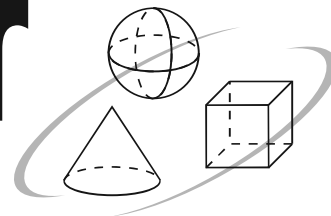


# Summer Solutions.



Minutes a Day—Mastery for a Lifetime!




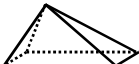






## Level 2

Mathematics  
3rd Edition

Help Pages



# Help Pages

## Vocabulary

Arithmetic Operations	
<p><b>addition</b> — the values of two or more numbers joined together. The sign "+" means add. The answer to an addition problem is called the <b>sum</b>. Example: Put the values of 5 and 2 together; the sum is 7; <math>5 + 2 = 7</math>.</p>	
<p><b>subtraction</b> — a value taken away from another. The sign "-" means subtract. The answer to a subtraction problem is called the <b>difference</b>. Example: Take 1 away from 5, the difference is 4; <math>5 - 1 = 4</math>.</p>	
<p><b>multiplication</b> — a value added to itself repeatedly. The sign "x" means multiply. The answer to a multiplication problem is called the <b>product</b>. Example: When 5 is added to itself 3 times, the product is 15; <math>5 + 5 + 5</math> is the same as <math>3 \times 5 = 15</math>.</p>	
<p><b>division</b> — a value shared equally. The sign "÷" means divide. The answer to a division problem is called the <b>quotient</b>. Example: When 8 is shared equally between 2, the quotient is 4; <math>8 \div 2 = 4</math>.</p>	
Geometry	
<p><b>congruent</b> — figures with the same shape and the same size.</p>	
<p><b>fraction</b> — a part of a whole. Example:  This box has 4 parts. 1 part is shaded; <math>\frac{1}{4}</math>.</p>	
<p><b>line of symmetry</b> — a line along which a figure can be folded so that the two halves match exactly. </p>	
Geometry — Shapes and Solids	
cone 	pyramid 
cube 	rectangular prism 
cylinder 	rhombus (diamond) 
ellipse (oval) 	sphere 

## Help Pages

### Vocabulary

Geometry — Polygons			
Number of Sides	Name	Number of Sides	Name
3 	triangle	4 	quadrilateral
Measurement — Relationships			
Time		Distance	
30 minutes = 1 half-hour		12 inches = 1 foot	
60 minutes = 1 hour		Volume	
365 days = 1 year		4 quarts = 1 gallon	
Statistics			
<p><b>mode</b> - the number that occurs most often in a group of numbers. The mode is found by counting how many times each number occurs in a list. The number that occurs more than any other is the mode. Some groups of numbers have more than one mode.</p> <p>Example: The mode of 77, (93) 85, (93) 77, 81, (93) and 71 is <b>93</b>.                      (93 is the mode because it occurs more than the others.)</p>			

### Place Value

Whole Numbers			
1,	4	0	5
Thousands	Hundreds	Tens	Ones
<p>The number above is read: one thousand, four hundred five.</p>			

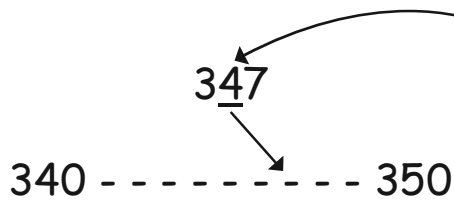
## Help Pages

### Solved Examples

#### Whole Numbers (continued)

**Rounding numbers** means estimating them. Focus on a particular place value, and decide if that digit is closer to the next higher number (round up) or to the next lower number (keep the same). It might be helpful to look at the place-value chart in the Help Pages.

Example: Round 347 to the tens place.



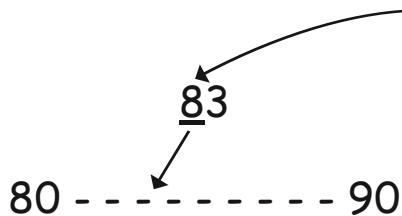
347 is closer to 350, so it is rounded to 350.

**350**

1. Identify the place to round to.
2. What are the nearest "tens" on either side of the number? (340 and 350)
3. Which of these is 347 closer to?
4. This is the number to round to.

Here is another example of rounding whole numbers.

