LETTER HOME

Numbers and Number Operations

Dear Family Member:

In this unit we focus on strengthening your child's understanding of our number system. To be able to compute, we need to understand place value—the idea that the value of a digit in a number depends upon where it is placed. For example, the 2 in 426 is 2 tens, but in 4235 it is 2 hundreds. This unit reviews addition, subtraction, and multiplication with an emphasis on understanding place value. Students learn a variety of strategies to solve problems, matching a problem with an efficient strategy for solving it. They learn estimation strategies to check the reasonableness of their answers.

You can help your child with place value and whole number operations using the following ideas:

What's It Worth? Give your child a number to write down. Then, ask for the value of each digit in the number. For example, ask your child to write "three hundred twenty-four." Then ask, "What is the value of the 3?" Your child should say, "three hundred."

Different Ways to Partition the Same Number. Ask your child to write down a multidigit number. Then ask them to write the number in expanded form using hundreds, tens, and ones. Then challenge your child to write a new number sentence that partitions the number a different way or with different representations.

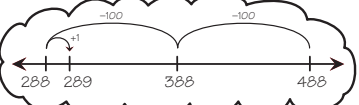For Example: 487   or   400 + 80 + 7   or   300 + 180 + 7   or   400 + 50 + 37
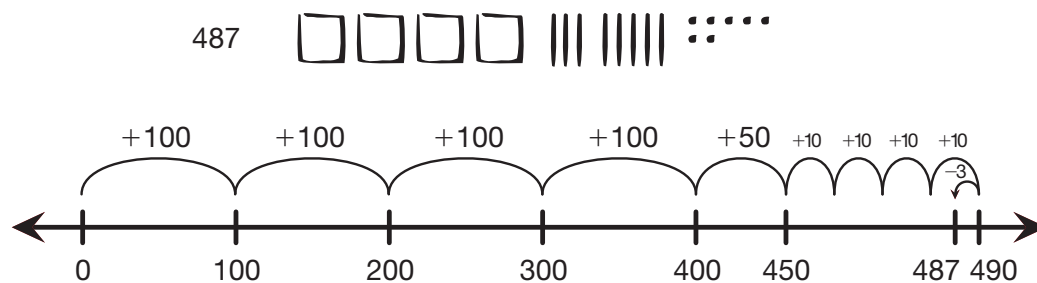
Digits Game. Play the digits game as a family. A player chooses a playing board that is a template for an addition or subtraction problem. Cards are drawn one at a time from a deck of 0–9 Digit Cards. After each draw, players write a digit in a box on the playing board trying to find the largest sum or difference correctly. Directions and game boards are in Lesson 7 in the *Student Guide*.

Strategy Menus. Encourage your child to use and reference the various strategy menus created and referenced in this unit as they are working. The following menus can be found in the Student Guide Reference section.

- *Addition Strategies Menu*
- *Subtraction Strategies Menu*
- *Multiplication Strategies Menu*

Subtraction Strategies Menu

Finding Friendly Numbers to Estimate

$428 - 179$

$430 - 200 = 230$
230 is a reasonable estimate

Linda

Counting Back

$488 - 199 = 289$

-100 -100
$+1$
288 289   388   488

Jerome

Counting Up

$300 - 198$

$198 + ②= 200$
$200 + ⑩⓪ = 300$
$100 + 2 = 102$

Tanya

Using the Compact Method

$$\begin{array}{r} {}^{11}\\ 3\ \cancel{4}\ 13\\ 4\ 2\ \cancel{3}\\ -\ 1\ 6\ 5\\ \hline 2\ 5\ 8 \end{array}$$

Shannon

Using Expanded Form

$$\begin{array}{rl} & \quad\quad {}^{110}\\ & {}^{300}\ \cancel{\cancel{10}}\ \ {}^{13}\\ 423 & 400 + 20 + \cancel{3}\\ \text{Subtract } 165 = & \underline{165 + 60 + 5}\\ & 200 + 50 + 8 = 258 \end{array}$$

Nila

Another Strategy: _____

Math Facts and Mental Math

This unit continues the systematic review and assessment of the multiplication facts.

Multiplication Facts. Students review the 2s, 3s, and 9s to maintain and increase fluency and to learn to apply multiplication strategies to larger numbers.

You can help your child review these facts using the flash cards that are sent home or by making a set of flash cards from index cards or scrap paper. Study facts in small groups each night. As your child goes through the flash cards, put the cards in three stacks: Facts I Know Quickly, Facts I Can Figure Out, and Facts I Need to Learn.

For Facts I Need to Learn, work on strategies for figuring them out. Good strategies include:

Skip counting. To solve 2×8, skip count: 2, 4, 6, 8, 10, 12, 14, 16, 18

Doubling. To solve 2×8, think $8 + 8 = 16$

Reasoning from known facts. To solve, 9×4 , $9 \times 2 = 18$ and $18 + 18 = 36$ or use 10×4 to solve 9×4. $10 \times 4 = 40$ and $40 - 4 = 36$.

For Facts I Can Figure Out, use the flash cards to practice the facts for fluency.

For Facts I Know Quickly, help your child use mental math strategies to multiply 10s and 100s: $40 \times 50 = 200$, $90 \times 200 = 18000$, $3 \times 300 = 900$.

Thank you for taking the time to talk with your child about what he or she is doing in math.

