thousands place. Place 1 next to the 0 in the hundreds place to make 10.

Step 4. This still does not help the 1 in the tens place. Borrow again from the 10, put a 9 in the hundreds place, and place a 1 next to the 1 in the tens place. Subtract.

Check Subtraction problem.

Original:
$$\begin{array}{r} 3,019 \text{ (minuend)} \\ - 1,292 \text{ (subtrahend)} \\ \hline 1,727 \text{ (difference)} \end{array}$$

Check:
$$\begin{array}{r} 1,292 \text{ (subtrahend)} \\ + 1,727 \text{ (difference)} \\ \hline 3,019 \text{ (original minuend)} \end{array}$$

Add the answer (difference) to the number being subtracted (subtrahend). The result should be the top number of the original problem (original minuend).

2. There are two subtraction facts for every basic addition fact.

a. $9 + 6 = 15$, you get these subtraction facts: $15 - 6 = 9$ and $15 - 9 = 6$.

b. $15 - 6 = 9$ (difference)

↑

minus sign means to subtract

↓

$15 - 9 = 6$ (difference)

3. There are several ways to read subtractions:

a. 15 take away 9 is 6

b. 6 subtracted from 15 is 9

c. 15 minus 9 is 6

4. Most single digit subtraction pairs you know, but you must be careful when you have to borrow.

Examples:

Easy Problem

$$\begin{array}{r} 68 \\ - 25 \\ \hline 43 \end{array}$$

but

$$\begin{array}{r} 3 \\ 43 \\ - 25 \\ \hline 18 \end{array}$$

is a more difficult problem.

You borrow a 1 from 4 and subtract 5 from 13, now you subtract 2 from 3 to get 1.

Since we know these are the opposite of addition, both can easily be checked.

$$\begin{array}{r} 25 \\ + 43 \\ \hline 68 \end{array}$$

$$\begin{array}{r} 25 \\ + 18 \\ \hline 43 \end{array}$$

Examples

1. $10 - 9 = 1$
2. $9 - 8 = 1$
3. $8 - 7 = 1$
4. $7 - 6 = 1$
5. $6 - 5 = 1$
6. $5 - 4 = 1$
7. $4 - 3 = 1$
8. $3 - 2 = 1$
9. $2 - 1 = 1$
10. $1 - 0 = 1$

11. $11 - 9 = 2$
12. $10 - 8 = 2$
13. $9 - 7 = 2$
14. $8 - 6 = 2$
15. $7 - 5 = 2$
16. $6 - 4 = 2$
17. $5 - 3 = 2$
18. $4 - 2 = 2$
19. $3 - 1 = 2$
20. $2 - 0 = 2$

21. $12 - 9 = 3$
22. $11 - 8 = 3$
23. $10 - 7 = 3$
24. $9 - 6 = 3$
25. $8 - 5 = 3$
26. $7 - 4 = 3$
27. $6 - 3 = 3$
28. $5 - 2 = 3$
29. $4 - 1 = 3$
30. $3 - 0 = 3$

31. $13 - 9 = 4$
32. $12 - 8 = 4$
33. $11 - 7 = 4$
34. $10 - 6 = 4$
35. $9 - 5 = 4$
36. $8 - 4 = 4$
37. $7 - 3 = 4$
38. $6 - 2 = 4$
39. $5 - 1 = 4$
40. $4 - 0 = 4$

41. $14 - 9 = 5$
42. $13 - 8 = 5$
43. $12 - 7 = 5$
44. $11 - 6 = 5$
45. $10 - 5 = 5$
46. $9 - 4 = 5$
47. $8 - 3 = 5$
48. $7 - 2 = 5$
49. $6 - 1 = 5$
50. $5 - 0 = 5$

51. $15 - 9 = 6$
52. $14 - 8 = 6$
53. $13 - 7 = 6$
54. $12 - 6 = 6$
55. $11 - 5 = 6$
56. $10 - 4 = 6$
57. $9 - 3 = 6$
58. $8 - 2 = 6$
59. $7 - 1 = 6$
60. $6 - 0 = 6$

- 61. $16 - 9 = 7$
- 62. $15 - 8 = 7$
- 63. $14 - 7 = 7$
- 64. $13 - 6 = 7$
- 65. $12 - 5 = 7$
- 66. $11 - 4 = 7$
- 67. $10 - 3 = 7$
- 68. $9 - 2 = 7$
- 69. $8 - 1 = 7$
- 70. $7 - 0 = 7$

- 71. $17 - 9 = 8$
- 72. $16 - 8 = 8$
- 73. $15 - 7 = 8$
- 74. $14 - 6 = 8$
- 75. $13 - 5 = 8$
- 76. $12 - 4 = 8$
- 77. $11 - 3 = 8$
- 78. $10 - 2 = 8$
- 79. $9 - 1 = 8$
- 80. $8 - 0 = 8$

- 81. $18 - 9 = 9$
- 82. $17 - 8 = 9$
- 83. $16 - 7 = 9$
- 84. $15 - 6 = 9$
- 85. $14 - 5 = 9$
- 86. $13 - 4 = 9$
- 87. $12 - 3 = 9$
- 88. $11 - 2 = 9$
- 89. $10 - 1 = 9$
- 90. $9 - 0 = 9$

Note the difference in the following problems.

