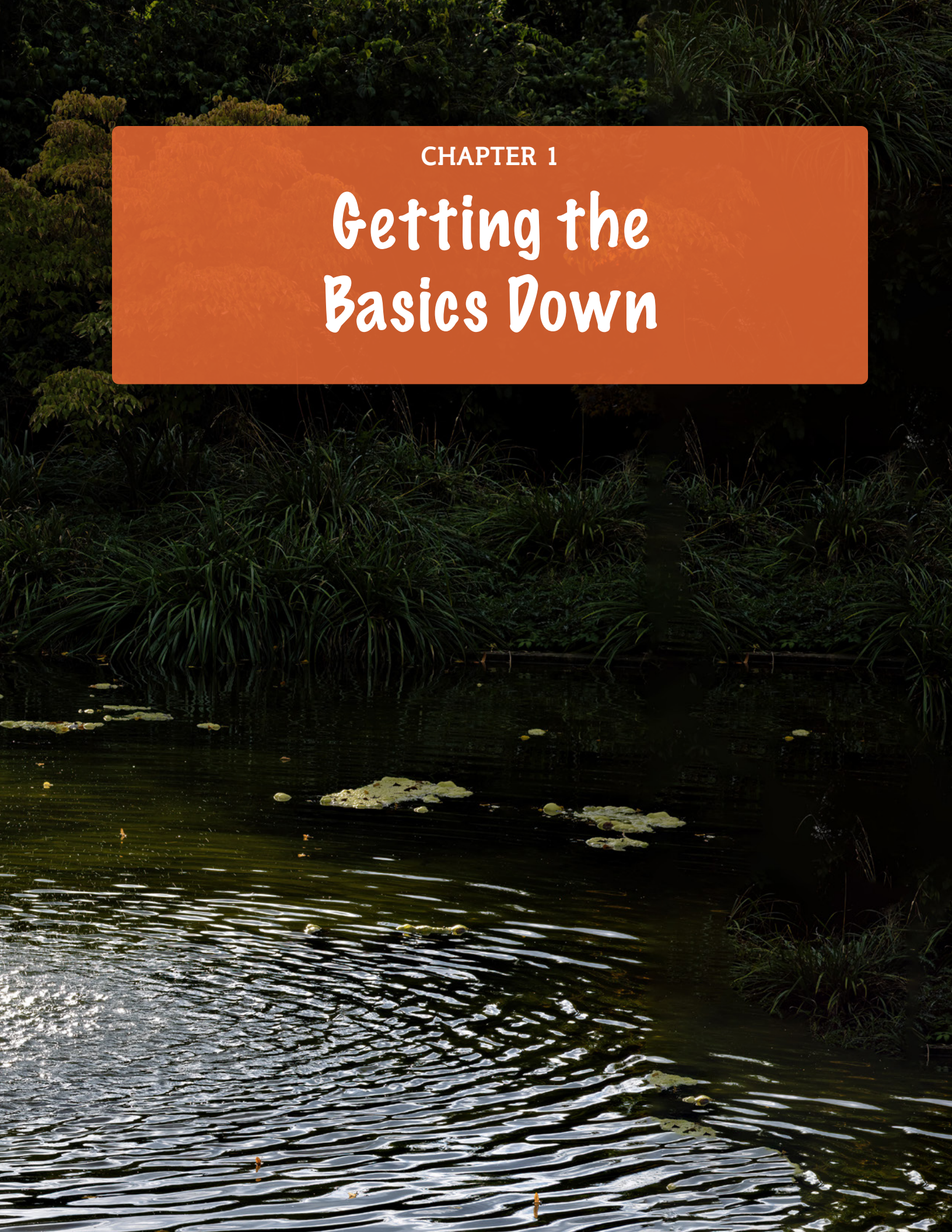


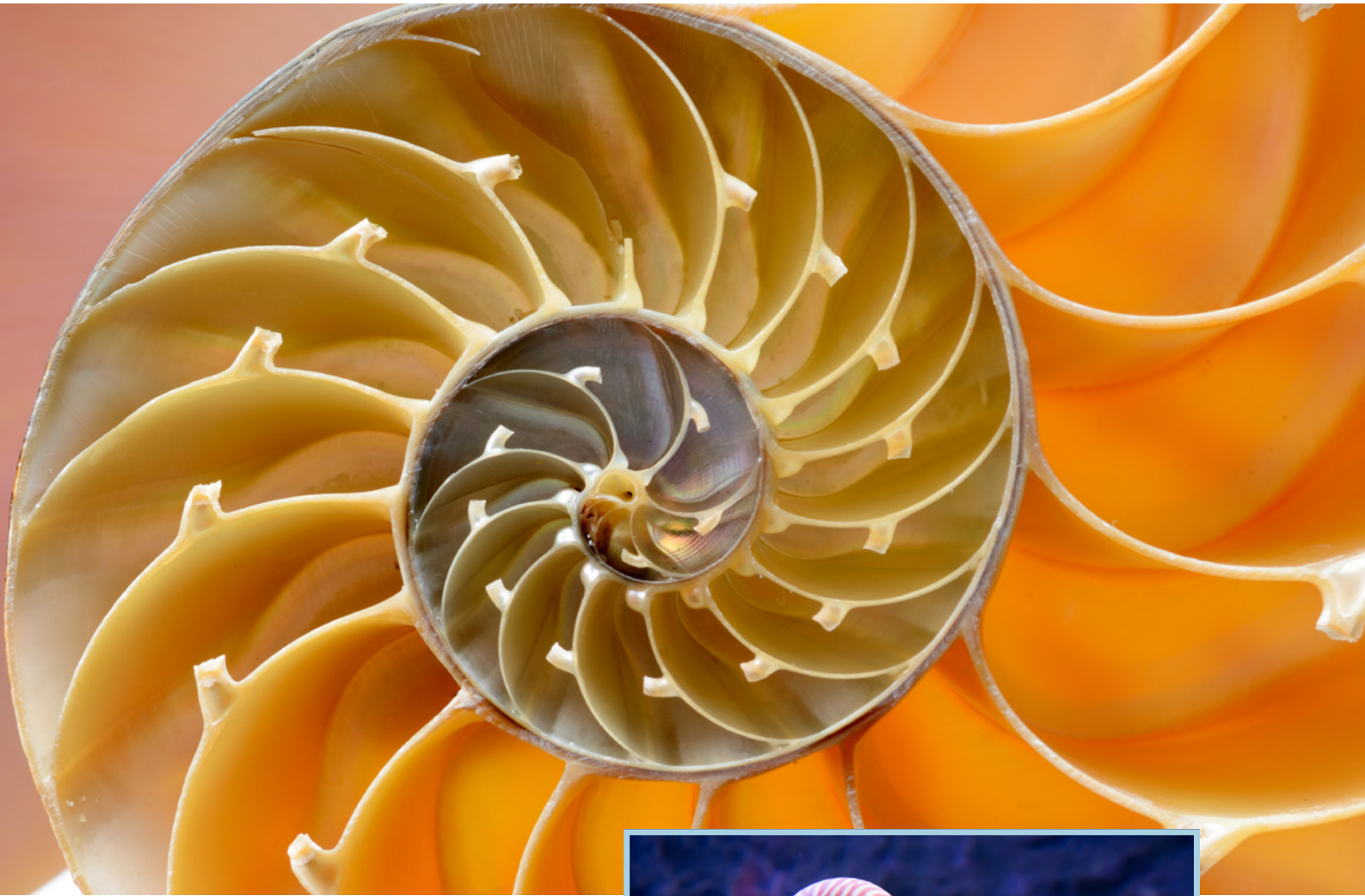
CHAPTER 1

# Getting the Basics Down



# Introduction

This is the inside of a beautiful nautilus shell. The little animal builds the shell around itself using a tough material called calcium carbonate formed around a protein. This animal makes the chambers of its shell by God's design. Each newly-made chamber is 1.618 times bigger than the previous one. God repeats patterns like this over and over again in His creation.



God's creation is orderly and beautiful to behold. He created the world with His patterns of math in mind.



# Learning the Rules

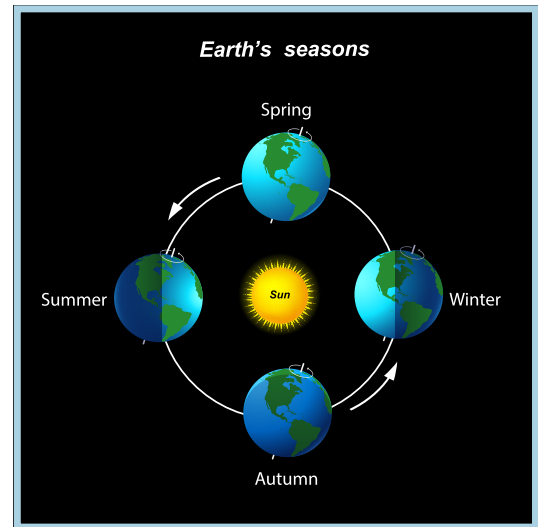
DAY 1

Then Noah built an altar to the Lord, and took of every clean animal and of every clean bird, and offered burnt offerings on the altar. And the Lord smelled a soothing aroma. Then the Lord said in His heart, "I will never again curse the ground for man's sake, although the imagination of man's heart is evil from his youth; nor will I again destroy every living thing as I have done.