Sincerely,

Unit 4: Home Practice

Part 1 **Triangle Flash Cards: 2s, 3s, and 9s**

Study for the quiz on the multiplication facts for the twos, threes, and nines. Take home your Triangle Flash Cards: 2s, 3s, and 9s and the list of facts you need to study.

To use the flash cards, ask a family member to choose one flash card at a time. He or she should cover the corner containing the highest number. This number will be the answer to a multiplication problem. Multiply the two uncovered numbers.

Study the math facts in small groups. Choose eight to ten facts to study each night. Your teacher will tell you when the quiz on the twos, threes, and nines will be.

Part 2 **Factors and Primes**

1. Is 9 a factor of 72? Explain why or why not.

2. Tell which of the following are prime numbers. If a number is prime, tell how you know. If it is not prime, write it as the product of prime factors.

   A. 13   **B.** 24   **C.** 15   **D.** 29

3. Rewrite the following factorizations using exponents.

   A. $240 = 2 \times 2 \times 2 \times 3 \times 2 \times 5$
   B. $800 = 2 \times 2 \times 2 \times 2 \times 5 \times 2 \times 5$
   C. $2100 = 2 \times 5 \times 3 \times 7 \times 2 \times 5$

4. Write each of the following products without exponents. Then multiply.

   A. $4^2 \times 3^2$ **B.** $3^3 \times 5$ **C.** $4^3 \times 2^2$ **D.** $2^2 \times 3^3$

Part 3 People and Prices

1. Some of the workers at the TIMS Candy Company went to the fruit stand for lunch. Maggie bought a plum for 29¢ and an apple for 39¢. If she pays with $1.00, how much change should she receive?

2. A regular comic book at the used book sale costs 5¢. Special edition comic books cost 10¢ each. How much does Shannon need to pay if she wants to purchase 3 regular comic books and 4 special edition comic books?

3. Roberto's father is a salesman for the TIMS Candy Company. At the end of the year, Roberto's father earned a bonus of $565. This was $180 more than last year's bonus.

   A. How much did Roberto's father receive as a bonus last year?

   B. How can you be sure your answer is reasonable?

4. Ana went to the movies. She had only dimes with her. If the movie costs $1.75, how many dimes does she need to give the cashier? Explain.

5. Jessie went with her family to a two-day fall festival. On the first day, 4367 adults attended the fest and 4587 children attended.

   A. The newspaper reported the actual attendance. Calculate the actual attendance for the first day.

   B. About how many more people need to attend on the second day to reach a total of 10,000 people at the festival? Use a number line to show how you got your answer.

Name _____   Date _____

Part 4 Complete the Fact Families

A. $9 \times 3 =$ _____

_____ $\times 9 =$ _____

_____ $\div 3 = 9$

_____ $\div$ _____ $=$ _____

B. $2 \times$ _____ $= 10$

_____ $\times$ _____ $= 10$

$10 \div 2 =$ _____

$10 \div$ _____ $=$ _____

C. $3 \times 8 =$ _____

_____ $\times 3 =$ _____

_____ $\div$ _____ $= 8$

_____ $\div$ _____ $= 3$

D. $9 \times$ _____ $= 54$

_____ $\times$ _____ $= 54$

$54 \div 6 =$ _____

$54 \div$ _____ $=$ _____

E. _____ $\times 3 = 6$

_____ $\times$ _____ $= 6$

$6 \div$ _____ $=$ _____

_____ $\div$ _____ $= 3$

F. $2 \times$ _____ $= 14$

_____ $\times$ _____ $=$ _____

$14 \div 2 =$ _____

_____ $\div$ _____ $=$ _____

G. _____ $\times 6 = 12$

$6 \times$ _____ $= 12$

$12 \div$ _____ $=$ _____

$12 \div$ _____ $=$ _____

H. $36 \div$ _____ $= 4$

$36 \div$ _____ $=$ _____

_____ $\times 9 =$ _____

_____ $\times$ _____ $= 36$

I. $9 \times 9 =$ _____

_____ $\div$ _____ $= 9$

J. $3 \times 3 =$ _____

_____ $\div$ _____ $= 3$

Part 5 Number Lines

1.

+1 +1   +10   +10   +10   +10   +1 +1 +1 +1 +1

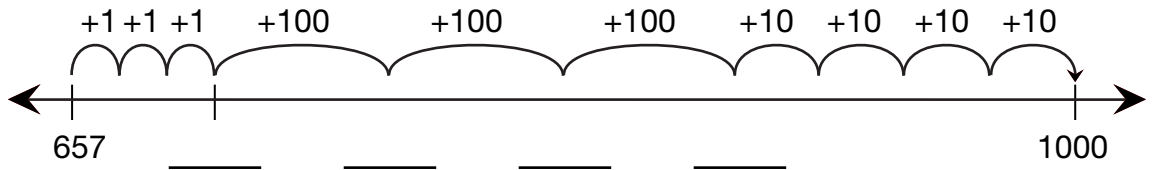53   100
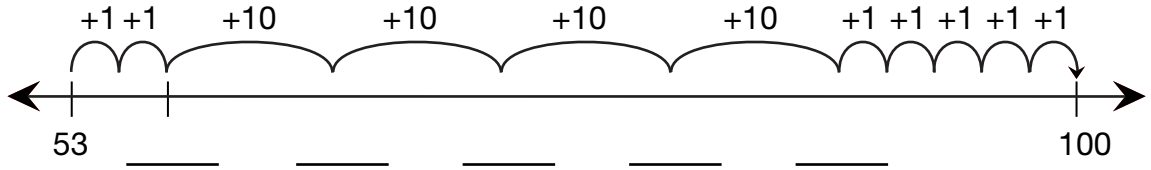
A. Fill in the blanks to show where the hopper lands.