91. $14 - 5 = \underline{9}$

92. $13 - 9 = \underline{4}$

93. $9 - 6 = \underline{3}$

94. $10 - 7 = \underline{3}$

95. $7 - 3 = \underline{4}$

96. $2 - 1 = \underline{1}$

97. $8 - 4 = \underline{4}$

98. $18 - 7 = \underline{11}$

99. $18 - 3 = \underline{15}$

100. $14 - 12 = \underline{2}$

101. $11 - 4 = \underline{7}$

102. $17 - 14 = \underline{3}$

Skill Check

Now try these:

$$\begin{array}{r} 1. \quad 79 \\ - 53 \\ \hline \end{array}$$

$$\begin{array}{r} 2. \quad 46 \\ - 28 \\ \hline \end{array}$$

$$\begin{array}{r} 3. \quad 135 \\ - 69 \\ \hline \end{array}$$

$$\begin{array}{r} 4. \quad 372 \\ - 178 \\ \hline \end{array}$$

$$\begin{array}{r} 5. \quad 1001 \\ - 682 \\ \hline \end{array}$$

$$\begin{array}{r} 6. \quad 2004 \\ - 17 \\ \hline \end{array}$$

$$\begin{array}{r} 7. \quad 3241 \\ - 1610 \\ \hline \end{array}$$

$$\begin{array}{r} 8. \quad 6748 \\ - 748 \\ \hline \end{array}$$

$$\begin{array}{r} 9. \quad 6974 \\ - 28 \\ \hline \end{array}$$

$$\begin{array}{r} 10. \quad 472 \\ - 68 \\ \hline \end{array}$$

$$\begin{array}{r} 11. \quad 798 \\ - 41 \\ \hline \end{array}$$

$$\begin{array}{r} 12. \quad 95 \\ - 48 \\ \hline \end{array}$$

$$\begin{array}{r} 13. \quad 48 \\ - 29 \\ \hline \end{array}$$

$$\begin{array}{r} 14. \quad 183 \\ - 71 \\ \hline \end{array}$$

$$\begin{array}{r} 15. \quad 35 \\ - 17 \\ \hline \end{array}$$

$$\begin{array}{r} 16. \quad 404 \\ - 130 \\ \hline \end{array}$$

$$\begin{array}{r} 17. \quad 696 \\ - 595 \\ \hline \end{array}$$

$$\begin{array}{r} 18. \quad 888 \\ - 494 \\ \hline \end{array}$$

$$\begin{array}{r} 19. \quad 921 \\ - 129 \\ \hline \end{array}$$

$$\begin{array}{r} 20. \quad 1840 \\ - 697 \\ \hline \end{array}$$

$$\begin{array}{r} 21. \quad 158 \\ - 93 \\ \hline \end{array}$$

$$\begin{array}{r} 22. \quad 44 \\ - 20 \\ \hline \end{array}$$

$$\begin{array}{r} 23. \quad 87 \\ - 13 \\ \hline \end{array}$$

$$\begin{array}{r} 24. \quad 98 \\ - 41 \\ \hline \end{array}$$

$$\begin{array}{r} 25. \quad 10,483 \\ - 7,681 \\ \hline \end{array}$$

Now select your area of work and then turn to the appropriate page for "Let's Apply to Your Workplace" questions:

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Exercise

1. A resident requires three injections of insulin daily. There are 18 syringes for the resident in the supply room. How many syringes are left at the end of the day?
 - a. 18
 - b. 14
 - c. 15
 - d. 17
2. ~~Mary Jane, who resides in D-wing, had a daily fluid intake of 320 cc's. Her daily output is 60 cc's. What is the difference of the output to the intake?~~
 - a. 200
 - b. 210
 - c. 250
 - d. 260
3. You are required to have 64 medium briefs on A-wing. You use 27 medium briefs while making rounds. How many medium briefs remain in A-wing after rounds?
 - a. 37
 - b. 39
 - c. 27
 - d. 36

Mathematics Skills for Health Care Providers

Lesson 4 of 7

Multiplication of Whole Numbers

Learning Objectives

At the end of this lesson, you will be able to:

1. Understand and use the basic operation of multiplication of whole numbers.
2. Apply the use of multiplication at your job.

Introduction

Just as with addition and subtraction, you will need to understand and apply the use of multiplication of whole numbers. Multiplication is the same as addition except that it is a shorter method.

Vocabulary and Key Terms

multiplicand - The top (or first) number - the one being multiplied is called the multiplicand.

multiplication - Combining equal groups to get a total.

multiplier - The lower (or second) number - the one that tells how many times the first number is to be added to itself is called the multiplier.

product - The result (or answer) of a problem is called the product.

