TIPS FOR FAMILIES

KEY CONCEPT OVERVIEW

In Lessons 1 through 4, students identify **factors** that make up a number less than 100. They also identify **multiples**, **prime numbers,** and **composite numbers**.

You can expect to see homework that asks your child to do the following:

- Determine and record the factors and multiples of given numbers.
- Determine whether a number is prime or composite.
- Determine whether a given number is a factor of another number.
- Determine whether a given number is a multiple of another number.

SAMPLE PROBLEM *(From Lesson 1)*

Find all the factors for the following numbers, and classify each number as prime or composite. Explain your classification of each as prime or composite.

Factor Pairs for 27	
1	27
3	9

Factor Pairs for 31	
1	31

The number 27 is a composite number. It has more than two factors. The number 31 is prime. Its only factors are 1 and itself.

HOW YOU CAN HELP AT HOME

- Create or print a hundreds chart. Have your child use crayons to color all of the multiples of a given number between 1 and 10. Choose a different color for each multiple. Look for and discuss any patterns that your child sees. For example, when coloring multiples of 2, your child should notice that the multiples all appear in the same columns and all end in 0, 2, 4, 6, or 8. When coloring multiples of 9, he should notice that the multiples appear in a diagonal pattern.
- Lay a calendar on the table. Ask your child to close her eyes. Prompt her to circle her pointer finger two times in the air, to place her finger on the calendar, and then to open her eyes. If the number that her finger has landed on is 10 or less, have her list the multiples of that number as high as she can successfully go. If the number is greater than 10, have her list the factors of that number and state whether the number is prime or composite.

TERMS

Associative property (of multiplication): When multiplying three or more numbers, the product will be the same regardless of how the numbers are grouped, for example, $6 \times 3 \times 8 = (6 \times 3) \times 8 = 6 \times (3 \times 8)$.

Composite number: A positive integer having three or more whole numbers factors. For example, 8 is a composite number because it has four factors: 1, 2, 4, and 8.

Factor: A number that is multiplied by another number. For example, in $3 \times 4 = 12$, the numbers 3 and 4 are factors. We can say, therefore, that 3 and 4 are factors of 12.

Multiple: The product of a given number and any other whole number. For example, 20 is a multiple of 10 because $2 \times 10 = 20$.

Prime number: A positive integer greater than 1 having whole number factors of only 1 and itself. For example, 3 is a prime number because it has only two factors – 1 and 3.

TIPS FOR FAMILIES

KEY CONCEPT OVERVIEW

In Lessons 5 and 6, students learn to multiply multi-digit whole numbers by using several strategies. Additionally, they learn to **round** numbers to the nearest ten, hundred, thousand, or ten thousand as a strategy to help them **estimate** the product (answer) of multiplication problems.

You can expect to see homework that asks your child to do the following:

- Find the product of multi-digit multiplication **expressions**.
- Round numbers in multiplication problems to estimate the answer.
- Solve word problems that involve multi-digit multiplication.

SAMPLE PROBLEMS *(From Lesson 5)*

Find the products. Show your thinking.

7×9
$= 63$

7×90
$= (7 \times 9) \times 10$
$= 63 \times 10$
$= 630$

70×90
$= (7 \times 10) \times (9 \times 10)$
$= (7 \times 9) \times 100$
$= 6{,}300$

70×900
$= (7 \times 9) \times (10 \times 100)$
$= 63{,}000$

HOW YOU CAN HELP AT HOME

- Multiply by 10, 100, and 1,000. Give your child a multiplication expression, and have him tell you the product (answer). For example,

  $3 \times 10 = 30$; $3 \times 100 = 300$; $3 \times 1{,}000 = 3{,}000$
  $50 \times 10 = 500$; $50 \times 100 = 5{,}000$; $50 \times 1{,}000 = 50{,}000$
- Review rounding of a whole number with your child. For example,

  What is 19 rounded to the nearest ten? (20)
  What is 727 rounded to the nearest hundred? (700)
  What is 3,815 rounded to the nearest thousand? (4,000)

TERMS

Estimate: Approximate the value of a quantity or number. For example, you can estimate the product of 22×3 as about 60 (22 is very close to the number 20, and $20 \times 3 = 60$).
Expression: Any combination of sums, differences, products, or divisions of numbers that evaluates to a number. Expressions do not have an equal sign (e.g., $600 + 3 + 0.07$).
Round: Replace a number with another number of approximately the same value. For example, 8,261 rounded to the nearest hundred is 8,300.