"While the earth remains,  
Seedtime and harvest,  
Cold and heat,  
Winter and summer,  
And day and night  
Shall not cease."  
(Genesis 8:20-22)

God has ordered the world according to laws. For example, He tilted the earth so that, as the earth revolves around the sun, we experience seasons of cold and heat in different months. These seasons occur regularly every year because God established laws for how the earth operates. We can always count on these rules, because God established them.



Math operates according to certain rules too. People did not invent the rules of math. God did. We only discover the rules. Today we will review some basic math rules. First, let's make sure we know these definitions:

**Sum**—the answer we get when adding numbers

**Addend**—any of the numbers being added

	Addend
+	Addend
	Sum

	7	←	Addend
+	2	←	Addend
	9	←	Sum

## CHAPTER 1 | GETTING THE BASICS DOWN

**Difference**—the answer we get when subtracting numbers

**Minuend**—the number from which we are subtracting another number

**Subtrahend**—the number from which we are subtracting another number

	Minuend
−	Subtrahend
	Difference

	7
−	2
	5

← Minuend  
 ← Subtrahend  
 ← Difference

**Product**—the answer we get when multiplying numbers

**Factor**—any of the numbers being multiplied

	Factor
X	Factor
	Product

	7
X	2
	14

← Factor  
 ← Factor  
 ← Product

**Quotient**—the answer we get when dividing numbers

**Dividend**—the number we will be dividing

**Divisor**—The number by which we will be dividing the dividend

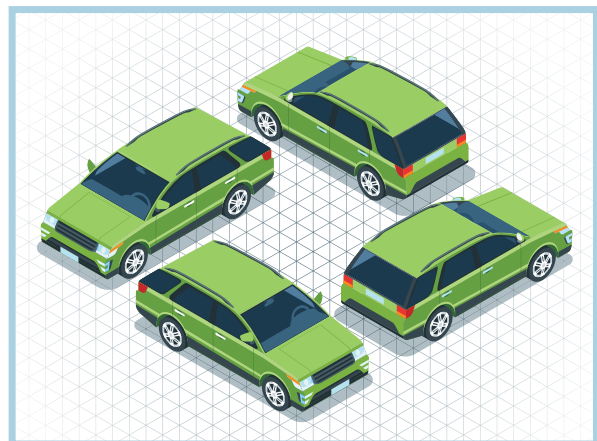
Quotient  
 Divisor ) Dividend

		2
7	)	14

Divisor ⇒      ← Quotient  
 ← Dividend

To commute means to move around. In math, the commutative property means that the numbers are moving around in the equation. This happens with addition and with multiplication problems.

Now let's learn the math laws and rules we call properties.



### 1. The Commutative Property of Addition

This rule states that we get the same sum even if we change the order of the numbers we are adding (the addends).

$$3 + 5 = 8$$

$$5 + 3 = 8$$

Here is the proper way to write out this rule:  $a + b = b + a$

### 2. The Commutative Property of Multiplication

This rule states that we get the same product even if we change the order of the numbers we are multiplying (the factors).

$$4 \times 2 = 8$$

$$2 \times 4 = 8$$

Here is the proper way to write out this rule:  $a \times b = b \times a$

### 3. The Associative Property of Addition

People will associate together in groups. We can bring people together in groups, and we can bring numbers together in groups. Now in this lesson we will group numbers together using math. We can bring them together as a group using parentheses. Whenever there are math operations contained within parenthesis, we will do these first.

The associative property of addition is used when we add more than two numbers. Below, 2 and 5 are associated inside the parentheses, and so we will add them first. We add  $2 + 5$  to get 7. Then we add 6 to get 13.

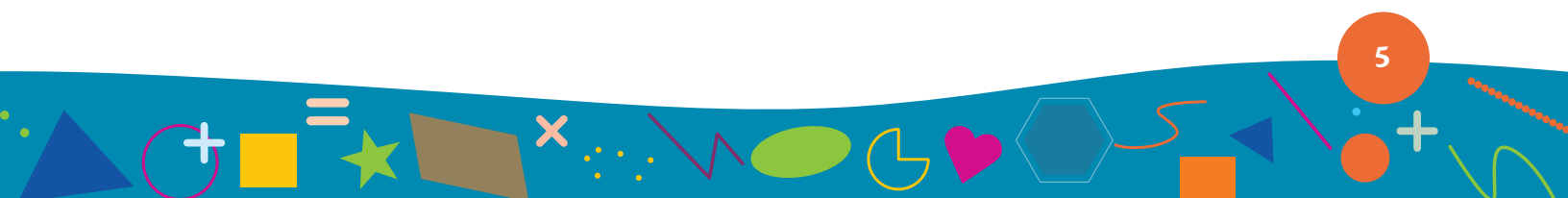
$$(2 + 5) + 6 = 7 + 6 = 13$$

In this next exercise, we associate 5 and 6 in the parentheses, and so we will add them together first. We add  $5 + 6$  to get 11. Then we add 2 to get 13.

$$2 + (5 + 6) = 2 + 11 = 13$$

The associative property of addition is stated like this: The way added numbers are grouped does not change the resulting sum (or the answer).

Here is the proper way to write out this rule:  $(a + b) + c = a + (b + c)$ .



#### 4. The Associative Property of Multiplication

This rule applies when we are multiplying more than two numbers.

$$(2 \times 3) \times 3 = 6 \times 3 = 18$$

Now try associating the numbers a different way:

$$2 \times (3 \times 3) = 2 \times 9 = 18$$

We arrived at the same product both ways. The order in which we multiplied the numbers didn't matter.

The associative property of multiplication is stated like this: The product of three or more numbers is the same regardless of how the numbers are grouped.

Here is the proper way to write out this rule:  $(a \times b) \times c = a \times (b \times c)$

#### 5. The Identity Property

The identity property means that numbers are left unchanged. It's like looking at yourself in a mirror. The reflection looks exactly the same as you!

- Zero is the identity number for addition. Adding zero to any number gives you the same number you started with.  
This rule can be written as:  $a + 0 = a$ .
- One is the identity number for multiplication. Multiplying any number by one gives you the same number you started with.  
This rule can be written as:  $a \times 1 = a$ .



Identity numbers don't change the answers to the problems. Here are some examples:

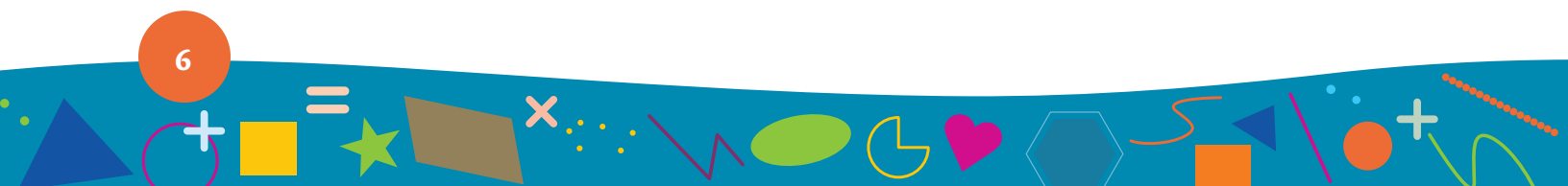
$$13 + 0 = 13$$

$$130 + 0 = 130$$

$$1 \times 13 = 13$$

$$1 \times 130 = 130$$

Number Properties	Addition	Multiplication
Communicative Property	$a + b = b + a$	$a \times b = b \times a$
Associative Property	$(a + b) + c = a + (b + c)$	$(a \times b) \times c = a \times (b \times c)$
Identity Property	$a + 0 = 0 + a = a$	$a \times 1 = 1 \times a = a$





## Student Exercises

Practice the commutative property of addition and multiplication.

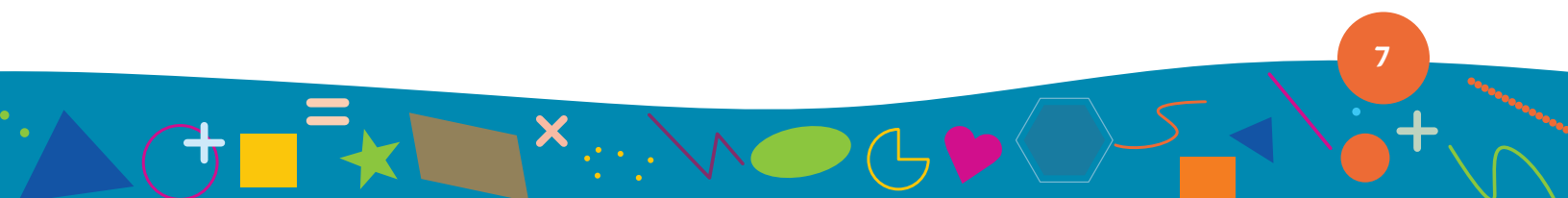
- |    |                          |
|----|--------------------------|
| 1. | $8 + 9 =$ _____          |
| 2. | $8 \times 9 =$ _____     |
| 3. | $105 + 303 =$ _____      |
| 4. | $105 \times 303 =$ _____ |

Practice the associative property of addition and multiplication. Always perform the operation within the parenthesis first.