B. How far is it from 53 to 100? _____

C. Show another way for a base-ten hopper to start at 53 and stop at 100.
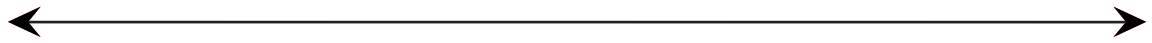
D. Write a number sentence to show how the first hopper moved.

2.

+1 +1 +1   +100   +100   +100   +10 +10 +10 +10

657   1000

A. Fill in the blanks to show where the hopper lands.

B. How far is it from 657 to 1000? _____

C. Show another way for a base-ten hopper to start at 657 and stop at 1000.

D. Write a number sentence to show how the first hopper moved.

Part 6 Arithmetic Review

Use paper and pencil or mental math to solve these problems. Remember to do a quick estimate and then look at your answer to make sure it makes sense.

1. 123
    + 537

2. 672
    − 253

3. 303
    + 497

4. 897
    + 481

5. 460
   − 255

6. 461
     791
    + 23

7. Explain how you can solve Question 3 using mental math.

8. Explain how you can solve Question 4 using base-ten shorthand.

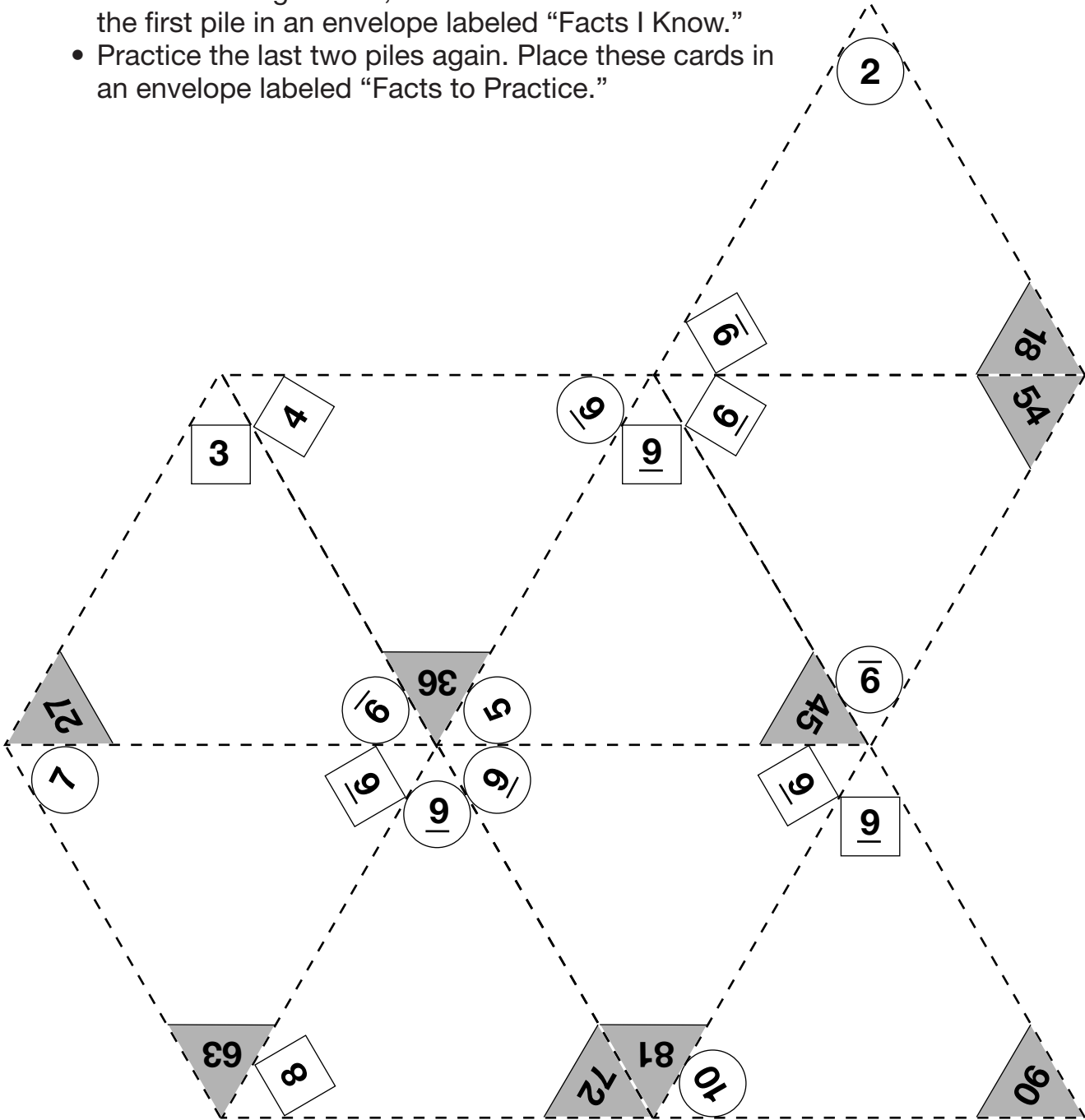**9.** Explain your estimation strategy for Question 6.