TIPS FOR FAMILIES

KEY CONCEPT OVERVIEW

In Lessons 7 through 13, students learn to multiply multi-digit whole numbers by using the **area model** (as shown in the Sample Problem below).

You can expect to see homework that asks your child to do the following:

- Change an expression written in word form to one written in number form, and vice versa. For example, *the sum of* 3 *sixteens and* 2 *nines* can be written as $(3 \times 16) + (2 \times 9)$.
- Solve multi-digit multiplication problems by using mental math. For example, consider the problem 19×15.

  Think: 20 fifteens – 1 fifteen

  $= (20 \times 15) - (1 \times 15)$

  $= 300 - 15$

  $= 285$
- Estimate and solve problems, including word problems, that involve multi-digit whole number multiplication.

SAMPLE PROBLEM *(From Lesson 11)*

Draw an area model. Then solve by using the **standard algorithm**.

$2{,}431 \times 106 = \mathbf{257{,}686}$

	2,000	+ 400	+ 30	+ 1	
6	12,000	2,400	180	6	14,586
+					
100	200,000	40,000	3,000	100	243,100

14,586 + 243,100 = 257,686

$$\begin{array}{r} 2,431 \\ \times \quad 106 \\ \hline 14,586 \\ +\,243,100 \\ \hline 257,686 \end{array}$$

HOW YOU CAN HELP AT HOME

- Quiz your child on the difference between a sum and a **product**. Try to do simple mental math together involving both sums and products. For example, tell your child, "Think of the product of 2 and 3." (The answer is 6.) "Now think of the product of 3 and 4." (The answer is 12.) "What's the sum of those two products, 6 and 12?" (The answer is 18.)
- Practice using partial products while doing multiplication. This can be a two-person activity with you and your child. Use easier three-digit numbers. For example, try 300×120. Tell your child, "You figure out 300×100, and I'll figure out 300×20. Then we can add those two numbers together to get the result." ($300 \times 100 = 30{,}000$; $300 \times 20 = 6{,}000$; $30{,}000 + 6{,}000 = 36{,}000$)

TERMS

Product: The number resulting from the multiplication of two or more numbers. For example, in $4 \times 0.2 = 0.8$, the number 0.8 is the product.

Standard algorithm: A standard step-by-step procedure to solve a particular type of problem. For example, the process of multiplying vertically with regrouping is a standard algorithm.

MODELS

Area Model

$2{,}431 \times 106 = 257{,}686$

	2,000	+ 400	+ 30	+ 1	
6	12,000	2,400	180	6	14,586
+					
100	200,000	40,000	3,000	100	243,100

$14{,}586 + 243{,}100 = 257{,}686$

TIPS FOR FAMILIES

KEY CONCEPT OVERVIEW

In Lessons 14 through 16, students learn to multiply multi-digit whole numbers by decimal numbers, using the area model (as shown in the Sample Problem below).

You can expect to see homework that asks your child to do the following:

- Estimate the product (e.g., $4.1 \times 226 \approx 4 \times 200 = 800$).
- Solve multiplication problems by using an area model.
- Solve word problems that involve multiplying multi-digit whole numbers by decimal numbers.

SAMPLE PROBLEM *(From Lesson 16)*

Estimate the product. Solve by using an area model and the standard algorithm.