- |  |  |
|--|--|
| 5. $(5 + 6) + 7 =$ ____ $+ 7 =$ <input type="text"/>     | 8. $10 + (20 + 30) = 10 +$ ____ $=$ <input type="text"/>             |
| 6. $5 + (6 + 7) = 5 +$ ____ $=$ <input type="text"/>     | 9. $(5 \times 3) \times 2 =$ ____ $\times 2 =$ <input type="text"/>  |
| 7. $(10 + 20) + 30 =$ ____ $+ 30 =$ <input type="text"/> | 10. $5 \times (3 \times 2) = 5 \times$ ____ $=$ <input type="text"/> |

Practice the identity property for addition and multiplication.

- |     |                          |
|-----|--------------------------|
| 11. | $2 + 0 =$ _____          |
| 12. | $6 \times 1 =$ _____     |
| 13. | $52,524 + 0 =$ _____     |
| 14. | $7,456 \times 1 =$ _____ |



# CHAPTER 1 | GETTING THE BASICS DOWN

## Place Value

Complete these place values. How many millions? How many hundred thousands? How many ten thousands? The first exercise is filled in as an example.

Read the first number this way: one hundred twenty-three million four hundred fifty-six thousand seven hundred eighty-nine and one tenth

	Hundred Millions	Ten Millions	Millions	Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones	Tenths
15.	1	2	3	4	5	6	7	8	9	1
16.										
17.										
18.										
19.										

Carry and borrow for these addition and subtraction exercises.

20.

Carry	1		
		3	7
+		4	5
			2

22.

Carry	1		
		5	6
+		3	9

24.

Borrow			
		5	3
-		2	7

21.

Carry	1		
		3	9
+		2	7

23.

Borrow	5	18	
		<del>6</del>	<del>8</del>
-		3	9
			9

25.

Borrow			
		9	5
-		3	6



26. Suppose you need to replace a light bulb on the kitchen ceiling. If you can reach as high as 60 inches, and the ceiling is 96 inches, you will need to use a ladder. How high, at least, must this ladder be at the rung where you can safely stand?



27. Suppose that you invite 16 friends over for your birthday. You will order enough pizza for each person to have 2 pieces. How many pieces of pizza will you need to provide altogether? Since you will eat with your friends, be sure to add yourself to the 16 guests.











28. Suppose you are planning a long bicycle trip with your family. You plan to ride 75 miles over a 3-day period. How many miles will you need to ride each day? You may think of the trip as 75 kilometers if you like.



You are used to equations. Equations use an equal sign to show that things are equal. Whatever is to the left of the equal sign has the same value as whatever is to the right. But when one side is larger or smaller than the other side, this is called an inequality. We use the inequality symbols, < (less than) and > (greater than), to make the math sentence true.

These are not equal. Decide which side is larger and write the correct inequality symbol in the circle. Do the same for the corresponding pie fractions. Decide which colored-in portion of the pie is larger. Color the fractions of pies in the last exercise yourself.

1.	$\frac{1}{2}$	<input type="text"/>	$\frac{1}{3}$		<input type="text"/>	
2.	$\frac{1}{4}$	<input type="text"/>	$\frac{1}{5}$		<input type="text"/>	
3.	$\frac{5}{9}$	<input type="text"/>	$\frac{1}{2}$		<input type="text"/>	
4.	$\frac{3}{7}$	<input type="text"/>	$\frac{2}{3}$		<input type="text"/>	

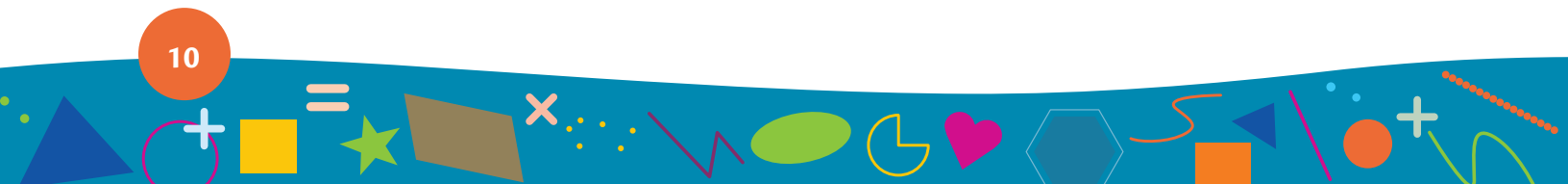
Decide which number is larger and write the correct inequality symbol (< or >) in the circle.

5.	5.61	<input type="text"/>	5.42	7.	1,456,321	<input type="text"/>	1,435,319
6.	13.5	<input type="text"/>	1.35	8.	999,999	<input type="text"/>	1,000,001

Think of your own way to split these numbers apart with addition and multiplication.

9 = \_\_\_\_ + \_\_\_\_                      12 = \_\_\_\_ × \_\_\_\_

9 = \_\_\_\_ + \_\_\_\_                      12 = \_\_\_\_ × \_\_\_\_



Write these numbers in a new way using subtraction and division.

$10 = \underline{\quad} - \underline{\quad}$

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

$10 = \underline{\quad} - \underline{\quad}$

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

Perform these long addition and multiplication exercises. Use the multiplication/division table in the back of the book if you have forgotten a fact. But try to learn that fact so you don't need to look it up again!

9.

Carry		1		
		1	4	5
	x			2

11.

Carry				
		2	3	4
	x			3

13.

Carry	1	1		
		2	5	6
	x			3

10.

Carry	1	1		
		2	5	6
	+	6	5	9

12.

Carry		1		
		8	7	1
	+	1	1	9

14.

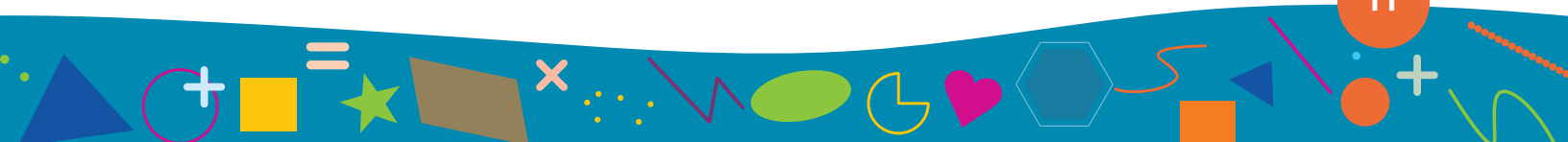
Carry				
		2	3	4
	+	4	5	9

Practice the commutative property of addition and multiplication.

15.	$24 + 19 = \underline{\hspace{2cm}}$
16.	$24 \times 19 = \underline{\hspace{2cm}}$
17.	$2,612 + 856 = \underline{\hspace{2cm}}$
18.	$2,612 \times 856 = \underline{\hspace{2cm}}$

Round these numbers to the 10s place.

19. 25 $\Rightarrow$	21. 466 $\Rightarrow$	23. 148 $\Rightarrow$
20. 13 $\Rightarrow$	22. 123 $\Rightarrow$	24. 1098 $\Rightarrow$



# Addition is the Opposite of Subtraction

Here is another math rule:

**Subtraction is the opposite of addition.**

In this example, we've added a second number (34) to the first number (25) to get a sum (59).

	2	5
+	3	4
<hr/>		
	5	9
-	3	4
<hr/>		
	2	5



Let's check to see if we got the correct answer. Subtract the second number (34) from the sum (59), and we are back to the first number (25)! This means we got the correct answer. If a sum is correct, doing

the opposite of addition (subtraction) should get us back to where we started.

This rule may also be applied to subtraction. Since subtraction and addition are opposites, we can add backwards to check our subtraction difference.  $\Rightarrow$

Here is an example:

	3	4
-	2	3
<hr/>		
	1	1
+	2	3
<hr/>		
	3	4

Subtracting 23 from 34 gives us a difference of 11. Now, adding 23 back to the difference takes us back to 34. If a difference is correct, doing the opposite of subtraction (addition) should get us back to where we started.

If you made a mistake in your subtraction, the additional adding exercise would catch the mistake. Here is an example:  $\Rightarrow$

You can see that we have made a mistake here. The number at the start and at the finish should be the same number. We started with 58, but we finished with 57. That's because we made a mistake when subtracting 35 from 58. The answer should have been 23.

	5	8
-	3	5
<hr/>		
	2	2
+	3	5
<hr/>		
	5	7

Try some 5 digit addition exercises and check them by subtraction.

Check:

a.

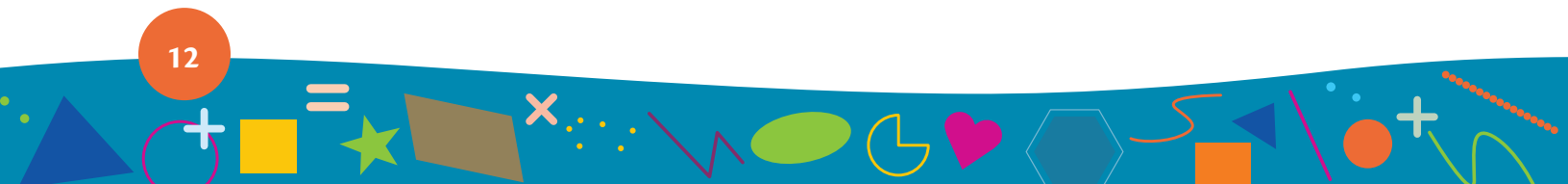
	5	3	4	3	5
+	1	2	4	3	1
<hr/>					
-	1	2	4	3	1
<hr/>					

b.