Prescription for Understanding

Multiplication is the same as repeating addition of the same amount/sum. When numbers are multiplied by the number 1, the answer is the same amount you started with. When numbers are multiplied by the number 0, the answer is 0.

$$\begin{array}{r} 231 \\ \times 1 \\ \hline 231 \end{array}$$

$$\begin{array}{r} 231 \\ \times 0 \\ \hline 000 \end{array}$$

The symbol $\times$ (times) is used to indicate multiplication.

$$8 \times 4 = 32$$

If numbers are larger than 9, the remainders must be carried to the next column.

$$\begin{array}{r} 8 \text{ (multiplicand)} \\ \times 4 \text{ (multiplier)} \\ \hline 32 \text{ (product)} \end{array}$$

but:

$$\begin{array}{r} 2 \\ 87 \\ \times 3 \\ \hline 261 \end{array}$$

Explanation: $3 \times 7 = 21$. Place the 1 in the answer, carry the 2 to the next column.
 $3 \times 8 = 24 + \text{the 2 carried over} = 26$. The answer is 261.

Proof:

$$\begin{array}{r} 2 \\ 87 \\ 87 \\ + 87 \\ \hline 261 \end{array}$$

Examples

1. $75 \times 4 = \underline{\hspace{2cm}}$

$$\begin{array}{r} 2 \\ 75 \\ \times 4 \\ \hline 300 \end{array}$$

$$\begin{array}{r} 1 \\ 82 \\ \times 6 \\ \hline 492 \end{array}$$

$$\begin{array}{r} 23 \\ 235 \\ \times 6 \\ \hline 1410 \end{array}$$

Numbers can be multiplied in any order and the answer will be the same. However, the method taught here is the preferred method. When you are multiplying two numbers, you place the number with more digits on top. Then begin multiplying the units/ones.

2. $265 \times 45 =$ _____

Step 1	$\begin{array}{r} 265 \\ \times 45 \\ \hline \end{array}$	Step 2	$\begin{array}{r} 32 \\ 265 \\ \times 45 \\ \hline 1325 \end{array}$	Step 3	$\begin{array}{r} 22 \\ 265 \\ \times 45 \\ \hline 1325 \\ 1060 \\ \hline \end{array}$	Step 4	$\begin{array}{r} 265 \\ \times 45 \\ \hline 1325 \\ 1060 \\ \hline 11,925 \end{array}$
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Step 1. Put 265 on top.

Step 2. Multiply 265×5 . Start this part of the answer under the unit/ones column.

Step 3. Multiply 265×4 . Start this part of the answer under the tens column.

Step 4. Add the results from Steps 2 and 3.

Checking a Multiplication Problem. Note: Division is covered in another lesson. Divide the answer by one of the numbers multiplied. The result should be the other number you multiplied.

$\begin{array}{r} 265 \\ \times 5 \\ \hline 1325 \end{array}$	check:	$\begin{array}{r} 265 \\ 5 \overline{) 1325} \\ \underline{10} \\ 32 \\ \underline{30} \\ 25 \\ \underline{25} \\ 0 \end{array}$
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$\begin{array}{r} 265 \\ \times 4 \\ \hline 1060 \end{array}$	check:	$\begin{array}{r} 265 \\ 4 \overline{) 1060} \\ \underline{8} \\ 26 \\ \underline{24} \\ 20 \\ \underline{20} \\ 0 \end{array}$
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The following table shows the basic multiplication answers. The numbers being multiplied are in the left column and along the top of the table. The products/answers are the numbers in the remaining sections of the table.

To use the table, find the two numbers you want to multiply (one in the top row of table and one in the left column of the table). Find where the numbers intersect and you have the product/answer.

For example, to find the product for 3×8 , you find 3 in the left column and 8 in the top column. Find where the numbers intersect and you have the product/answer of 24.

Note: you could have found the 3 in the top column and the 8 in the left column, and found where the numbers intersect and produced the same product.

Multiplication Table

		1	2	3	4	5	6	7	8	9
×										
1		1	2	3	4	5	6	7	8	9
2		2	4	6	8	10	12	14	16	18
3		3	6	9	12	15	18	21	24	27
4		4	8	12	16	20	24	28	32	36
5		5	10	15	20	25	30	35	40	45
6		6	12	18	24	30	36	42	48	54
7		7	14	21	28	35	42	49	56	63
8		8	16	24	32	40	48	56	64	72
9		9	18	27	36	45	54	63	72	81

Skill Check

Find the missing products.