Example: Round 83 to the nearest ten.



83 is closer to 80, so it is rounded to 80.

**80**

1. What is the rounding place?
2. What are the nearest "tens" on either side of the number? (80 and 90)
3. Which of these is 83 closer to?
4. This is the number to round to.

## Help Pages

### Solved Examples

#### Whole Numbers (continued)

There are **even numbers** and **odd numbers**. A number is even if it ends in 0, 2, 4, 6, or 8. A number is odd if it ends in 1, 3, 5, 7, or 9.

Examples: 46 is an even number because it ends in 6.

11 is an odd number because it ends in 1.

A **fact family** is a set of related facts using addition, subtraction, and the same three numbers.

Example: Write a fact family using 3, 4, and 7.

$$\begin{array}{rcl} 3 + 4 = 7 & & 7 - 3 = 4 \\ 4 + 3 = 7 & & 7 - 4 = 3 \end{array}$$

Numbers can be compared by saying one is **greater than** another or one is **less than** another.

The symbol ">" means *greater than*. The symbol "<" means *less than*.  
(Hint: The open part of the sign is near the bigger number.)

Examples:  $10 < 18$     10 is less than 18.

$27 > 13$     27 is greater than 13.

# Help Pages

## Solved Examples

### Whole Numbers (continued)

When adding or subtracting whole numbers, the numbers must first be lined-up from the right. Starting with the ones place, add (or subtract) the numbers. When adding, if the answer has 2 digits, write the ones digit and regroup the tens digit. For subtraction, it may also be necessary to regroup first. Then, add (or subtract) the numbers in the tens place. Continue with the hundreds, etc.

Look at these examples of **addition**.

Examples: Find the sum of 314 and 12.

$$\begin{array}{r} 314 \\ + 12 \\ \hline 326 \end{array}$$

Add 648 and 236.

$$\begin{array}{r} 648 \\ + 236 \\ \hline 884 \end{array}$$

1. Line up the numbers on the right.
2. Beginning with the ones place, add. Regroup if necessary.
3. Repeat with the tens place.
4. Continue this process with the hundreds place, etc.

Use the following examples of **subtraction** to help.

Example: Subtract 37 from 93.

$$\begin{array}{r} 8 \quad 13 \\ \cancel{9} \quad \cancel{3} \\ - 37 \\ \hline 56 \end{array}$$

1. Begin with the ones place. Check to see if regrouping is needed. Since 7 is larger than 3, regroup to 8 tens and 13 ones.
2. Now look at the tens place. Check to see if regrouping is needed. Since 3 is less than 8, regrouping is not needed.
3. Subtract each place value beginning with the ones.

# Help Pages

## Solved Examples

### Whole Numbers (continued)

Example: Find the difference of 425 and 233.

$$\begin{array}{r}
 \overset{3}{\cancel{4}} \overset{12}{\cancel{2}} 5 \\
 - 233 \\
 \hline
 192
 \end{array}$$

1. Begin with the ones place. Check to see if regrouping is needed. Since 3 is less than 5, regrouping is not needed.
2. Now look at the tens place. Check to see if regrouping is needed. Since 3 is larger than 2, regroup to 3 hundreds and 12 tens.
3. Now look at the hundreds place. Check to see if regrouping is needed. Since 2 is less than 3, subtract.
4. Subtract each place value beginning with the ones.

When **subtracting from zero**, regrouping is always needed. Use the examples below to help.

Example: Subtract 38 from 60.

$$\begin{array}{r}
 \overset{5}{\cancel{6}} \overset{10}{\cancel{0}} \\
 - 38 \\
 \hline
 22
 \end{array}$$

1. Begin with the ones place. Since 8 is less than 0, regrouping is needed.
2. Regroup to 5 tens and 10 ones.
3. Then, subtract each place value beginning with the ones.

Example: Find the difference between 500 and 261.

$$\begin{array}{r}
 \overset{4}{\cancel{5}} \overset{9}{\cancel{0}} \overset{10}{\cancel{0}} \\
 - 261 \\
 \hline
 239
 \end{array}$$

# Help Pages

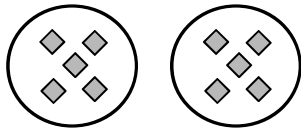
## Solved Examples

### Whole Numbers (continued)

**Multiplication** is a quick way to add groups of numbers. The sign ( $\times$ ) for multiplication is read "times." The answer to a multiplication problem is called the **product**. Use the examples below to help understand multiplication.