$13 \times 3.12 \approx \mathbf{10 \times 3 = 30}$

	300	+ 10	+ 2	(hundredths)
3	900	30	6	936 hundredths
+				
10	3,000	100	20	3,120 hundredths

$9.36 + 31.20 = 40.56$

$$\begin{array}{r} 3.12 \\ \times \quad 13 \\ \hline 936 \\ +3120 \\ \hline 4056 \end{array}$$

HOW YOU CAN HELP AT HOME

- Help your child practice multiplication facts. Have him bounce a basketball as he says the multiples of different numbers. For example, he can practice saying the multiples of 8 with each bounce: 0, 8, 16, 24, 32, 40, 48, 56, 64, 72, 80. Then he can say them backward: 80, 72, 64, 56, 48, 40, 32, 24, 16, 8, 0.
- Practice estimation at the grocery store. For example, say, "I want to buy 7 watermelons, and each one costs $2.99. Estimate my total cost." ($7 \times \$2.99 \approx 7 \times \$3 = \$21$)

TIPS FOR FAMILIES

KEY CONCEPT OVERVIEW

In Lessons 17 through 19, students learn to **convert** measurements using multiplication.

You can expect to see homework that asks your child to do the following:

- Convert from one type of unit to another (e.g., 4.7 m = 470 cm; 24 ft = 8 yd).
- Solve word problems that involve measurement.

SAMPLE PROBLEM *(From Lesson 18)*

Convert milliliters to liters.

579 milliliters = 0.579 liter

579 *milliliters* = 579 × (1 *milliliter*)
= 579 × (0.001 *liter*)
= 0.579 *liter*

HOW YOU CAN HELP AT HOME

- With your child, practice finding which unit is larger or smaller. For example, say to your child, "I'll name two units, and you tell me the larger unit. Meter or kilometer? (Kilometer) Pound or ounce? (Pound) Inch or yard? (Yard) Pint or quart? (Quart)."
- Practice measurement conversions with your child while shopping in a supermarket. For example, you might ask your child, "If I need a pound of butter, and this package of butter is eight ounces, how many packages of butter should I buy?" or "If I only need two cups of cream, should I buy a pint or a quart of cream?"

TERMS

Convert: To express a measurement in a different unit (e.g., liters expressed as milliliters).

TIPS FOR FAMILIES

KEY CONCEPT OVERVIEW

Lessons 20 through 22 focus on strategies to help students solve division problems of multi-digit numbers.

You can expect to see homework that asks your child to do the following:

- Rewrite division problems as easier problems, and then solve. For example,

  $12{,}000 \div 300$

  $= 12{,}000 \div 100 \div 3$
  $= 120 \div 3$
  $= 40$

- Estimate the **quotient**. For example,

  $609 \div 24$

  $\approx 600 \div 20$
  $= 30$

- Solve word problems that involve division of multi-digit numbers.

SAMPLE PROBLEM *(From Lesson 22)*

Estimate the quotient.
$5{,}492 \div 72$

$\approx 5{,}600 \div 70$
$= 560 \div 7$
$= 80$

HOW YOU CAN HELP AT HOME

- Play a skip-counting contest with your child. For example, count by 3's to 30: 3, 6, 9, 12, 15, ... Count by 30's to 300: 30, 60, 90, 120, 150, ... Count by 300's to 3,000: 300, 600, 900, 1200, 1500, ...
- Play the Rounding card game with your child.
    1. Take the jacks, queens, kings, tens, and jokers out of the deck.
    2. Put the stack of remaining cards facedown.
    3. Flip a set number of cards and have your child practice rounding the number represented by the flipped cards to different place value units.

  For example, you flip a 6, a 1, an 8, and a 2; they represent 6,182. Rounding 6,182 to the nearest ten is 6,180; rounding 6,182 to the nearest hundred is 6,200; and rounding 6,182 to the nearest thousand is 6,000.

TERMS

Quotient: The answer resulting from the division of two numbers. For example, in $5.4 \div 6 = 0.9$, the number 0.9 is the quotient.

TIPS FOR FAMILIES

KEY CONCEPT OVERVIEW

Lessons 23 through 27 focus on larger numbers in division problems using the strategy of long division.