1. $6 \times 8 = \underline{\hspace{2cm}}$

2. $7 \times 8 = \underline{\hspace{2cm}}$

3. $9 \times 4 = \underline{\hspace{2cm}}$

4. $8 \times 8 = \underline{\hspace{2cm}}$

5. $5 \times 3 = \underline{\hspace{2cm}}$

6. $3 \times 5 = \underline{\hspace{2cm}}$

7. $4 \times 8 = \underline{\hspace{2cm}}$

8. $7 \times 6 = \underline{\hspace{2cm}}$

9. $6 \times 4 = \underline{\hspace{2cm}}$

10. $8 \times 7 = \underline{\hspace{2cm}}$

11. $6 \times 6 = \underline{\hspace{2cm}}$

12. $9 \times 8 = \underline{\hspace{2cm}}$

13. $7 \times 9 = \underline{\hspace{2cm}}$

14. $4 \times 7 = \underline{\hspace{2cm}}$

15. $7 \times 4 = \underline{\hspace{2cm}}$

16. $5 \times 8 = \underline{\hspace{2cm}}$

17. $4 \times 9 = \underline{\hspace{2cm}}$

18. $8 \times 2 = \underline{\hspace{2cm}}$

19. $2 \times 4 = \underline{\hspace{2cm}}$

20. $6 \times 2 = \underline{\hspace{2cm}}$

21. $8 \times 9 = \underline{\hspace{2cm}}$

22. $4 \times 4 = \underline{\hspace{2cm}}$

23. $1 \times 7 = \underline{\hspace{2cm}}$

24. $2 \times 7 = \underline{\hspace{2cm}}$

25. $7 \times 7 = \underline{\hspace{2cm}}$

26. $5 \times 9 = \underline{\hspace{2cm}}$

Find the missing products on the following two numbers multipliers.

27.
$$\begin{array}{r} 65 \\ \times 45 \\ \hline \end{array}$$

28.
$$\begin{array}{r} 235 \\ \times 95 \\ \hline \end{array}$$

29.
$$\begin{array}{r} 78 \\ \times 22 \\ \hline \end{array}$$

30.
$$\begin{array}{r} 333 \\ \times 33 \\ \hline \end{array}$$

31.
$$\begin{array}{r} 649 \\ \times 84 \\ \hline \end{array}$$

32.
$$\begin{array}{r} 721 \\ \times 18 \\ \hline \end{array}$$

33.
$$\begin{array}{r} 222 \\ \times 11 \\ \hline \end{array}$$

34.
$$\begin{array}{r} 698 \\ \times 99 \\ \hline \end{array}$$

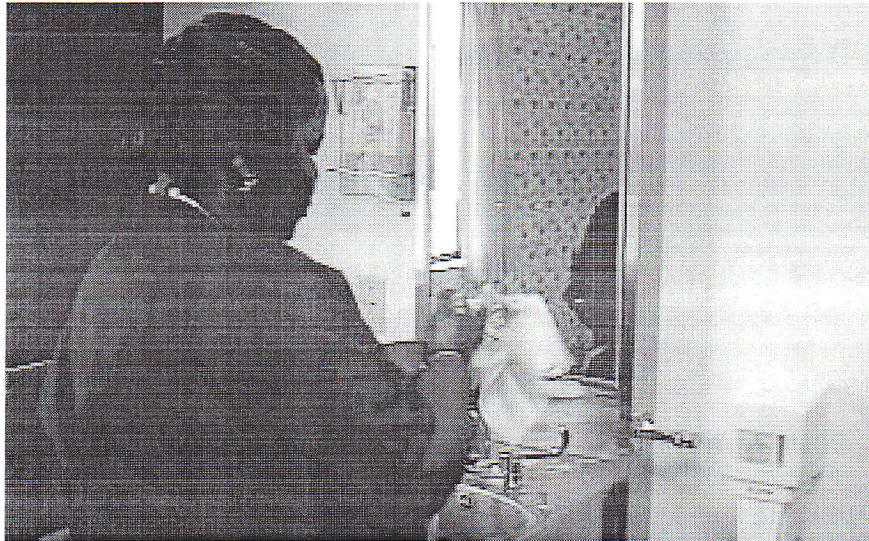
- | | | | | | | | |
|-----|---|-----|--|-----|--|-----|--|
| 35. | $\begin{array}{r} 721 \\ \times 45 \\ \hline \end{array}$ | 36. | $\begin{array}{r} 897 \\ \times 38 \\ \hline \end{array}$ | 37. | $\begin{array}{r} 945 \\ \times 16 \\ \hline \end{array}$ | 38. | $\begin{array}{r} 210 \\ \times 49 \\ \hline \end{array}$ |
| 39. | $\begin{array}{r} 635 \\ \times 14 \\ \hline \end{array}$ | 40. | $\begin{array}{r} 485 \\ \times 81 \\ \hline \end{array}$ | 41. | $\begin{array}{r} 921 \\ \times 72 \\ \hline \end{array}$ | 42. | $\begin{array}{r} 747 \\ \times 22 \\ \hline \end{array}$ |
| 43. | $\begin{array}{r} 308 \\ \times 45 \\ \hline \end{array}$ | 44. | $\begin{array}{r} 502 \\ \times 12 \\ \hline \end{array}$ | 45. | $\begin{array}{r} 303 \\ \times 44 \\ \hline \end{array}$ | 46. | $\begin{array}{r} 766 \\ \times 55 \\ \hline \end{array}$ |
| 47. | $\begin{array}{r} 6495 \\ \times 321 \\ \hline \end{array}$ | 48. | $\begin{array}{r} 5385 \\ \times 91 \\ \hline \end{array}$ | 49. | $\begin{array}{r} 4328 \\ \times 44 \\ \hline \end{array}$ | 50. | $\begin{array}{r} 7891 \\ \times 32 \\ \hline \end{array}$ |
| 51. | $\begin{array}{r} 9645 \\ \times 48 \\ \hline \end{array}$ | 52. | $\begin{array}{r} 1908 \\ \times 81 \\ \hline \end{array}$ | | | | |