Example:  $2 \times 5$  is read "two times five."

It means *2 groups of 5* or  $5 + 5$ .

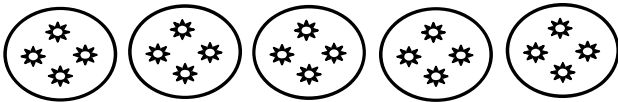


$$2 \times 5 = 5 + 5 = 10$$

The product of  $2 \times 5$  is 10.

Example:  $5 \times 4$  is read "five times four."

It means *5 groups of 4* or  $4 + 4 + 4 + 4 + 4$ .



$$5 \times 4 = 4 + 4 + 4 + 4 + 4 = 20$$

The product of  $5 \times 4$  is 20.

It is very important to memorize **multiplication facts**. This table will help, but only until it's memorized!

To use this table, choose a number in the top gray box and multiply it by a number in the left gray box. Follow both with a finger (down and across) until they meet. The number in that box is the product.

An example is shown.

$$2 \times 5 = 10$$

$\times$	0	1	2	5	10
0	0	0	0	0	0
1	0	1	2	5	10
2	0	2	4	10	20
5	0	5	10	25	50
10	0	10	20	50	100



# Help Pages

## Solved Examples

### Whole Numbers (continued)

**Division** is the opposite of multiplication. The sign ( $\div$ ) for division is read "divided by." The answer to a division problem is called the **quotient**.

Remember that multiplication is a way of adding groups to get their total. Think of division as the opposite of this. In division, the total and the number in each group are already known. The total number of groups is unknown. Follow the examples below.

Example: What is  $9 \div 3$ ?

(9 items divided into groups of 3.)



The total number is 9.

Each group contains 3.



How many groups are there?

There are 3 groups.

$$9 \div 3 = 3$$

Example: Divide 10 by 2.

(10 items divided into groups of 2.)



The total number is 10.

Each group contains 2.



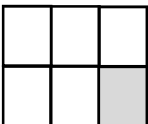
How many groups are there?

There are 5 groups.

$$10 \div 2 = 5$$

### Fractions

A **fraction** is used to represent part of a whole. The top number in a fraction is the part. The bottom number in a fraction is the whole.



The whole rectangle has 6 sections.

Only 1 section is shaded.

This can be shown as the fraction  $\frac{1}{6}$ .

$\frac{1}{6}$	shaded part parts in the whole
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# Help Pages

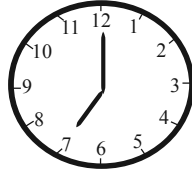
## Solved Examples

### Time

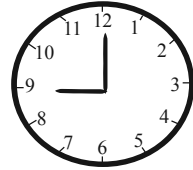
The measure of how long something takes to happen is called **elapsed time**.

Example:

The movie began at 7:00



and ended at 9:00



How long did the movie last? (How much time passed between 7:00 and 9:00?) There are **2 hours** between 7:00 and 9:00, so the movie lasted for 2 hours.

Example:

How many hours pass from the beginning of Spelling class until the end of Math class?

Spelling starts at 8:30. Math ends at 11:30. (How much time passes between 8:30 and 11:30?)

### Class Schedule

8:30 – 9:00	Spelling
9:00 – 10:00	Reading
10:00 – 11:30	Math
11:30 – 12:00	English

There are **3 hours** between 8:30 and 11:30. Three hours pass from the beginning of Spelling class until the end of Math class.

## Who Knows?

- Sides in a triangle?.....(3)
- Sides in a square?.....(4)
- Days in a week?.....(7)
- Months in a year?.....(12)
- Days in a year?.....(365)
- Inches in a foot?.....(12)
- Quarts in a gallon?.....(4)
- The number that is seen most  
often in a set of numbers?.....(mode)
- Figures with the same size  
and shape?.....(congruent)
- Answer to an addition problem?.....(sum)
- Answer to a subtraction problem?.....(difference)
- Answer to a multiplication problem?.....(product)