LETTER HOME

Division and Data

Dear Family Member:

In this unit your child will learn to divide large numbers by one- and two-digit divisors. Students estimate quotients (the answer to a division problem) and use their knowledge of multiplication facts and multiples of ten to find answers to problems such as 548 ÷ 8.

Students explore division using equal sharing and area models. Both ways of looking at division expand their understanding of the operation. When students have a solid understanding of division, they make fewer mistakes, retain their learning longer, and can think more flexibly to solve problems.

> 8 × 60 = 480 and 8 × 70 = 560. Since 548 is between 480 and 560, I know my answer is between 60 and 70, but it is probably closer to 70 since 548 is closer to 560 than 480.
>
> Jessie

The paper-and-pencil method taught by *Math Trailblazers*™ for long division is called the partial quotients division method. This method builds on conceptual understanding of division. It is often easier for students to learn and is more flexible than the traditional method. Both methods involve making estimates, but the partial quotient method allows underestimates so it does not involve as much erasing and recalculating as the traditional method sometimes does. This increases accuracy. This method is easily extended to solve problems with larger divisors.

The partial quotients division method is often easier for students to learn.

Students will also apply their understanding of area to find the area of shapes with curved sides in the *Spreading Out* investigation. They will use ratios, tables, graphs, and averages to solve problems.

As we work together in class, here are some ways you can help your child at home:

- **Play the Division Digits Game.** In this game, students draw numbers for a set of Digit Cards 0–9 and place them on a division playing board. The winner makes the largest quotient. Directions are in the *Student Activity Book*.

- **Compare Strategies.** Encourage your child to show you how he or she is learning division. Show him or her your method for division. Compare them.

- **Play the Quotient Quest Game.** In this game, students practice estimating quotients. To play, they choose numbers from a double set of Digit Cards 0–9. They place their cards on a playing board to make a division problem that will have a quotient between two target numbers. The directions are in the *Student Activity Book*.
- **Learn the Partial Quotients Method.** This method is often called the Forging Method because you can underestimate and still solve the problem efficiently. The partial quotient method is described here.

Partial Quotients Method

As an example, let's divide 95 by 3. Think of dividing 95 objects, such as marbles, into groups of 3. How many groups will there be? (Or, think of putting the objects into 3 groups. How many will be in each group?) Let's estimate 20. Since 3 × 20 = 60, write

$$\begin{array}{r} 3 \overline{)\ 95} \\ -\ 60 \\ \hline 35 \end{array} \quad \bigg| \ 20$$

Now divide the remaining 35 marbles by 3. Let's estimate that 35 ÷ 3 is about 10. Since 3 × 10 = 30, write

$$\begin{array}{r} 3 \overline{)\ 95} \\ -\ 60 \\ \hline 35 \\ -\ 30 \\ \hline 5 \end{array} \quad \begin{array}{l} 20 \\ \\ 10 \end{array}$$

Since 3 "goes into" 5 one time, write

$$\begin{array}{r} 3 \overline{)\ 95} \\ -\ 60 \\ \hline 35 \\ -\ 30 \\ \hline 5 \\ -\ 3 \\ \hline 2 \end{array} \quad \begin{array}{l} 20 \\ \\ 10 \\ \\ +1 \\ \\ \\ \end{array}$$

Since 2 divided by 3 does not give us a whole number, there are 2 marbles left over. This is the remainder.

Add up the number of 3s we took away: 20 + 10 + 1 = 31. So, 95 divided by 3 is 31 with remainder 2. We write this on top of the problem, as in the traditional division method.

$$\begin{array}{r} 31R2 \\ 3 \overline{)\ 95} \\ -\ 60 \\ \hline 35 \\ -\ 30 \\ \hline 5 \\ -\ 3 \\ \hline 2 \end{array} \quad \begin{array}{l} 20 \\ \\ 10 \\ \\ +1 \\ \\ 31 \end{array}$$

As students become familiar with the partial quotients method, they make better estimates to keep the number of steps at a minimum. Below is another way to do this problem using this method. Note that this time, making the highest possible estimates (without overestimating) results in the same number of steps as the traditional method. If the highest estimate is made each time, the two methods are essentially the same.

$$\begin{array}{r} 31R2 \\ 3 \overline{)\ 95} \\ -\ 90 \\ \hline 5 \\ -\ 3 \\ \hline 2 \end{array} \quad \begin{array}{l} 30 \\ \\ 1 \\ \\ 31 \end{array}$$

The partial quotients method allows students to underestimate as they develop their estimation skills. However, when students overestimate, they have to erase, just as with the traditional method.

Math Facts and Mental Math

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

Multiplication Facts. Students review the multiplication facts for the last six facts (4 × 6, 4 × 7, 4 × 8, 6 × 7, 6 × 8, 7 × 8) 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 and focus only on those facts that your child needs to learn. 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. If there are many multiplication facts that your child still needs to learn, divide them into smaller groups of facts. Choose groups of facts that lend themselves to the use of the same strategy and focus on one group at a time.