You can expect to see homework that asks your child to do the following:

- Divide up to four-digit numbers by two-digit numbers, and then check the answer using multiplication (as shown in the Sample Problem below).
- Solve word problems that involve division.

SAMPLE PROBLEM *(From Lesson 27)*

Divide. Then, check your work using multiplication.
4,652 ÷ 22

```
      2  1  1   R 10
   ┌──────────
22 │ 4,  6  5  2
   −  4  4
   ──────────
      2  5
   −  2  2
   ──────────
         3  2
      −  2  2
   ──────────
         1  0
```

Check:

```
     2  1  1
   ×     2  2
   ──────────
     4  2  2

+ 4, 2  2  0
   ──────────
   4, 6  4  2
```

```
     4,  6  4  2
+          1  0
   ──────────────
     4,  6  5  2
```

HOW YOU CAN HELP AT HOME

- Play the Divide the Card number game with your child.
    1. Take out the jacks, queens, kings, and jokers.
    2. Put the stack of remaining cards face down.
    3. Flip three or four cards from the top of the deck, and place them face up on the table. The three- or four-digit number shown by these cards will represent the whole.
    4. Your child flips two cards from the top of the deck and places them face up on the table. The two-digit number shown by these cards will represent the divisor.
    5. Write the division expression using the whole and the divisor. Then ask your child to estimate the quotient.
    6. Your child then solves the division problem using the standard algorithm.

  For example, you flip three cards with the numbers 3, 1, and 2; it represents 312. Your child flips two cards with the numbers 5 and 1; it represents 51. You write $312 \div 51$ and say, "Estimate how many times 51 can go into 312." She says, "Six," and then solves the division problem using the standard algorithm. (The answer is 6 with a remainder of 6.)

  If playing cards are not available, write the digits 1-9 on pieces of paper or index cards.

TIPS FOR FAMILIES

KEY CONCEPT OVERVIEW

In Lessons 28 through 31, students learn to divide decimal numbers by one-, two-, and three-digit whole numbers (e.g., 34.5 ÷ 300 = 0.115).

You can expect to see homework that asks your child to do the following:

- Rewrite division problems as easier problems, and then solve.

  For example, 1.2 ÷ 60
  = 1.2 ÷ 6 ÷ 10
  = 0.2 ÷ 10
  = 0.02
- Estimate the quotient.

  For example, 3.91 ÷ 17
  ≈ 4 ÷ 20
  = 4 ÷ 10 ÷ 2
  = 0.4 ÷ 2
  = 0.2
- Check the answers to division problems using multiplication.
- Solve word problems that involve division.

SAMPLE PROBLEM *(From Lesson 31)*

Divide. Check your work using multiplication.
5.6 ÷ 16

$$\begin{array}{r} 0.35 \\ 16\overline{)\,5.60} \\ -\,48 \\ \hline 80 \\ -\,80 \\ \hline 0 \end{array}$$

Check:

$$\begin{array}{r} 0.35 \\ \times\quad 16 \\ \hline 210 \\ +\,350 \\ \hline 5.60 \end{array}$$

HOW YOU CAN HELP AT HOME

- Play a call-and-response game with your child. You say a division expression, and he says the answer in unit form. For example, 6 tenths ÷ 2? (3 tenths); 20 hundredths ÷ 4? (5 hundredths); 54 thousandths ÷ 6? (9 thousandths).
- Play the Divide the Dice number game with your child. You can use two dice for tens or tenths, three dice for hundreds or hundredths, or four dice for thousands or thousandths. Your child can use two dice for tens or three dice for hundreds.
    1. You roll two dice. The numbers rolled can be written as tens or tenths. This value represents the whole.
    2. Your child rolls his two dice. The numbers rolled are written as a tens. This value represents the divisor.
    3. Using the whole and the divisor, write the division expression and say, "First, estimate the answer, and then divide using the standard algorithm."