	2	4	4	3	5
+	3	3	4	1	4
<hr/>					
-	3	3	4	1	4
<hr/>					

c.

	7	6	5	4	3
+	1	2	3	4	5
<hr/>					
-	1	2	3	4	5
<hr/>					



### Rounding and Adding

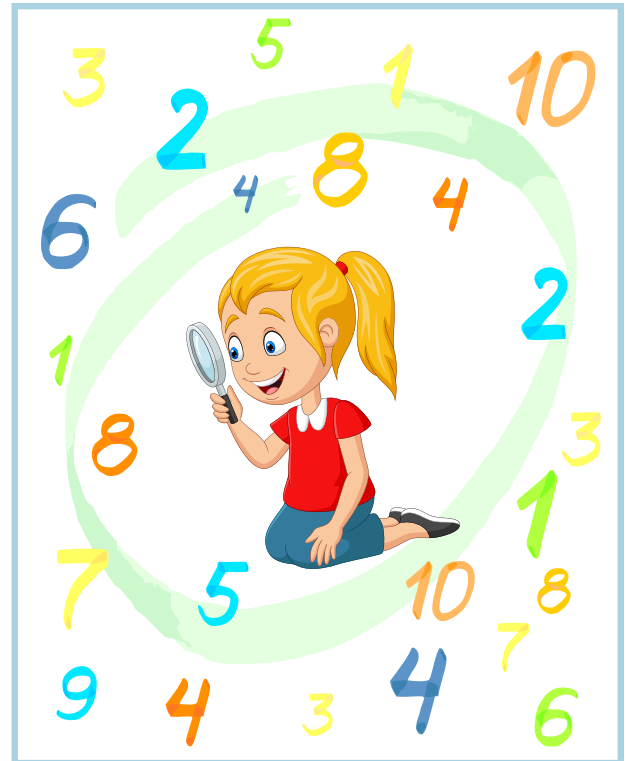
Another way to make sure you haven't made a big mistake in your addition is to do a mental estimate. We've rounded the addends below, and you can add them up. In these exercises, find each exact sum and each estimated sum. Compare the two answers. Round the numbers yourself for the last two exercises.

#### Rules for rounding:

0-4 rounds down, and 5-9 rounds up.

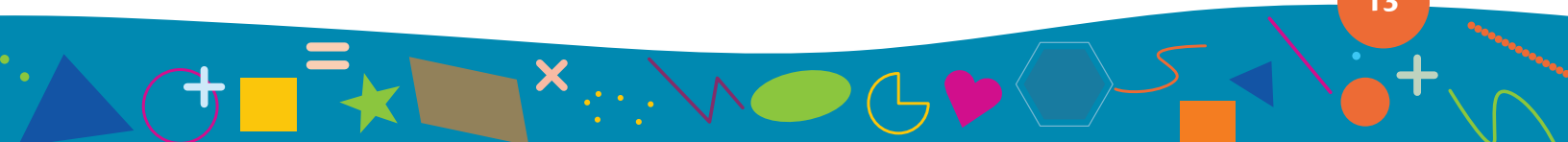
Example: 13 rounds to 10, 15 rounds to 20; 17 rounds to 20.

Example: Rounding to the nearest tenths place, 3.14 rounds to 3.1; 7.25 rounds to 7.3; 4.95 rounds to 5.0.



	Add exactly	Rounded to the nearest 100																								
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	8	0	0	0																												
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## Student Exercises

Carry or borrow for these addition and subtraction exercises.

1.

Carry	1	2		
		3	2	5
		4	8	7
	+	1	1	9

2.

Carry				
		1	5	8
		8	7	8
	+	4	5	9

3.

Carry				
		3	2	4
		5	4	3
	+	5	3	2

4.

Borrow		5	12	
		2	<del>6</del>	<del>2</del>
	-	1	3	8

5.

Borrow		6	15	
		2	<del>7</del>	<del>5</del>
	-	1	5	9

6.

Borrow				
		3	5	3
	-	2	6	2

Multiply and divide with the long form.

7.

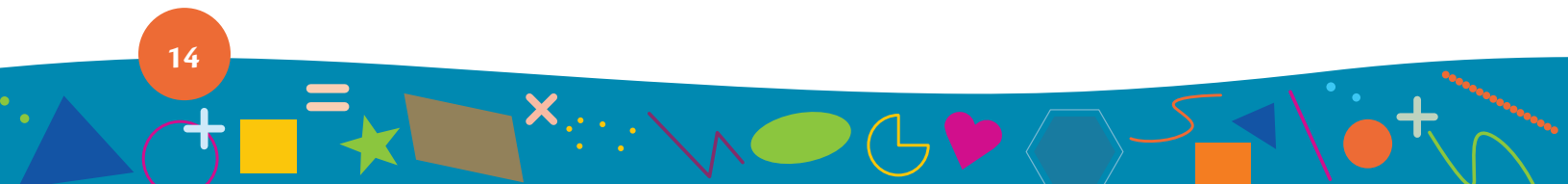
5	)	55
-		
-		

8.

3	)	39
-		
-		

9.

4	)	48
-		
-		



I have finished the race, I have kept the faith. Finally, there is laid up for me the crown of righteousness, which the Lord, the righteous Judge, will give to me on that Day, and not to me only but also to all who have loved His appearing. (2 Tim. 4:7-8)



**Race to the End**  
**Multiplication Speed Test**

Test your speed on these multiplication exercises. Your goal, by the time you have completed Level 4 Math, should be to write all the answers in 60 seconds. Your parent/teacher should time you. Add 5 seconds to your time for every mistake you make. Do it fast, but do it right.



Average Time — 90 seconds  
Optimum Time — 75 seconds

Best Student Time — 60 seconds  
Expert/Teacher Time — 45 seconds

$\begin{array}{r} 4 \\ \times 7 \\ \hline \end{array}$	$\begin{array}{r} 4 \\ \times 2 \\ \hline \end{array}$	$\begin{array}{r} 5 \\ \times 8 \\ \hline \end{array}$	$\begin{array}{r} 4 \\ \times 5 \\ \hline \end{array}$	$\begin{array}{r} 7 \\ \times 7 \\ \hline \end{array}$	$\begin{array}{r} 9 \\ \times 9 \\ \hline \end{array}$	$\begin{array}{r} 3 \\ \times 4 \\ \hline \end{array}$	$\begin{array}{r} 6 \\ \times 9 \\ \hline \end{array}$	$\begin{array}{r} 3 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 4 \\ \times 9 \\ \hline \end{array}$
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# DAY 4

# Practice

Round these numbers to the places shown.

		10s place	1s place	1/10s (tenths) place
1.	324.561			

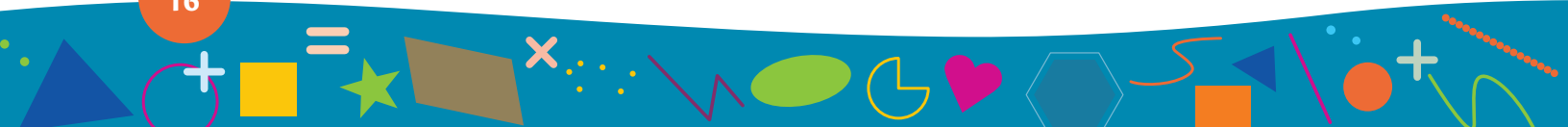
		1,000s place	100,000s place	1,000,000s place
2.	10,333,720			

3. Decode this message. Find each letter using the coordinates on the attached chart. The first letter is provided for you .

	A	B	C	D
1	D	Y	O	E
2	K	T	G	N
3	P	F	I	V
4	H	A	B	M
5	Q	R	S	L

B2 A4 D1      D5 C1 B5 A1  
 T    —    —      —    —    —    —  
 C3 C5      D4 B1  
 —    —      —    —  
 C5 A4 D1 A3 A4 D1 B5 A1  
 —    —    —    —    —    —    —

Now write your own code for someone else to decipher. Think of a word and carefully write the coordinates of the letters in the yellow boxes below.

4. A young family has these expenses every month: \$900 for an apartment, \$220 for food, \$210 for car expenses, \$100 for electricity, \$100 for healthcare, \$30 for clothing. How much total money must this family earn each month?

Carry			
Apartment	\$ 9	0	0
Food	\$ 2	2	0
Car	\$ 2	1	0
Electricity	\$ 1	0	0
Health	\$		
Clothing +	\$		
Total	\$		



5. Imagine what it was like during the American frontier days. In the 1800s, the average log cabin in the wilderness was about 16 feet long by 8 feet wide. How many square feet is this? Compare that to the average house in America today which is about 2,280 square feet. What is the difference?