Triangle Flash Cards: 2s

- Work with a partner. Each partner cuts out the flash cards.
- To quiz you on a multiplication fact, your partner covers the shaded number. Multiply the two uncovered numbers.
- Divide the used cards into three piles: Facts I Know Quickly, Facts I Can Figure Out, and Facts I Need to Learn. Place the first pile in an envelope labeled "Facts I Know."
- Practice the last two piles again. Place these cards in an envelope labeled "Facts to Practice."

Triangle Flash Cards: 3s

- Work with a partner. Each partner cuts out the flash cards.
- To quiz you on a multiplication fact, your partner covers the shaded number. Multiply the two uncovered numbers.
- Divide the used cards into three piles: Facts I Know Quickly, Facts I Can Figure Out, and Facts I Need to Learn. Place the first pile in an envelope labeled "Facts I Know."
- Practice the last two piles again. Place these cards in an envelope labeled "Facts to Practice."
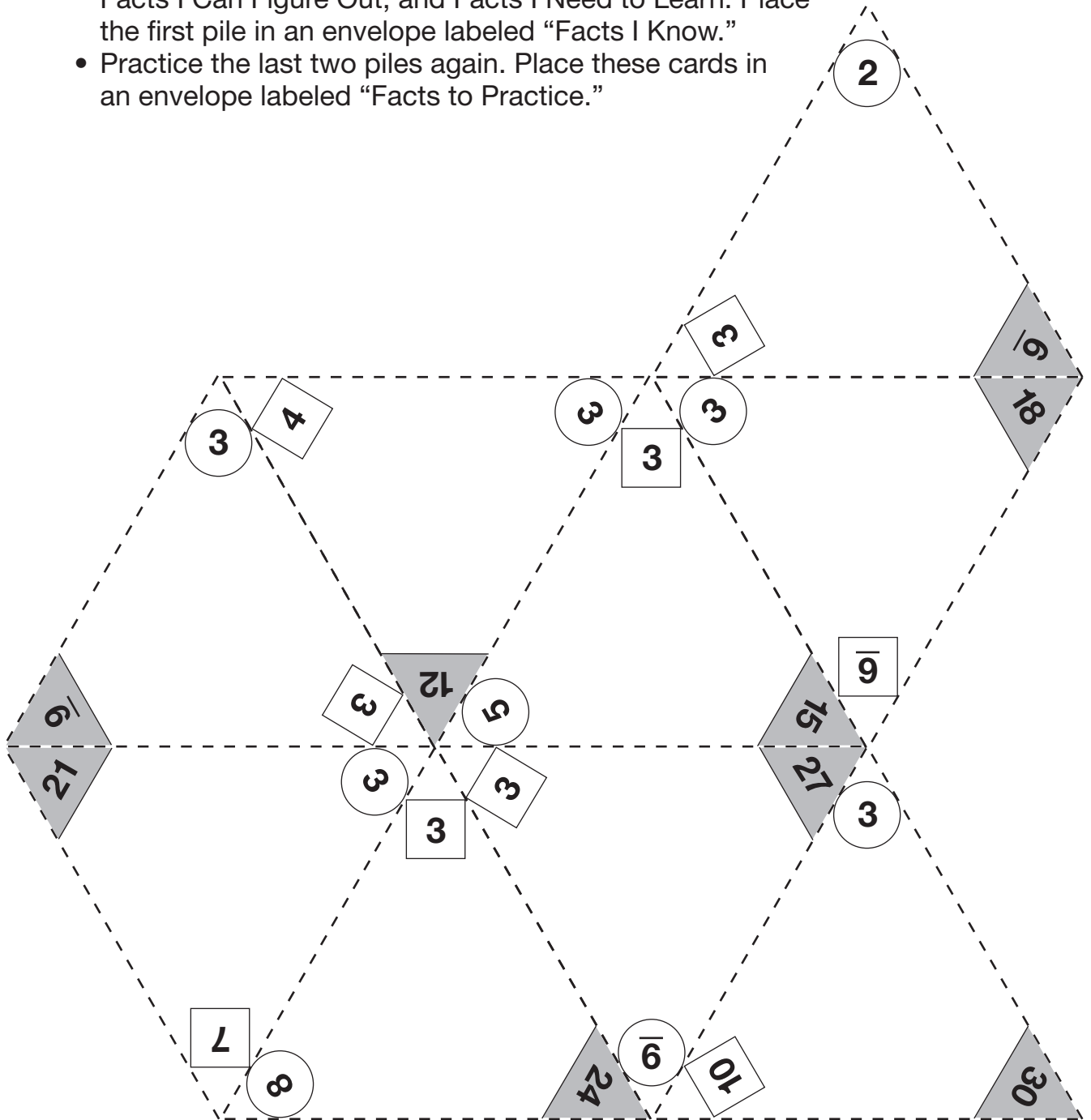
Triangle Flash Cards: 9s

- Work with a partner. Each partner cuts out the flash cards.
- To quiz you on a multiplication fact, your partner covers the shaded number. Multiply the two uncovered numbers.
- Divide the used cards into three piles: Facts I Know Quickly, Facts I Can Figure Out, and Facts I Need to Learn. Place the first pile in an envelope labeled "Facts I Know."
- Practice the last two piles again. Place these cards in an envelope labeled "Facts to Practice."