  For example, you roll a 5 and a 6, which can represent 56 or 5.6 (your choice). Your child rolls a 1 and a 6, which represents 16. You write either 56 ÷ 16 or 5.6 ÷ 16, and say, "First, estimate the answer, and then divide using the standard algorithm."

  Answers:
  $56 \div 16 \approx 60 \div 20 = 3$; $56 \div 16 = 3.5$
  $5.6 \div 16 \approx 6 \div 20 = 0.3$; $5.6 \div 16 = 0.35$

  If dice are not available, use a random number generator on a smart phone.

TIPS FOR FAMILIES

KEY CONCEPT OVERVIEW

In Lessons 32 and 33, students learn to solve multi-step word problems using long division.

You can expect to see homework that asks your child to do the following:

- Divide multi-digit numbers using long division.
- Solve multi-step word problems that involve division.

SAMPLE PROBLEM *(From Lesson 33)*

Jeremiah has 2,440.8 kilograms of cashews to deliver in equal amounts to 18 stores. If 11 of the stores are in Texas, how many kilograms of cashews will be delivered to stores in Texas?

2,440.8 ÷ 18 = 135.6 **135.6 × 11 = 1,491.6**

```
      1 3 5. 6
   ┌──────────
18 │ 2, 4 4 0. 8
   − 1 8
   ──────
     6 4
   − 5 4
   ──────
     1 0 0
   −   9 0
   ──────
       1 0 8
     − 1 0 8
     ───────
           0
```

```
    1 3 5. 6
  ×       1 1
  ──────────
    1 3 5 6
+ 1 3 5 6 0
  ──────────
  1, 4 9 1. 6
```

1,491.6 kilograms of cashews will be delivered to stores in Texas.

HOW YOU CAN HELP AT HOME

- Play the Multiply the Dice number game with your child to practice multi-digit multiplication. You can use two dice for two-digit numbers, three dice for three-digit numbers, or four dice for four-digit numbers.
  1. You can select up to four dice to roll to create a multi-digit number.
  2. Your child can select up to three dice to roll to create another multi-digit number.
  3. You write the multiplication expression using the two numbers and say, "First, estimate the answer, and then solve the problem."

HOW YOU CAN HELP AT HOME
(CONTINUED)

For example, you roll a 6, a 2, and a 5, which represents 625. She rolls a 1 and a 3, which represent 13. You write 625 × 13 and say, "First, estimate the answer, and then solve the problem."
Answers: 625 × 13 ≈ 600 × 10 = 6,000; 625 × 13 = 8,125

Challenge: Change the whole numbers of the first number rolled into a decimal number (e.g., 62.5 × 13, 6.25 × 13, or 0.625 × 13).

Answers:
62.5 × 13 ≈ 60 × 10 = 600; 62.5 × 13 = 812.5
6.25 × 13 ≈ 6 × 10 = 60; 6.25 × 13 = 81.25
0.625 × 13 ≈ 1 × 10 = 10; 0.625 × 13 = 8.125

- Play the Divide the Dice number game with your child to practice multi-digit division. You can use two dice for two-digit numbers, three dice for three-digit numbers, or four dice for four-digit numbers.
    1. You can select up to four dice to roll to create a multi-digit number to represent the whole.
    2. Your child selects two dice to roll to create a two-digit number to represent the divisor.
    3. You write the division expression using the whole and the divisor and say, "First, estimate the answer, and then solve the problem."

For example, you roll a 6, a 1, and a 1, which represents 611. She rolls a 2 and a 6, which represent 26. You write 611 ÷ 26 and say, "First, estimate the answer, and then solve the problem."

Answers: 611 ÷ 26 ≈ 600 ÷ 30 = 20; 611 ÷ 26 = 23.5

Challenge: Change the whole numbers of the first number rolled into a decimal number (e.g., 61.1 ÷ 26 or 6.11 ÷ 26).

Answers:
61.1 ÷ 26 ≈ 60 ÷ 30 = 2; 61.1 ÷ 26 = 2.35
6.11 ÷ 26 ≈ 6 ÷ 30 = 0.2; 6.11 ÷ 26 = 0.235