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. You can also help your child extend and deepen understanding by asking him or her to choose a multiplication fact that was difficult to learn and describe strategies used for learning the fact.

Division Facts. Students review the division facts for the last six facts (4×6, 4×7, 4×8, 6×7, 6×8, 7×8) to maintain and increase fluency and to learn and apply multiplication and division 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 into three stacks: Facts I Know Quickly, Facts I Can Figure Out, and Facts I Need to Learn.

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

<u>Turn-around facts.</u> To solve $42 \div 6$: I know $6 \times 7 = 42$, so $42 \div 6 = 7$.

<u>Reasoning from known facts.</u> To solve $28 \div 4$: I know $28 \div 2 = 14$ so $28 \div 4$ is half of 14 or 7.

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 divide 10s and 100s:

$$320 \div 40 = 8; \ 4200 \div 700 = 6$$

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

Sincerely,

Unit 7: Home Practice

Part 1 Triangle Flash Cards: Last Six Facts

Study for the quiz on the multiplication and division facts for the last six facts. Take home your Triangle Flash Cards: Last Six Facts (4 × 6, 4 × 7, 4 × 8, 6 × 7, 6 × 8, 7 × 8) and your list of facts you need to study.

Ask a family member to choose one flash card at a time. To quiz you on a multiplication fact, he or she should cover the corner containing the highest number. (The highest number on each card is slightly shaded.) This number will be the answer to the multiplication fact. Multiply the two uncovered numbers.

To quiz you on a division fact, your family member can cover one of the unshaded numbers. Then use the two uncovered numbers to solve a division fact.

Ask your family member to mix up the multiplication and division facts. He or she should sometimes cover the highest number and sometimes cover one of the smaller numbers.

Your teacher will tell you when the quiz on the last six facts will be.

Part 2 Review Problems

Solve the following problems. Choose an appropriate method for each: mental math, paper and pencil, or a calculator. Explain your solutions. Use a separate sheet of paper to show your work.

1. Write the number 3×10^5 in standard form.

2. What is the value of the 5 in 345,687?

3. Estimate the answers to the following problems.

    A. $346,000 \times 5$ **B.** $251,000 \times 7$ **C.** $51,000 \times 5$

4. Jerome's mother is planning to retile the bathroom floor. The room measures 8 feet by 8 feet. She is planning to use square tiles that measure 6 inches by 6 inches.

    A. What is the area of the bathroom floor?

    B. How many tiles will she need? (Hint: Make a drawing.)

Part 3 Area Problems

Choose an appropriate strategy to solve each problem. Label your answers with appropriate units.

1. Jessie's parents are buying a rug for Jessie's bedroom. Jessie measured the length and width of her bedroom floor. It is 10 feet by 10 feet. If they want to cover the entire floor, what is the area of the rug they should purchase? What shape should the rug be? How did you decide?

2. Arthur made a cake in a rectangular pan that is 13 inches × 9 inches. He put red icing on half the cake and white icing on the other half, so he had two triangles. What is the area of the red triangle? Explain your thinking.

3. Jerome's grandmother has an 8-inch by 10-inch wedding picture of herself and Jerome's grandfather. Her wedding picture sits next to Jerome's 3-inch by 5-inch school picture. About how many times greater in area is the wedding picture than the school picture. Show or tell how you decided.

4. **A.** Shannon has a dog run in her back yard for her dog. The dog run is a rectangle that is 12 feet by 8 feet. What is the area of her dog run?

   B. Nila wants to put the same size dog run in her backyard. Her yard is in the shape of a square with an area of 100 square feet. Will an 8-feet by 12-feet dog run fit in her yard? Explain why or why not.

Part 4 · Word Problems

Choose an appropriate strategy to solve each problem. Use the *Multidigit Multiplication Strategies Menu* and the *Division Strategies Menu* in the *Student Guide* Reference section. Use a separate sheet of paper to show your work for each problem.

1. Mighty Tree Tree Farm is having a sale. Seedlings (very young trees) are grouped in bunches of 15 for $25.00, tax included. Coleman School decided to buy 6 bunches to plant on the school grounds.

   A. How many seedlings did Coleman School buy?

   B. How much money did Coleman School spend?

2. Mr. Moreno's class volunteered to plant the seedlings on the school grounds. There are 22 students present in Mr. Moreno's class on planting day. If each student plants about the same number of seedlings, how many seedlings will each student plant?

3. Mighty Tree Tree Farm also sells older trees. They charge $8.00 per foot in height for older trees, tax included. Jacob's family chooses to buy two trees that are the same height. The total cost is $128. How tall are the two trees?