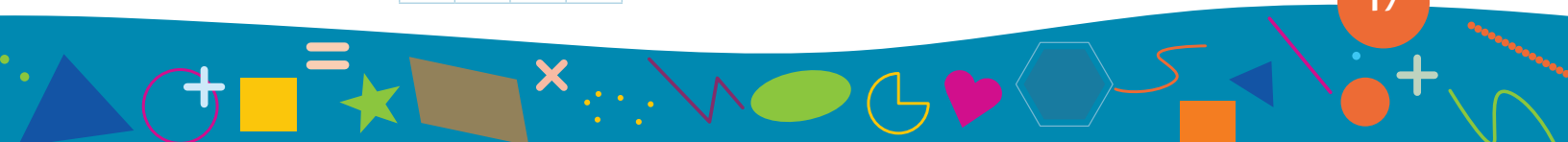
	1	6
x		8

	2	,	2	8	0
-					



6. Suppose you were to build a log cabin. Let's see how much your materials would cost. A concrete floor would require 3 cubic yards of concrete, costing \$110 per yard. How much would the concrete cost? Do the math and use your answer for Exercise 7.

	1	1	0
x			3



## CHAPTER 1 | GETTING THE BASICS DOWN

7. Write the cost of concrete from Exercise 5 in the chart below. Then add up all the amounts to find the cost of materials for your little cabin.

Carry			
Concrete	\$		
Roofing	\$ 1	6	0
Structure	\$ 2	0	0
Door	\$ 1	0	0
Window	\$ 1	0	0
Plywood	\$ 2	0	0
Paint	+	5	0
Total			

Some of the addends have been rounded for the exercises below. Find each exact sum and each estimated sum. Compare the two answers. Round the numbers yourself for the last two exercises.

	Add exactly	Rounded to the nearest 100																																
8.	<table border="1" style="border-collapse: collapse; text-align: center;"> <tr><td></td><td>4</td><td>7</td><td>9</td></tr> <tr><td>+</td><td>2</td><td>2</td><td>0</td></tr> <tr><td colspan="4"><hr/></td></tr> <tr><td></td><td></td><td></td><td></td></tr> </table>		4	7	9	+	2	2	0	<hr/>								<table border="1" style="border-collapse: collapse; text-align: center;"> <tr><td></td><td>5</td><td>0</td><td>0</td></tr> <tr><td>+</td><td>2</td><td>0</td><td>0</td></tr> <tr><td colspan="4"><hr/></td></tr> <tr><td></td><td></td><td></td><td></td></tr> </table>		5	0	0	+	2	0	0	<hr/>							
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# Finding the Missing Number

DAY 5

“What do you think? If a man has a hundred sheep, and one of them goes astray, does he not leave the ninety-nine and go to the mountains to seek the one that is straying? And if he should find it, assuredly, I say to you, he rejoices more over that sheep than over the ninety-nine that did not go astray. Even so it is not the will of your Father who is in heaven that one of these little ones should perish.”  
(Matthew 18:12-14)



Wisdom notices when something is missing. For example, the Shepherd in Jesus’s parable noticed one sheep missing from his one hundred sheep. In Jesus’s parable of the lost coin, the woman noticed one coin missing (Luke 15). She swept the whole house to find it. Jesus notices when His own are missing, and He goes out to find them.


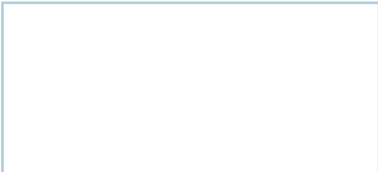
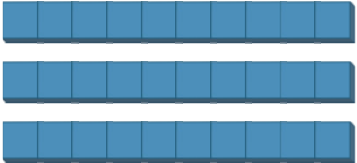


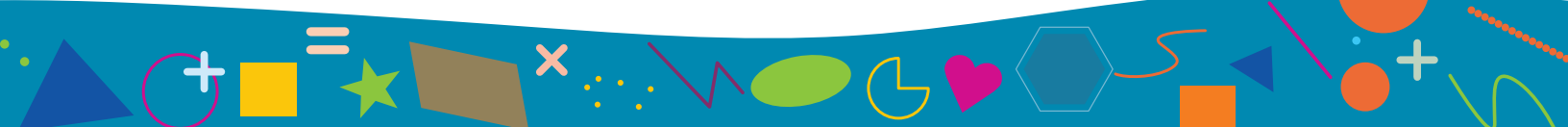
Today, we will learn more about missing numbers. The missing number in an equation is called an unknown. We usually show the missing number as a letter of the alphabet. Here is an example of an equation with an unknown shown by the letter n.

What part of this equation is missing? One of the addends is missing. We see the unknown n instead.

$$10 + n = 30$$

Below, we have laid out the same equation using blocks. We are adding 1 chunk of ten plus something else to get 3 chunks of ten. Draw the missing number of blocks.

a.  +  = 



## CHAPTER 1 | GETTING THE BASICS DOWN

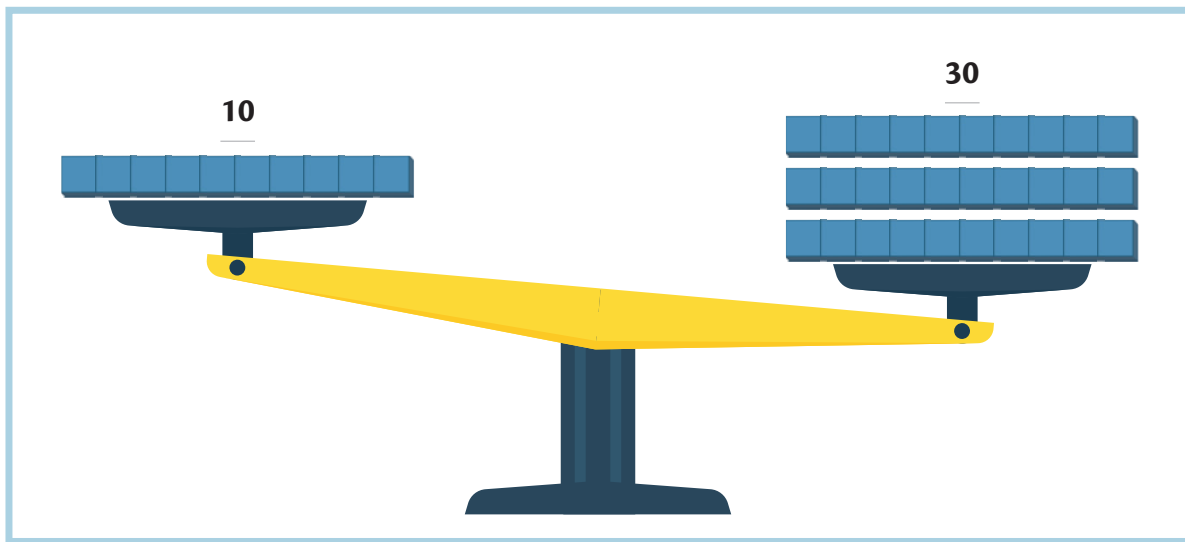
Remember that every equation requires an equal amount on both sides of the equal sign. Now let's think of our equation as weights on a scale. The goal is to get the scale to balance.

Without removing any blocks from the right side, how many blocks do we need to add on the left side so there will be an equal number?

b  $n = \underline{\hspace{2cm}}$

This answer was easy to see. You could also have found the answer by subtracting to find the difference between the blocks on each side.

c.  $30 - 10 = \underline{\hspace{2cm}}$



“And you shall know the truth, and the truth shall make you free.” (John 8:32)

The truth is important to God. The truth is important in God's math as well. Today you will learn to use an important principle of truth in math to help you find missing numbers.



An equation is a math statement that says two things are equal. The value of the left side of the equal sign is equal to the value of the right side. Therefore, when you work with an equation, you must make sure that your equation is always true:

**Both sides of the equal sign must always have the same value.**

This means that if you change one side of an equation by a certain amount, you must also change the other side of the equation by the same amount. Otherwise your equation is not true.

Here is our equation again:

$$10 + n = 30$$

Our goal is to find what the missing number is: to find what  $n$  is equal to. To do this, we will need to change our equation until we are left with:

$$n = \underline{\hspace{2cm}}$$

This means we will try to get  $n$  by itself. Right now,  $n$  is not by itself. It has a 10 added to it.

To get  $n$  by itself, we must subtract 10 from the left side of the equation. And to keep our equation true, we must also subtract 10 from the right side of the equation.

$$10 - 10 + n = 30 - 10$$

We do the math and end up with:

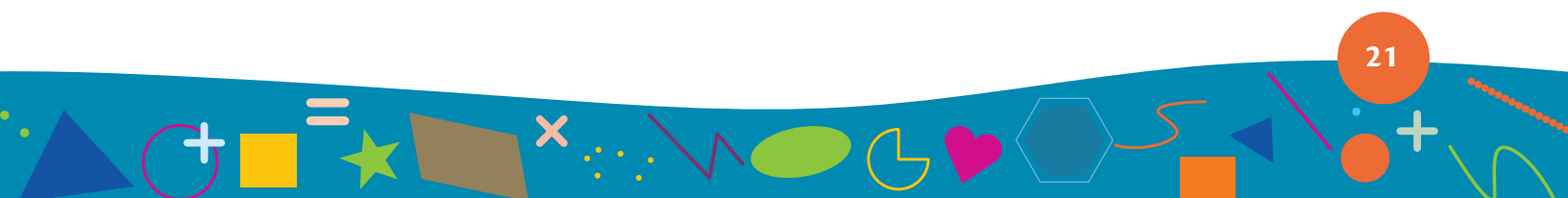
$$0 + n = 20$$

Because of the identity property of addition, adding zero to  $n$  doesn't change the value of  $n$ . So we can just say:

$$n = 20$$

Our missing number is 20. Now you know this fast way to find unknowns in equations:

**Get the unknown by itself, while keeping both sides of the equation equal.**



## CHAPTER 1 | GETTING THE BASICS DOWN

Let's try the same thing with larger numbers.