Now select your area of work and then turn to the appropriate page for "Let's Apply to Your Workplace" questions:

Nursing Assistant ----- Page 105 - 106
 Dietary Services ----- Page 107 - 108
 Environmental Services ----- Page 109 - 110

Let's Apply to Nurse Assistant **Mathematics – Lesson 4 of 7**

Nursing assistants use whole numbers in many different places. An example would be determining the amount of supplies needed. Nursing assistants must check the supplies and then decide whether to order more.



Example

The nurse asked you to find out if there are enough syringes to last the whole shift. They use about 30 per shift. After checking, you find 2 boxes of one dozen each. How many syringes are there?

You multiply the number in each box by the number of boxes. (There are 12 in a dozen.)

$$12 \times 2 = 24$$

There are 24 syringes and you need 30 ($30 - 24 = 6$). You need 6 more syringes. There are not enough to last the whole shift.

Exercise

1. A nurse asks you to get 5 boxes of "skilled vital signs" forms for recording vital signs. Each box holds 60 forms. How many forms will you be getting?
 - a. 325
 - b. 275
 - c. 300
 - d. 305

2. The nursing facility where you work uses thermometers that are used once and thrown away. The wing you work on keeps three thermometers in stock for each resident. There are 46 residents. How many thermometers are kept?
 - a. 138
 - b. 128
 - c. 148
 - d. 136

3. As a nursing assistant, you are required to conduct an inventory of the supply room. There are 26 boxes of syringes in the supply room. Each box has 48 syringes. How many are there all together?
 - a. 1,258
 - b. 1,250
 - c. 1,200
 - d. 1,248

Mathematics Skills for Health Care Providers

Lesson 5 of 7

Division of Whole Numbers

Learning Objectives

At the end of this lesson, you will be able to:

1. Understand and use the basic operations of the division of whole numbers.
2. Apply the use of the division of whole numbers to your job.

On your job, you see and work with whole numbers on a daily basis. In this lesson, you will learn how to divide whole numbers.

Vocabulary and Key Terms

dividend - The number that the divisor divides into.

divisor - The divisor tells how many times to separate or divide an amount.

remainder - When you divide, you sometimes have an amount left over. This amount is called a remainder. Use the letter R to stand for remainder. The remainder is part of the answer.

quotient - The answer found by division is called a quotient.

Example:
$$\begin{array}{ccccccc} 24 & & \div & & 12 & = & 2 \\ \text{dividend} & & \text{division} & & \text{divisor} & & \text{quotient} \\ & & \text{sign} & & & & \end{array}$$

Remember, division facts can be read two ways: "twelve divided into twenty-four is two" and "twenty-four divided by twelve equals two."

Prescription for Understanding

Division is the opposite math operation of multiplication. There are two division facts for every multiplication fact.

Example: from $2 \times 12 = 24$, you get:

$$24 \div 12 = 2$$

$$24 \div 2 = 12$$

Example: from $2 \times 4 = 8$, you get:

$$8 \div 4 = 2$$

$$8 \div 2 = 4$$

The symbols " $\div$ " and " $\overline{\hspace{1cm}}$ " mean to divide. 24 divided by 12 is written as

$$24 \div 12 \quad \text{or} \quad 12 \overline{)24}$$

Example: $525 \div 35$

Step 1.	$35 \overline{)525}$	Step 2.	$\begin{array}{r} 1 \\ 35 \overline{)525} \\ \underline{35} \\ 17 \end{array}$	Step 3.	$\begin{array}{r} 15 \\ 35 \overline{)525} \\ \underline{35} \\ 175 \\ \underline{175} \\ 0 \end{array}$
----------------	----------------------	----------------	--	----------------	--

Step 1. Set up your problem, putting the number being divided (dividend) inside the frame. In this problem, 525 is being divided.

Step 2. How many times does 35 go into 5? None. Since 35 is too large to go into 5, you look at the first two digits together. How many times does 35 go into 52? One time. Put a one above the tens place and multiply 1 times 35, then subtract.