Base-Ten Recording Sheet

1000s	100s	10s	1s	Number Sentence

1000s	100s	10s	1s	Number Sentence

1000s	100s	10s	1s	Number Sentence

Make a Pack

The object of the game is to be the first player to complete a pack. This is a game for two players.
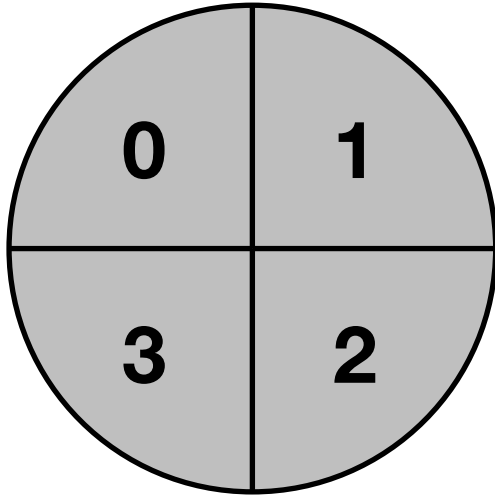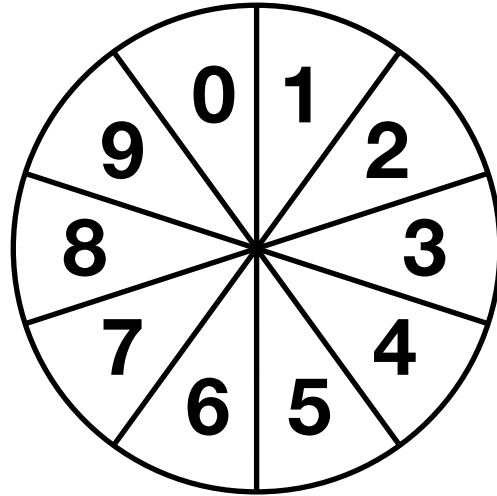
Number of hundreds   **Number of tens**

Materials

- 1 *Make a Pack Game Board* for each player

- 1 gray spinner with 0–3 for hundreds and 1 white spinner with 0–9 for tens

- clear plastic spinner or pencil and paper clip

- 20 skinnies, 20 flats, and 1 pack

Directions

1. Spin the gray spinner once and take that many flats. Spin the white spinner once and take that many skinnies.

2. Stack up your flats and skinnies on the outline on your game board.

3. Trade skinnies for flats according to the Fewest Pieces Rule.

4. Write the total number of base-ten pieces you have after each turn in the "Running Total" column.

5. Take turns repeating the steps above.

Make a Pack Game Board
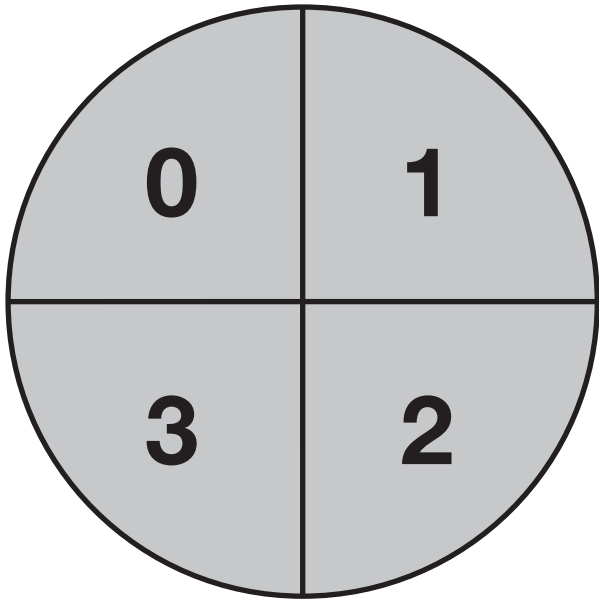
Number of hundreds
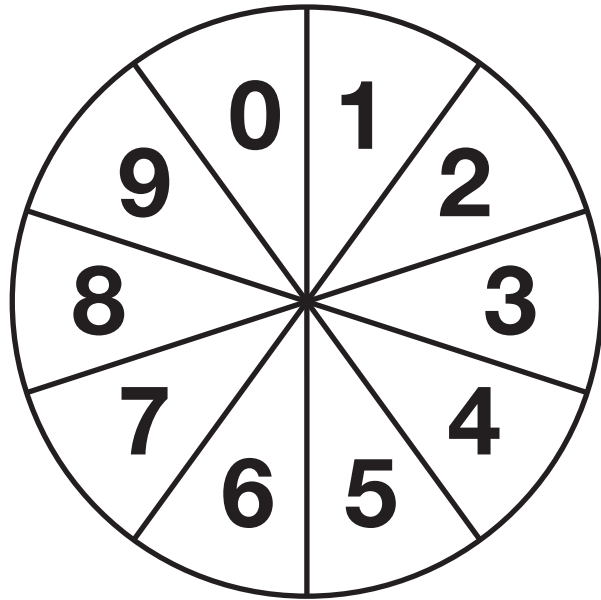
Number of tens