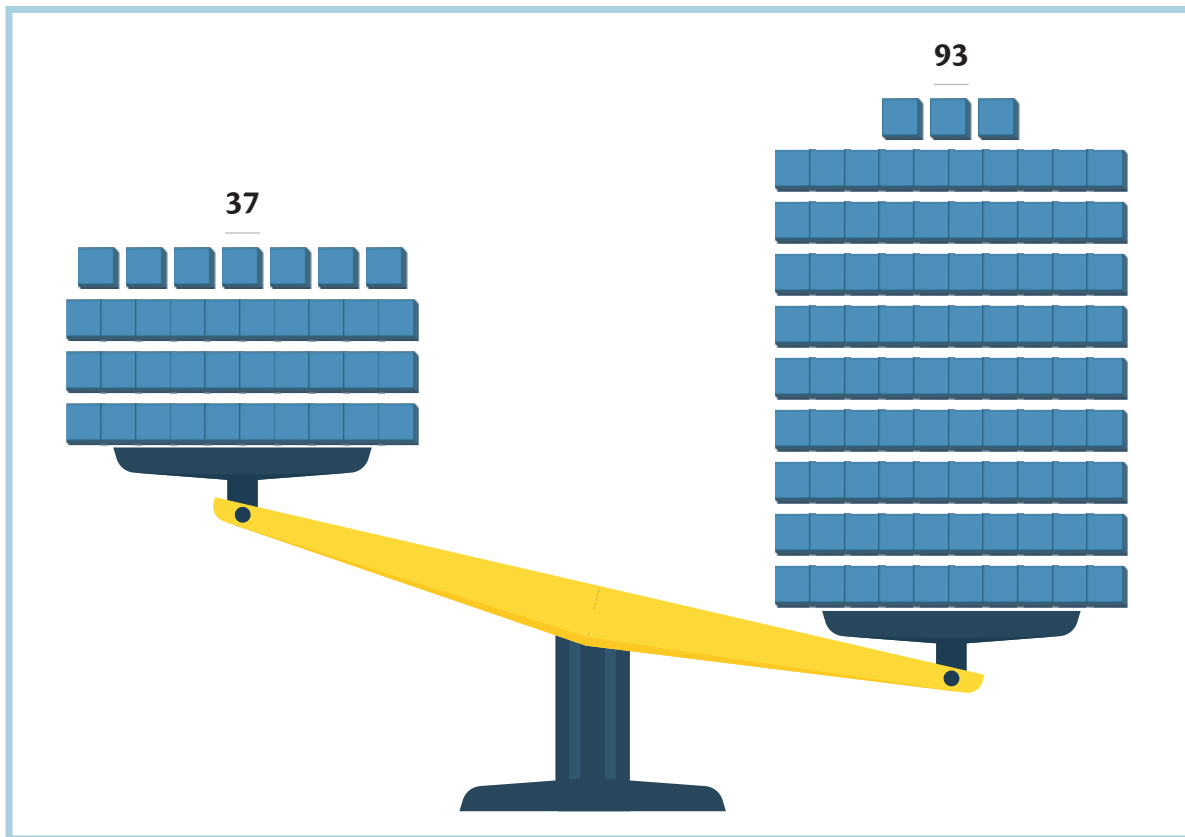
$$37 + n = 93$$

How many blocks do we need to add to the left side of this scale so it will equal the right? Subtract to find the difference.

d.

Borrow	8	13
	<del>9</del>	<del>3</del>
	- 3	7

$$n = \underline{\quad}$$



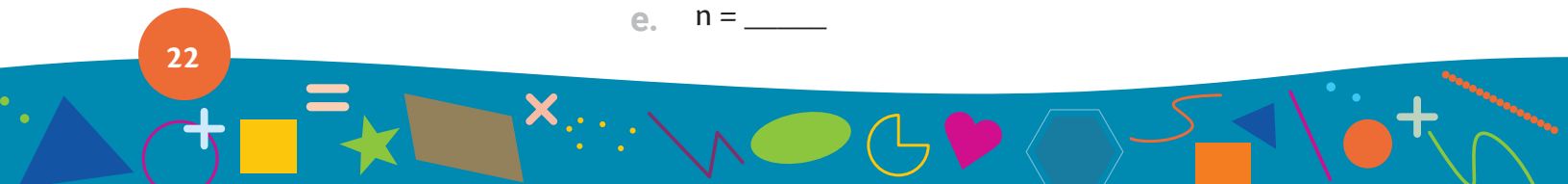
Let's try our new way to find the unknown. Your goal is to get  $n$  by itself on its own side of the equal sign. The only way to do this is to subtract 37 from the left side. To be fair, and to keep the equation true, you must subtract 37 from the right side as well. On the left, subtracting 37 from 37 is 0. So  $n$  will equal 93 minus 37.

$$37 - 37 + n = 93 - 37$$

$$0 + n = 93 - 37$$

$$n = 93 - 37$$

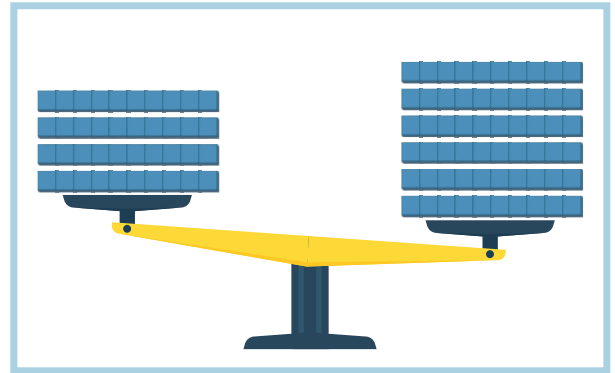
e.  $n = \underline{\quad}$



Try a few of these on your own. Use subtraction to find the unknown.

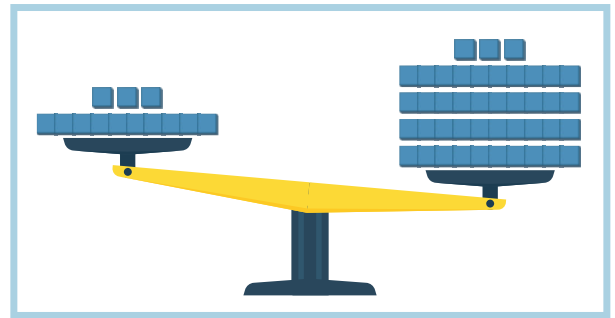
f.  $40 + n = 60$

	6	0
-	4	0



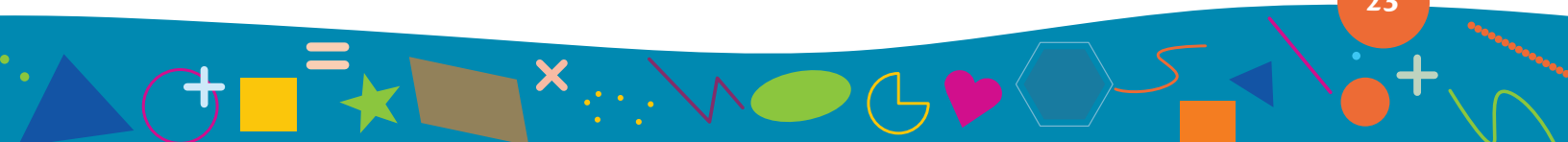
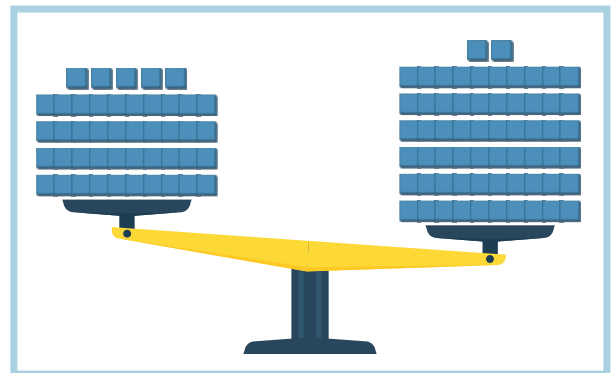
g.  $13 + n = 43$

	4	3
-	1	3



h.  $45 + n = 62$

Borrow		
	6	2
-	4	5





## Student Exercises

Find the missing number, following the instructions:

1.  $3 + n = 5$

Subtract 3 from both sides.

$$3 + n - 3 = 5 - 3$$

The missing number is . . .

$$n = \underline{\quad}$$

2.  $5 + n = 10$

Subtract 5 from both sides.

$$5 + n - 5 = 10 - 5$$

The missing number is . . .

$$n = \underline{\quad}$$

3.  $7 + n = 15$

Subtract 7 from both sides.

$$7 + n - 7 = 15 - 7$$

The missing number is . . .

$$n = \underline{\quad}$$

Find out what this number pattern is doing and use addition or subtraction to finish the list.