Step 3. Ask yourself whether 35 will go into 17. No. Bring down the 5. Will 35 go into 175? Yes, five times. $5 \times 35 = 175$. There is no remainder; 35 divides evenly into 525.

Usually, if you divide by a single digit, short division is fairly simple.

Example: $680 \div 4$

Step 1. $4 \overline{) 680}$

Step 2.
$$\begin{array}{r} 1 \\ 4 \overline{) 680} \\ \underline{4} \\ 28 \end{array}$$

Step 3.
$$\begin{array}{r} 17 \\ 4 \overline{) 680} \\ \underline{4} \\ 28 \\ \underline{28} \\ 0 \end{array}$$

Step 1. Set up the problem, putting the number being divided (dividend) inside the frame. In the problem, 680 is being divided.

Step 2. Ask yourself how many times will 4 go into 6. 1 time with 2 left over. Bring down your 8.

Step 3. How many times does 4 go into 28? 7 times with 0 left over. Lastly, 4 goes into 0, 0 times.

In division problems with a remainder, indicate the remainder as part of the answer.

Example: $156 \div 9 = 17 \text{ r}3$

$$\begin{array}{r} 17 \text{ r}3 \\ 9 \overline{) 156} \\ \underline{9} \\ 66 \\ \underline{63} \\ 3 \end{array}$$

Our quotient is 17 with remainder of 3.

Note: This answer is also written:
 $17 \frac{3}{9} = 17 \frac{1}{3}$

To check a division problem, multiply the answer by the number you divided by. Then add the remainder if there is one. The result should be the number you divided into.

Example:

$$\begin{array}{r} 17 \\ \times 9 \\ \hline 153 \\ + 3 \text{ (Remainder)} \\ \hline 156 \end{array}$$

Division is the most difficult of the whole number operations. Many times you have to estimate and then test any possible answers. Zeros in division create extra trouble. Review the example below:

$$2691 \div 13 \quad \text{or} \quad \begin{array}{r} 207 \\ 13 \overline{) 2691} \\ \underline{26} \\ 09 \\ \underline{0} \\ 91 \\ \underline{91} \\ 0 \end{array}$$

The zero in the answer above holds the tens place. This zero means that 13 would not divide into 9.

Check by multiplication:

$$\begin{array}{r} 207 \\ \times 13 \\ \hline 621 \\ 207 \\ \hline 2,691 \end{array}$$

Skill Check

Try the following problems:

1. $6 \overline{) 186}$

2. $31 \overline{) 674}$

3. $29 \overline{) 684}$

4. $41 \overline{) 678}$

5. $65 \overline{) 5,708}$

6. $29 \overline{) 678}$

7. $45 \overline{) 569}$

8. $22 \overline{) 7,010}$

9. $9 \overline{) 156}$

10. $28 \overline{) 170}$

Fill in the missing quotients in the problems below. Your answers should be the number that if multiplied by the divisor equal the dividend.