Turn	Running Total
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

Multiplication Facts I Know

- Circle the facts you know well.
- Keep this table and use it to help you multiply.
- As you learn more facts, you may circle them too.
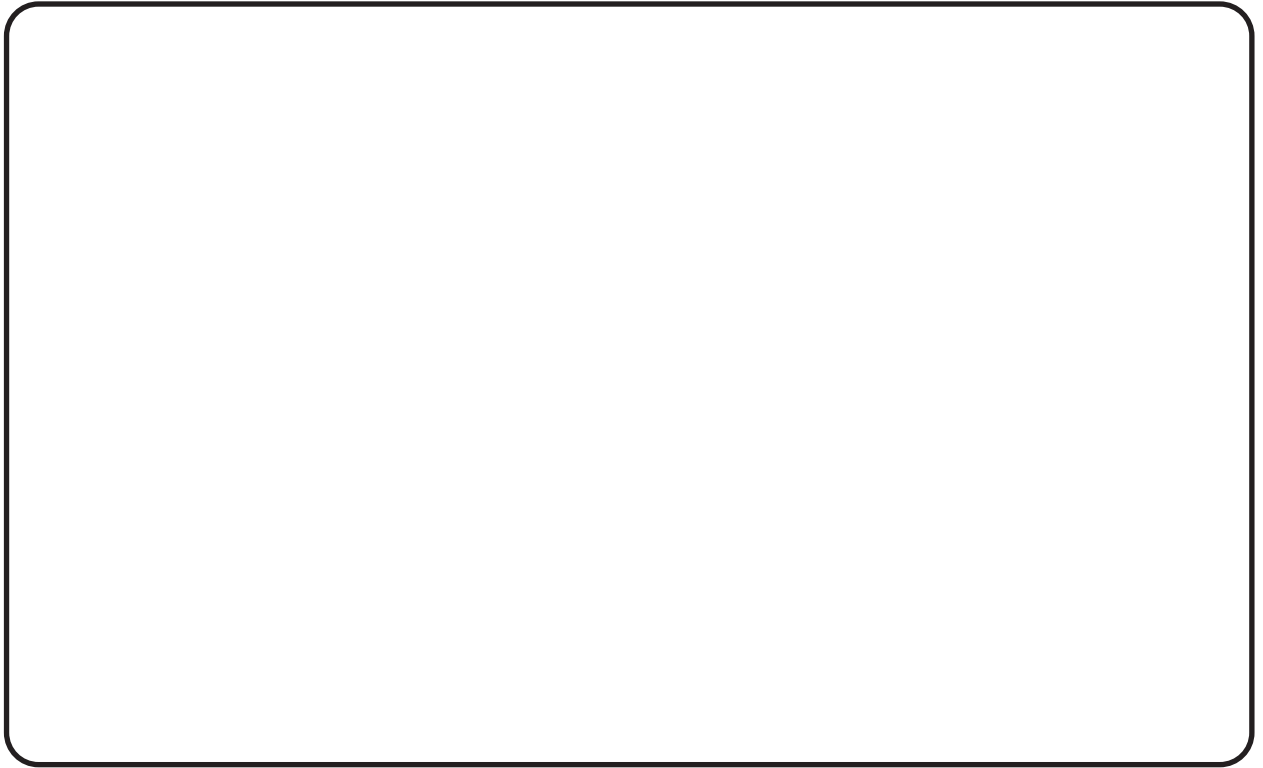
×	0	1	2	3	4	5	6	7	8	9	10
0	0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9	10
2	0	2	4	6	8	10	12	14	16	18	20
3	0	3	6	9	12	15	18	21	24	27	30
4	0	4	8	12	16	20	24	28	32	36	40
5	0	5	10	15	20	25	30	35	40	45	50
6	0	6	12	18	24	30	36	42	48	54	60
7	0	7	14	21	28	35	42	49	56	63	70
8	0	8	16	24	32	40	48	56	64	72	80
9	0	9	18	27	36	45	54	63	72	81	90
10	0	10	20	30	40	50	60	70	80	90	100

What I Think

Solve: 100 + 70 + *n* = 200 + 80 + 5
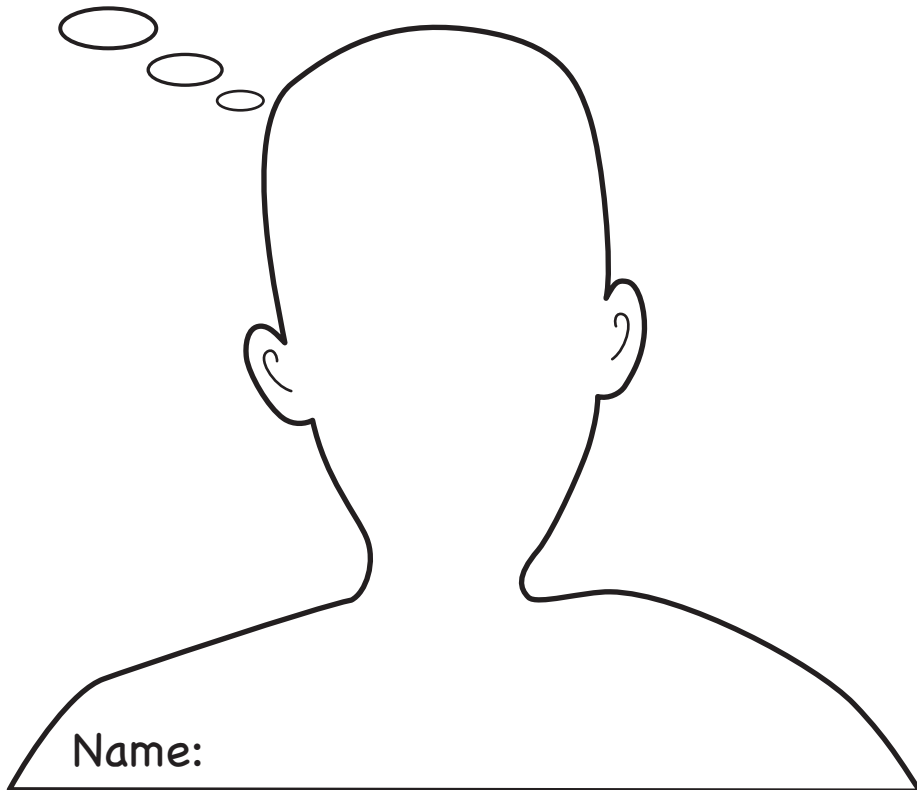
Name:

Name _____ Date _____

Number Sentences
Check-In: Questions 11–14
Feedback Box

	Expectation	Check In	Comments
Show that different partitions of the same number are equal. [Q# 11–13]	E1		
Solve addition problems with number lines. [Q# 12]	E2		
Solve subtraction problems with number lines. [Q# 14]	E3		

- -

Base-Ten Recording Sheet

1000s	100s	10s	1s	Number Sentence

1000s	100s	10s	1s	Number Sentence

1000s	100s	10s	1s	Number Sentence

Digit Cards 0-9

4	9
3	8
2	7
1	6
0	5

Name _____ Date _____

Addition Check-In: Questions 17–20 Feedback Box

	Expectation	Check In	Comments
Represent and solve addition problems using base-ten pieces. [Q# 20]	E2		
Solve addition problems using mental math strategies. [Q# 18]	E4		
Add multidigit numbers using paper-and-pencil methods. [Q# 17]	E6		
Choose appropriately from among mental math, estimation, and paper-and-pencil methods to add. [Q# 17–19]	E9		
Estimate sums. [Q# 19]	E11		

- -

Assessment Master

Place Value and Addition Quiz

1. Sketch 2782 using base-ten shorthand.

2. Solve this problem using base-ten pieces or a number line.

   435
   + 298

3. Solve this problem using a paper-and-pencil method and a mental math strategy. Circle the strategy you think is the best choice for this problem. Explain your choice.

   702
   + 258

4. Explain an estimation strategy that shows that your answer to Question 3 is reasonable.

5. Solve this problem using a different paper-and-pencil method than you used in Question 3.

   277
   + 358

6. Solve these problems using paper-and-pencil methods.

    A.   403
         + 117

    B.   2498
         + 512

7. Choose one of the problems in Question 6 and show how it can be solved using mental math.

8. Ana solved this problem using the all-partials paper-and-pencil method. Explain Ana's step shown by the arrow.

```
    769
  + 158
     17
    110  ←——————
    800
    927
```

9. Explain an estimation strategy that shows that Ana's answer to Question 8 is reasonable.

Place Value and Addition Quiz Feedback Box	Expectation	Check In	Comments
Show partitions of numbers using base-ten shorthand. [Q#1]	E1		
Represent and solve an addition problem using base-ten pieces or a number line. [Q#2]	E2		
Solve addition problems using mental math. [Q#3, 7]	E4		
Add using paper-and-pencil methods. [Q#3, 5, 6, 8]	E6		
Choose appropriately from mental math and paper-and-pencil methods to add. [Q# 3, 5]	E9		
Estimate sums. [Q# 4, 9]	E11		

Base-Ten Recording Sheet

1000s	100s	10s	1s	Number Sentence

1000s	100s	10s	1s	Number Sentence

1000s	100s	10s	1s	Number Sentence

Name _____ Date _____

Subtraction
Check-In: Questions 14–17
Feedback Box

	Expectation	Check In	Comments
Represent and solve subtraction problems using base-ten pieces. [Q# 17]	E3		
Solve subtraction problems using mental math strategies. [Q# 15]	E4		
Subtract multidigit numbers using paper-and-pencil methods. [Q# 14, 16]	E7		
Choose appropriately from among mental math, estimation, and paper-and-pencil methods to subtract. [Q# 15]	E9		

– –

Assessment Master

When Do We Estimate?

	Situation	Example #1	Example #2
1.	When we want to check if an answer is reasonable	After we use a calculator or paper and pencil to find an exact answer	
2.	When we want to find a quick answer in our heads	When we are estimating the cost of 20 cans of pet food at the store	
3.	When we don't need an exact answer	Finding the amount a school spends on electricity in one year to plan for the next year	
4.	When it is difficult or impossible to find an exact answer	The number of leaves in a forest	
5.	When numbers don't stay exactly the same over time	The value of five rare stamps (the price might change from one day to the next)	

Addition and Subtraction Quiz

• = Bit   / = Skinny   ⬜ = Flat   ⬜ = Pack

one   ten   hundred   thousand

1. A. Roberto showed 418 using base-ten shorthand. Write a number sentence to match.

⬜ ⬜ ⬜ / ⦂⦂•

B. Show the number 4328 using base-ten shorthand and the Fewest Pieces Rule. Write a number sentence to match your answer.

C. Use base-ten shorthand to show 4328 another way. Write a number sentence to match your answer.

2. Jackie estimated that 2598 + 621 is less than 3000. Do you agree with Jackie? Why or why not?

3. Solve 2598 + 621 using any method you choose. Use your answer in Question 2 to help you choose your strategy.

4. **A.** Jesse used base-ten pieces to solve 488 + 134. Finish Jesse's work.

▢			•
4	8	8
+ 1	3	4

B. Solve 488 + 134 using a different method or strategy.

C. Circle the method or strategy you liked best.

5. Ming used a Base-Ten Hopper to solve:

$$\begin{array}{r} 86 \\ -\ 58 \\ \hline \end{array}$$

2 + 20 + 6 = 28

Show another way to solve the problem using a Base-Ten Hopper.