4. 2, 4, 6, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_

5. 22, 20, 18, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_

6. 30, 27, 24, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_

7. 3, 6, 9, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_

Which math operation will you need for the following statements. Circle the correct math symbol.

8. I split my birthday cake equally among all my friends.

+ - × ÷

9. Plants grow taller when manure is added to the soil.

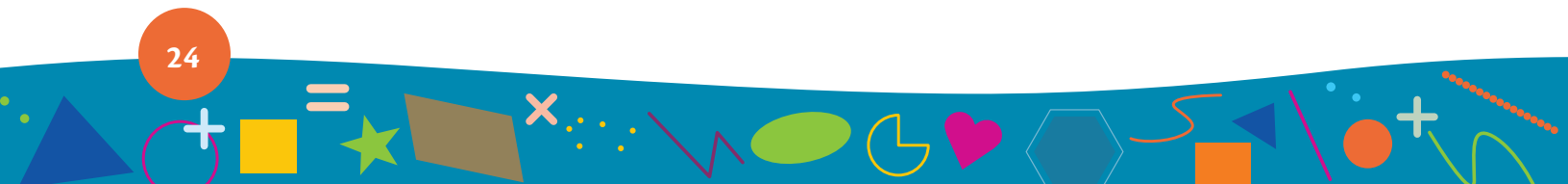
+ - × ÷

10. As the days of Advent pass, each day is one day closer to Christmas.     + - × ÷

11. A farmer built a rectangular pigpen that is ten feet long and twenty feet wide.     + - × ÷

12. I divided my candy bar into two equal parts to share with my sister.     + - × ÷

13. I added ten more colors to my box of crayons.     + - × ÷



14. I was playing my guitar too hard, and I broke a string. + - × ÷

15. I'd like to know how much water our neighborhood swimming pool holds. I know its length, width, and depth. + - × ÷



Perform these addition and subtraction exercises. You will have to carry twice or borrow twice for these.

16.

Carry	1	1		
		4	3	3
	+	4	8	7

18.

Carry				
		5	6	5
	+	3	4	8

20.

Carry				
		5	4	6
	+	3	9	9

17.

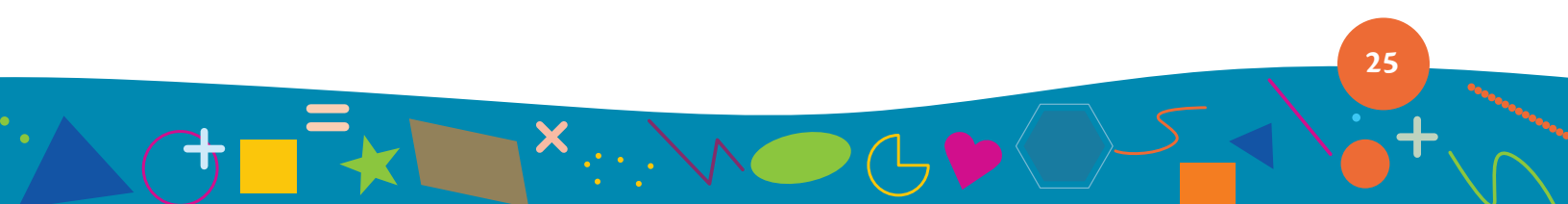
Borrow	5	16	18	
		<del>6</del>	<del>7</del>	<del>8</del>
	-	1	8	9

19.

Borrow	4	14	13	
		<del>5</del>	<del>5</del>	<del>3</del>
	-	1	9	5

21.

Borrow				
		7	6	5
	-	4	8	8



Use subtraction to find the unknown.

1.  $50 + n = 90$

	9	0
-	5	0

4.  $58 + n = 95$

Borrow		8	15
		<del>9</del>	<del>5</del>
	-	5	8

2.  $14 + n = 57$

	5	7
-	1	4

5.  $225 + n = 395$

		3	9	5
	-	2	2	5

3.  $148 + n = 268$

	2	6	8
-	1	4	8

6.  $149 + n = 578$

Borrow				
		5	7	8
	-	1	4	9

Find the missing number, following the instructions:

7.  $2 + n = 4$

Subtract 2 from both sides:

$$2 + n - 2 = 4 - 2$$

The missing number is...

$$n = \underline{\quad}$$

8.  $4 + n = 8$

Subtract 4 from both sides:

$$4 + n - 4 = 8 - 4$$

The missing number is...

$$n = \underline{\quad}$$

9.  $6 + n = 12$

Subtract 6 from both sides:

$$6 + n - 6 = 12 - 6$$

The missing number is...

$$n = \underline{\quad}$$

10.  $8 + n = 16$

Fill in the numbers for this one:

$$8 + n - \underline{\quad} = 16 - \underline{\quad}$$

The missing number is...

$$n = \underline{\quad}$$



Practice these multiplication and division problems from memory.

11.  $10 \times 5 =$  \_\_\_\_\_      13.  $4 \times 11 =$  \_\_\_\_\_      15.  $12 \div 3 =$  \_\_\_\_\_      17.  $16 \div 4 =$  \_\_\_\_\_  
 12.  $3 \times 12 =$  \_\_\_\_\_      14.  $4 \times 12 =$  \_\_\_\_\_      16.  $60 \div 10 =$  \_\_\_\_\_      18.  $72 \div 8 =$  \_\_\_\_\_

Practice these long multiplication and division exercises.

19.

	Carry		1	
		1	3	4
	x			3
<hr/>				

21.

	Carry			
		3	5	7
	x			3
<hr/>				

23.

	Carry			
		2	4	5
	x			3
<hr/>				

20.

7	)	84
-		
<hr/>		
-		
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22.

4	)	48
-		
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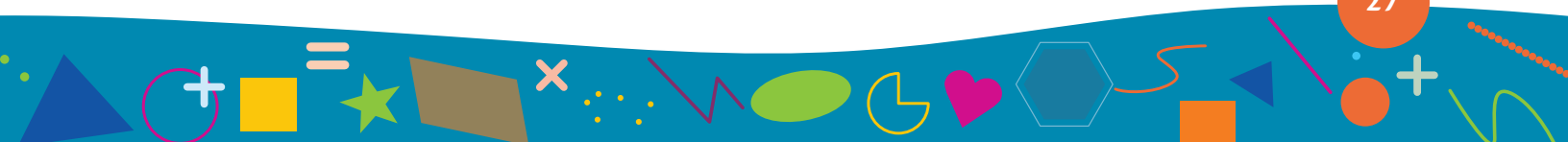
24.

5	)	75
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 **Everyday Math**

Use the chart for the following exercises. Assume that tax is included in these prices.

CREATION MUSEUM SOUVENIRS	
Hat	\$7.99
T-shirt	\$12.99
Book	\$8.00
Toy Dinosaur	\$9.95



## CHAPTER 1 | GETTING THE BASICS DOWN

**25.** Let's say your family is visiting a Creation Museum on vacation. You've worked hard mowing lawns to earn money. You would like to buy a hat and a t-shirt. How much is the total cost?



Carry					
				.	
	+			.	
		<hr/>			

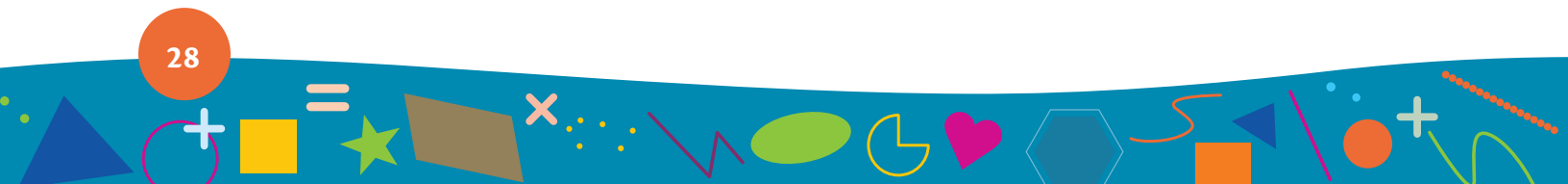
**26.** Your brother would like to buy a toy dinosaur. He has \$21.50. How much money will your brother have left after buying the dinosaur?

Borrow					
				.	
	-			.	
		<hr/>			

**27.** If your sister has \$25, and she'd like to buy a hat, a t-shirt, and a book, does she have enough money? If not, how much more does she need?

Carry					
				.	
				.	
	+			.	
		<hr/>			

Borrow					
		\$	2	5	.00
	-			.	
		<hr/>			



# Subtraction and Borrowing from Zero

DAY 7

... Count it all joy when you fall into various trials, knowing that the testing of your faith produces patience. But let patience have its perfect work, that you may be perfect and complete, lacking nothing. If any of you lacks wisdom, let him ask of God, who gives to all liberally and without reproach, and it will be given to him. (James 1:2-5)

Math can be a trial for some students. If math is a trial for you, it's not the only trial you will face in your life. There are many challenges ahead. Trials test our faith. You will need two things to face difficulties in life—faith and wisdom. First, you must have confidence (faith) in God, not in yourself. Then, you must pray for wisdom. You must pray that God will help you to make it through. You must also be patient. Pray for help, and then keep working through the problems.