11. $9 \div 1 = \underline{\quad}$

20. $18 \div 2 = \underline{\quad}$

29. $27 \div 3 = \underline{\quad}$

12. $8 \div 1 = \underline{\quad}$

21. $16 \div 2 = \underline{\quad}$

30. $24 \div 3 = \underline{\quad}$

13. $7 \div 1 = \underline{\quad}$

22. $14 \div 2 = \underline{\quad}$

31. $21 \div 3 = \underline{\quad}$

14. $6 \div 1 = \underline{\quad}$

23. $12 \div 2 = \underline{\quad}$

32. $18 \div 3 = \underline{\quad}$

15. $5 \div 1 = \underline{\quad}$

24. $10 \div 2 = \underline{\quad}$

33. $15 \div 3 = \underline{\quad}$

16. $4 \div 1 = \underline{\quad}$

25. $8 \div 2 = \underline{\quad}$

34. $12 \div 3 = \underline{\quad}$

17. $3 \div 1 = \underline{\quad}$

26. $6 \div 2 = \underline{\quad}$

35. $9 \div 3 = \underline{\quad}$

18. $2 \div 1 = \underline{\quad}$

27. $4 \div 2 = \underline{\quad}$

36. $6 \div 3 = \underline{\quad}$

19. $1 \div 1 = \underline{\quad}$

28. $2 \div 2 = \underline{\quad}$

37. $3 \div 3 = \underline{\quad}$

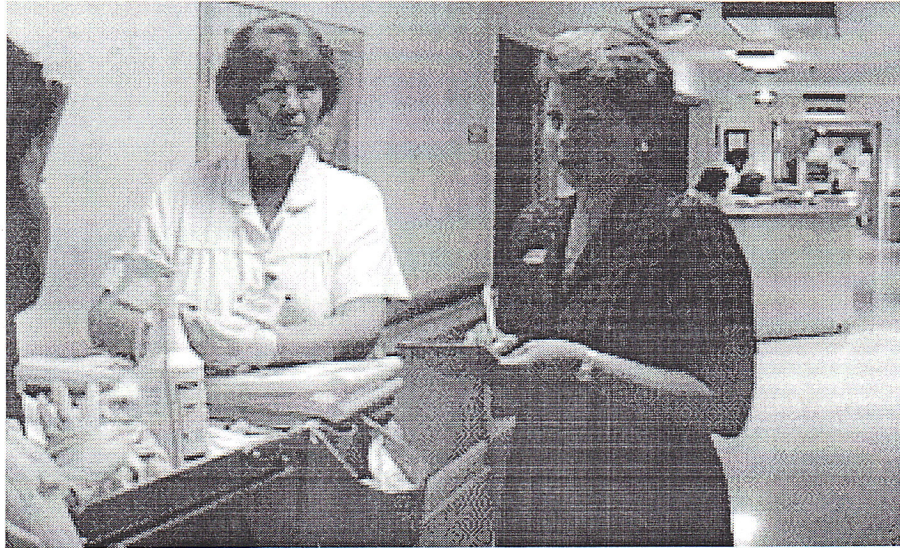
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|-------------------------------------|-------------------------------------|-------------------------------------|
| 38. $36 \div 4 = \underline{\quad}$ | 47. $45 \div 5 = \underline{\quad}$ | 56. $54 \div 6 = \underline{\quad}$ |
| 39. $32 \div 4 = \underline{\quad}$ | 48. $40 \div 5 = \underline{\quad}$ | 57. $48 \div 6 = \underline{\quad}$ |
| 40. $28 \div 4 = \underline{\quad}$ | 49. $35 \div 5 = \underline{\quad}$ | 58. $42 \div 6 = \underline{\quad}$ |
| 41. $24 \div 4 = \underline{\quad}$ | 50. $30 \div 5 = \underline{\quad}$ | 59. $36 \div 6 = \underline{\quad}$ |
| 42. $20 \div 4 = \underline{\quad}$ | 51. $25 \div 5 = \underline{\quad}$ | 60. $30 \div 6 = \underline{\quad}$ |
| 43. $16 \div 4 = \underline{\quad}$ | 52. $20 \div 5 = \underline{\quad}$ | 61. $24 \div 6 = \underline{\quad}$ |
| 44. $12 \div 4 = \underline{\quad}$ | 53. $15 \div 5 = \underline{\quad}$ | 62. $18 \div 6 = \underline{\quad}$ |
| 45. $8 \div 4 = \underline{\quad}$ | 54. $10 \div 5 = \underline{\quad}$ | 63. $12 \div 6 = \underline{\quad}$ |
| 46. $4 \div 4 = \underline{\quad}$ | 55. $5 \div 5 = \underline{\quad}$ | 64. $6 \div 6 = \underline{\quad}$ |
| 65. $63 \div 7 = \underline{\quad}$ | 74. $81 \div 9 = \underline{\quad}$ | |
| 66. $56 \div 7 = \underline{\quad}$ | 75. $72 \div 9 = \underline{\quad}$ | |
| 67. $49 \div 7 = \underline{\quad}$ | 76. $63 \div 9 = \underline{\quad}$ | |
| 68. $42 \div 7 = \underline{\quad}$ | 77. $54 \div 9 = \underline{\quad}$ | |
| 69. $35 \div 7 = \underline{\quad}$ | 78. $45 \div 9 = \underline{\quad}$ | |
| 70. $28 \div 7 = \underline{\quad}$ | 79. $36 \div 9 = \underline{\quad}$ | |
| 71. $21 \div 7 = \underline{\quad}$ | 80. $27 \div 9 = \underline{\quad}$ | |
| 72. $14 \div 7 = \underline{\quad}$ | 81. $18 \div 9 = \underline{\quad}$ | |
| 73. $7 \div 7 = \underline{\quad}$ | 82. $9 \div 9 = \underline{\quad}$ | |

Now select your area of work and then turn to the appropriate page for "Let's Apply to Your Workplace" questions:

Nursing Assistant ----- Page 117 - 118
 Dietary Services ----- Page 119 - 120
 Environmental Services ----- Page 121 - 122

Let's Apply to Nurse Assistant
Mathematics – Lesson 5 of 7

Nursing assistants divide using whole numbers in many tasks. One task is in determining the amount of supplies needed.



Example

The nurse asked you to find out whether there are enough syringes on hand for the next week. If there are 156 syringes in the supply cabinet and you will need 26 per day, how many days supply are on hand?

Since $152 \div 26$ is 6, there will not be enough to last for the next week, 7 days.