6. Solve the following.

A. 252
      − 89

B. 6520
      − 2897

C. 4004
      − 3966

D. Use an estimation strategy to check whether your answer to Question 5A is reasonable.

E. Show how to use a mental math strategy to solve one of the problems above.

7. On Monday morning a hardware store had 2675 flower seed packets in stock. By Friday, there were less than 1900 left.

About how many packets were sold from Monday to Friday? Show or tell how you decided.

Name _____   Date _____

8. Jackie wants to choose a store that gives her the lowest cost for one badminton set and two soccer balls. She calls two stores for prices and writes the information in a table.

	Sporty Morty's	**Athletes Warehouse**
Soccer ball	$39.00 each	$21.99 each
Badminton set	$14.95 each	$17.49 each

Which store should she choose? Show or tell how Jackie can find an estimate to decide.

Addition and Subtraction Quiz Feedback Box

	Yes . . .	**Yes, but . . .**	**No, but . . .**	**No . . .**
MPE1. Know the problem. I read the problem carefully. I know the questions to answer and what information is important. [Q# 7–8]				
MPE5. Show my work. I show or tell how I arrived at my answer so someone else can understand my thinking. [Q# 7–8]				

Name _____   Date _____

Addition and Subtraction Quiz Feedback Box

	Expectation	Check In	Comments
Show partitions of numbers using base-ten pieces. [Q# 1]	E1		
Represent and solve addition problems using base-ten pieces. [Q# 4]	E2		
Solve subtraction problems with number lines. [Q# 5]	E3		
Solve addition and subtraction problems using mental math strategies. [Q# 6]	E4		
Add multidigit numbers using paper-and-pencil methods. [Q# 2–3]	E6		
Subtract multidigit numbers using paper-and-pencil methods. [Q# 6]	E7		
Choose from mental math, estimation, calculators, and paper-and-pencil methods to add whole numbers. [Q# 2–4, 8]	E9		
Choose from mental math, estimation, calculators, and paper-and-pencil methods to subtract whole numbers. [Q# 6–7]	E9		
Estimate sums and differences. [Q# 6–8]	E11		

Small Multiplication Tables

×	0	1	2	3	4	5	6	7	8	9	10
0	0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9	10
2	0	2	4	6	8	10	12	14	16	18	20
3	0	3	6	9	12	15	18	21	24	27	30
4	0	4	8	12	16	20	24	28	32	36	40
5	0	5	10	15	20	25	30	35	40	45	50
6	0	6	12	18	24	30	36	42	48	54	60
7	0	7	14	21	28	35	42	49	56	63	70
8	0	8	16	24	32	40	48	56	64	72	80
9	0	9	18	27	36	45	54	63	72	81	90
10	0	10	20	30	40	50	60	70	80	90	100

×	0	1	2	3	4	5	6	7	8	9	10
0	0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9	10
2	0	2	4	6	8	10	12	14	16	18	20
3	0	3	6	9	12	15	18	21	24	27	30
4	0	4	8	12	16	20	24	28	32	36	40
5	0	5	10	15	20	25	30	35	40	45	50
6	0	6	12	18	24	30	36	42	48	54	60
7	0	7	14	21	28	35	42	49	56	63	70
8	0	8	16	24	32	40	48	56	64	72	80
9	0	9	18	27	36	45	54	63	72	81	90
10	0	10	20	30	40	50	60	70	80	90	100

×	0	1	2	3	4	5	6	7	8	9	10
0	0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9	10
2	0	2	4	6	8	10	12	14	16	18	20
3	0	3	6	9	12	15	18	21	24	27	30
4	0	4	8	12	16	20	24	28	32	36	40
5	0	5	10	15	20	25	30	35	40	45	50
6	0	6	12	18	24	30	36	42	48	54	60
7	0	7	14	21	28	35	42	49	56	63	70
8	0	8	16	24	32	40	48	56	64	72	80
9	0	9	18	27	36	45	54	63	72	81	90
10	0	10	20	30	40	50	60	70	80	90	100

×	0	1	2	3	4	5	6	7	8	9	10
0	0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9	10
2	0	2	4	6	8	10	12	14	16	18	20
3	0	3	6	9	12	15	18	21	24	27	30
4	0	4	8	12	16	20	24	28	32	36	40
5	0	5	10	15	20	25	30	35	40	45	50
6	0	6	12	18	24	30	36	42	48	54	60
7	0	7	14	21	28	35	42	49	56	63	70
8	0	8	16	24	32	40	48	56	64	72	80
9	0	9	18	27	36	45	54	63	72	81	90
10	0	10	20	30	40	50	60	70	80	90	100

Name _____   Date _____

Multiplication at the Zoo Check-In: Questions 14–15 Feedback Box	Expec- tation	Check In	Comments
Solve multiplication problems using mental math strategies.	E5		
Solve multiplication problems using paper-and-pencil methods.	E8		
Choose appropriately between mental math and paper-and-pencil methods to multiply whole numbers.	E10		

	Yes . . .	Yes, but . . .	No, but . . .	No. . .
MPE1. Know the problem. I read the problem carefully. I know the questions to answer and what information is important. [Q# 15]				
MPE5. Show my work. I show or tell how I arrived at my answer so someone else can understand my thinking. [Q# 15]				