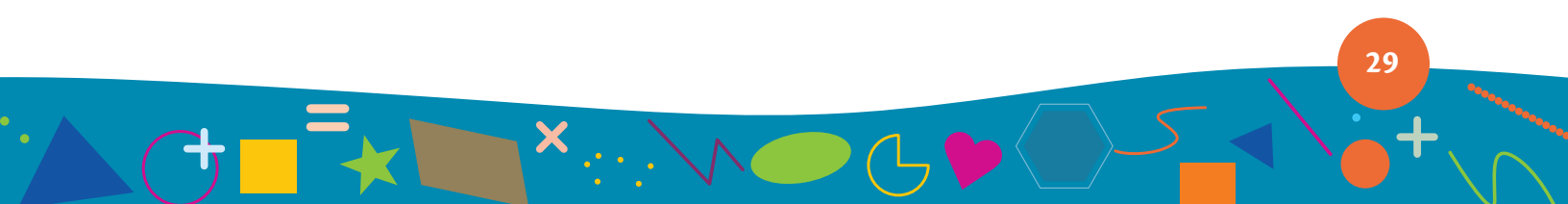
God does not want you to give up, even when things get harder. If you keep on praying, and keep on working through your problems, you will learn patience. You will learn how to endure through hard times. Math may be a trial to work through. Math may not be joyful at first. But when you see that God is helping you, math turns into a joy.



Today, we will learn more about subtraction. We will learn what to do when the number we want to borrow from is a zero. Let's do this subtraction.

Starting with the 1s column, we find that we need to borrow a 10 from the 10s column. But there is a problem with that. There are no tens in the 10s column. There is only a zero. The 10s column has nothing to lend.

	100	10	1
	4	0	5
-	1	2	6



## CHAPTER 1 | GETTING THE BASICS DOWN

So first, the 10s column needs to borrow something. Before the tens column can lend a 10 to the 1s column, it must borrow a chunk of 100 for itself from the 100s column. Then the 10s column will have a 10 which it can loan to the 1s column.

Let's see how to write this down. We change the 4 in the hundreds column to a 3. We cross out the 0 in the 10s column and write a 10 above it. Now the 1s column can borrow a 10 from the 10s column. We cross out the 10 and write 9 above it. The 1s column adds the borrowed 10 to its 5, and we write the 15 above it.

Now, we can finish the exercise. We subtract each column and get the answer: 279.

	100	10	1
		9	
	3	<del>10</del>	15
	4	<del>0</del>	<del>5</del>
-	1	2	6
	2	7	9

Now try these on your own. A few hints have been provided for the borrowing.

a.

	100	10	1
		9	
	4	<del>10</del>	17
	<del>5</del>	<del>0</del>	<del>7</del>
-	3	4	8

b.

	100	10	1
		9	
	8	<del>10</del>	11
	<del>9</del>	<del>0</del>	<del>1</del>
-	4	1	9

c.

	100	10	1
			10
	<del>6</del>	<del>0</del>	<del>0</del>
-	3	9	8



## Student Exercises

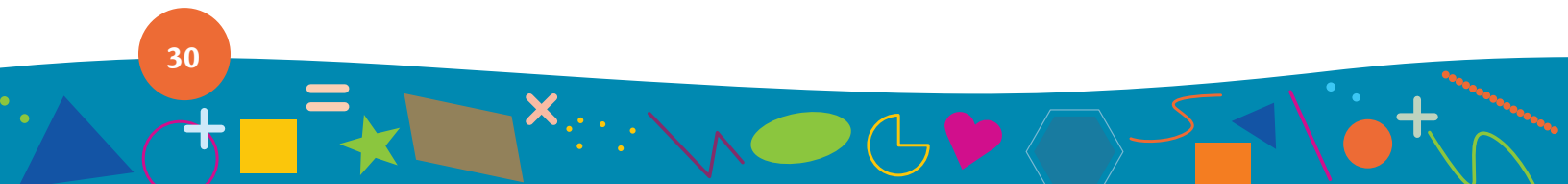
Use subtraction to find and fill in the unknown number.

1.  $18 + \underline{\quad} = 28$

Borrow			
		2	8
	-	1	8

2.  $28 + \underline{\quad} = 40$

Borrow			
		4	0
	-	2	8



## DAY 7 | SUBTRACTION AND BORROWING FROM ZERO

3.  $35 + \underline{\quad} = 56$

		5	6
	-	3	5

5.  $110 + \underline{\quad} = 120$

		1	2	0
	-	1	1	0

4.  $47 + \underline{\quad} = 62$

		6	2
	-	4	7

6.  $157 + \underline{\quad} = 209$

		2	0	9
	-	1	5	7

7. Your family car's gas tank holds 25 gallons. There are 15 gallons in the tank now. How many gallons of gas do you need to fill up the tank? Use the following equation, and subtract to find the answer.

$15 + \underline{\quad} = 25$

		2	5
	-	1	5



8. If gas is \$4.00 per gallon, how much will it cost to fill up the tank in question 10?

x \$		4

## CHAPTER 1 | GETTING THE BASICS DOWN

9. Suppose you are on a long bike ride to a city that's 52 miles from your house. You have already gone 28 miles. How many miles are left on your bike ride? Use the following equation, and subtract to find the answer. (You may use 52 km and 28 km if you like.)

$$28 + \underline{\quad} = 52$$

Borrow			
		5	2
	-	2	8

10. The cake has been in the oven for 37 minutes, but the recipe says it should bake 65 minutes. How many minutes are left before the cake is ready to take out of the oven? Fill in the numbers for this equation. Subtract to find the answer.

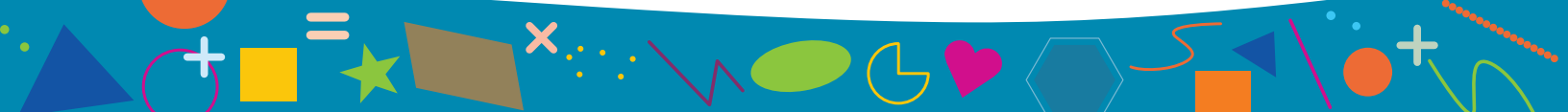
$$\underline{\quad} + \underline{\quad} = \underline{\quad}$$

Borrow			
	-		



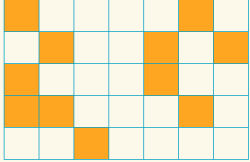
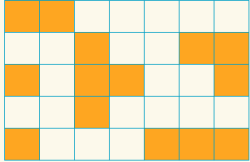
### Competition Time!


Practice quick adding with a parent or sibling. Face each other and place your hands behind your backs. Take turns saying "Go," and both of you pull out your hands, holding up any number of fingers. The first person to correctly add both your fingers together wins that round.

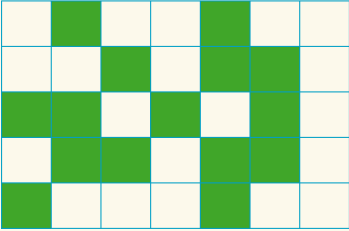
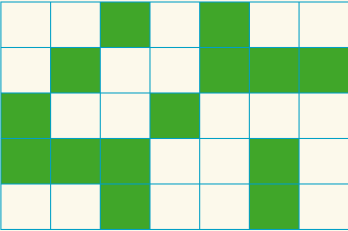
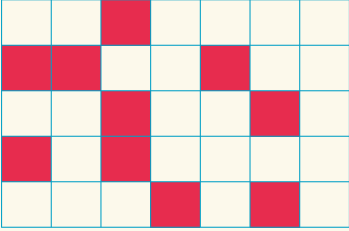
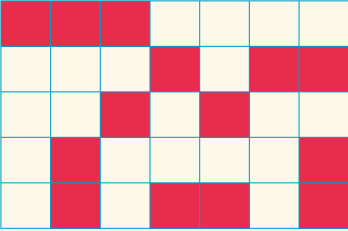
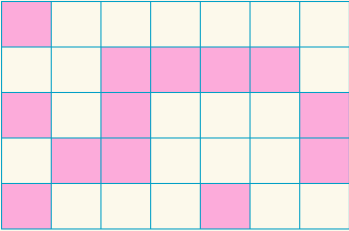
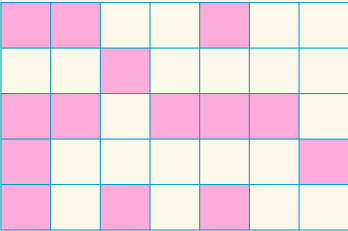
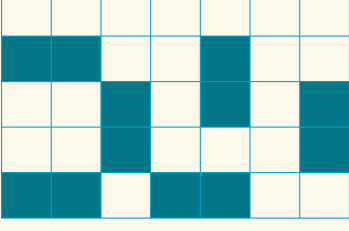


11. Compare the pictures in each pair by adding up each picture's colored squares. Then write the correct symbol between the pictures. (=, <, >)

<   >   =

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