Exercise

1. The nursing facility where you work uses thermometers that are used once and thrown away. If there are 392 thermometers on hand and you will need 7 for each resident during the next week, how many residents will you be able to take temperatures on for the next week?
 - a. 65
 - b. 56
 - c. 45
 - d. 54

2. There are 506 syringes on hand in the stock room. If you normally use 46 syringes per day, how many days supply do you have on hand?
 - a. 10
 - b. 12
 - c. 11
 - d. 14

3. As a nursing assistant, you are required to make hourly bed checks. A typical bed check requires three minutes to complete. How many bed checks can you complete in 60 minutes?
 - a. 10
 - b. 20
 - c. 15
 - d. 4

LESSON 1 ANSWERS

1 7,000
 500
 60
 1

2 5,000
 700
 0
 1

3a 40
b 600
c 0
d 4,000
e 70,000
f 7,000
g 600,000

4 30,000
 4,000
 700
 80
 9

EXERCISE

1 a

2 c

3 b

LESSON 2 ANSWERS

1	23	2	17	3	64	4	7
	22		28		55		4
	14		23		29		3
	<u>64</u>		<u>91</u>		<u>82</u>		12
	123		159		230		<u>26</u>

5	28	6	2	7	2	8	2,942
	19		6		4		4,321
	61		9		9		698
	<u>4</u>		<u>22</u>		8		231
	112		39		7		132
					<u>4</u>		<u>101</u>
					34		8,425

9	6,984	10	16	11	28	12	62
	5,722		22		9		29
	4,321		4		6		8
	3,968		<u>9</u>		<u>98</u>		<u>43</u>
	2,423		51		141		142
	<u>1,988</u>						
	25,406						

13	10,986,430	14	22,000	15	64,320	16	68
	69,322		10,000		29,780		4
	28,421		11,000		42,580		72
	9,423		8,000		33,333		
	8,621		7,000		43,780		
	<u>10</u>		<u>5,000</u>		<u>15,745</u>		
	11,102,227		63,000		229,538		

17	17	18	64	19	69	20	28
	<u>2</u>		99		96		82
	19		<u>163</u>		43		48
					<u>34</u>		<u>84</u>
					242		242

21	19	22	61	23	92	24	22
	91		16		29		18
	28		24		39		42
	<u>82</u>		<u>42</u>		<u>93</u>		<u>18</u>
	220		143		253		100

25	93	26	96
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EXERCISE

1 d

2 a

3 d

LESSON 3 ANSWERS

1	79	2	46	3	135	4	372
	<u>-53</u>		<u>-28</u>		<u>-69</u>		<u>-178</u>
	26		18		66		194
5	1,001	6	2,004	7	3,241	8	6,748
	<u>-682</u>		<u>-17</u>		<u>-1,610</u>		<u>-748</u>
	319		1,987		1,631		6,000
9	6,974	10	472	11	798	12	95
	<u>-28</u>		<u>-68</u>		<u>-41</u>		<u>-48</u>
	6,946		404		757		47
13	48	14	183	15	35	16	404
	<u>-29</u>		<u>-71</u>		<u>-17</u>		<u>-130</u>
	19		112		18		274
17	696	18	888	19	921	20	1,840
	<u>-595</u>		<u>-494</u>		<u>-129</u>		<u>-697</u>
	101		394		792		1,143
21	158	22	44	23	87	24	98
	<u>-93</u>		<u>-20</u>		<u>-13</u>		<u>-41</u>
	65		24		74		57
25	10,483						
	<u>-7,681</u>						
	2,802						

EXERCISE

1 c

2 d

3 a

LESSON 4 ANSWERS

1	48	2	56	3	36	4	64
5	15	6	15	7	32	8	42
9	24	10	56	11	36	12	72
13	63	14	28	15	28	16	40
17	36	18	16	19	8	20	12
21	72	22	16	23	7	24	14
25	49	26	45	27	2,925	28	22,325
29	1,716	30	10,989	31	54,516	32	12,978
33	2,442	34	69,102	35	32,445	36	34,086
37	15,120	38	10,290	39	8,890	40	39,285
41	66,312	42	16,434	43	13,860	44	6,024
45	13,332	46	42,130	47	2,084,895	48	490,035
49	190,432	50	252,512	51	462,960	52	154,548

EXERCISE

1 c

2 a

3 d

LESSON 5 ANSWERS

1	31	2	21r23	3	23r17	4	16r22
5	87r53	6	23r11	7	12r29	8	318r14
9	17r3	10	6r2	11	9	12	8
13	7	14	6	15	5	16	4
17	3	18	2	19	1	20	9
21	8	22	7	23	6	24	5
25	4	26	3	27	2	28	1
29	9	30	8	31	7	32	6
33	5	34	4	35	3	36	2
37	1	38	9	39	8	40	7
41	6	42	5	43	4	44	3
45	2	46	1	47	9	48	8
49	7	50	6	51	5	52	4
53	3	54	2	55	1	56	9
57	8	58	7	59	6	60	5
61	4	62	3	63	2	64	1
65	9	66	8	67	7	68	6
69	5	70	4	71	3	72	2
73	1	74	9	75	8	76	7
77	6	78	5	79	4	80	3
81	2	82	1				

EXERCISE

1 b

2 c

3 b