4. Once a year, Mighty Tree Tree Farm has a Truckload Bargain Day. On this day, customers pay $250 and get a truckload of trees. One truckload has 9 trees. Estimate the cost of one tree in this truckload.

5. This year, Mighty Tree Tree Farm sold 32 truckloads at $250 each. How much money did Mighty Tree Tree Farm take in on this day?

6. Last year, Mighty Tree Tree Farm sold 450 trees on Truckload Bargain Day. If each truckload contains 9 trees, how many truckloads did they sell?

Part 5 Comparing Prices

While stocking shelves at her father's store, Carla compares the prices of two different brands of pencils. She showed the information in the following graphs. Use the graphs to answer the questions below. Use a separate sheet of paper for your explanations.

Sharpy Pencils

Cost (cents) vs. Number of Pencils

Penny's Pencils

Cost (cents) vs. Number of Pencils
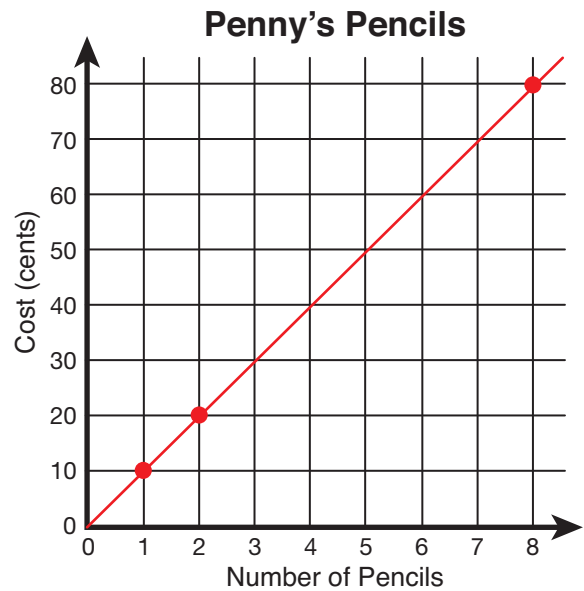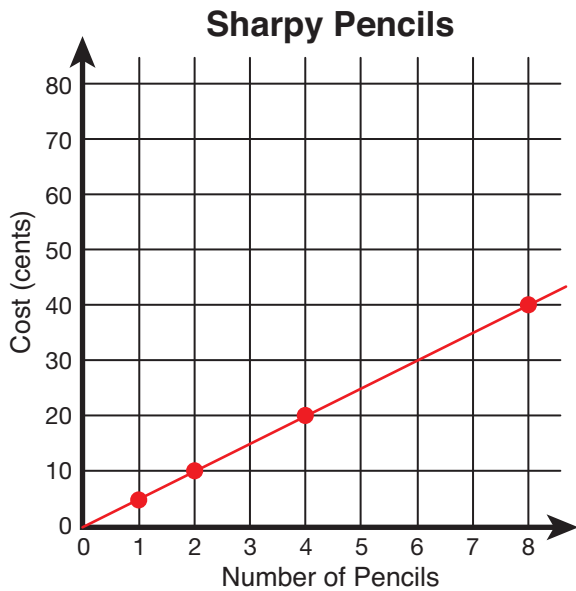
1. **A.** Write a ratio of cost to the number of pencils for Sharpy Pencils.

   B. Write two ratios equal to the ratio in Question 1A.

2. **A.** Write a ratio of cost to number of pencils for Penny's Pencils.

   B. Write two ratios equal to the ratio in Question 2A.

3. Which pencils are more expensive? How do you know?

4. Which line is steeper? Explain why.

Show as many ways as you can to solve the following problems.

5. What is the cost of four Sharpy Pencils?

6. How many of Penny's Pencils can you buy with 60¢?

7. How many Sharpy Pencils can you buy with 60¢?

Part 6 Multiplication and Division Practice

Choose an appropriate strategy to solve each problem. Use the *Multidigit Multiplication Strategies Menu* and the *Division Strategies Menu* in the *Student Guide* Reference section.

A. $49 \times 9 =$ **B.** $135 \div 6 =$ **C.** $18 \times 45 =$ **D.** $1064 \div 4 =$

E. $22 \times 76 =$ **F.** $2834 \div 3 =$ **G.** $8505 \div 7 =$ **H.** $1063 \times 3 =$

I. $1894 \times 4 =$ **J.** $7720 \div 8 =$ **K.** $2460 \times 6 =$ **L.** $8070 \div 5 =$

M. Explain a mental math strategy for solving Question A.

N. Explain how you estimated to see if your answer to Question J is reasonable.

Triangle Flash Cards:
Last Six Facts

- 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.
- To quiz you on a division fact, your partner covers the number in the square or the number in the circle. Solve a division fact with 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.
- Practice the last two piles again. Place these cards in an envelope labeled "Facts to Practice."
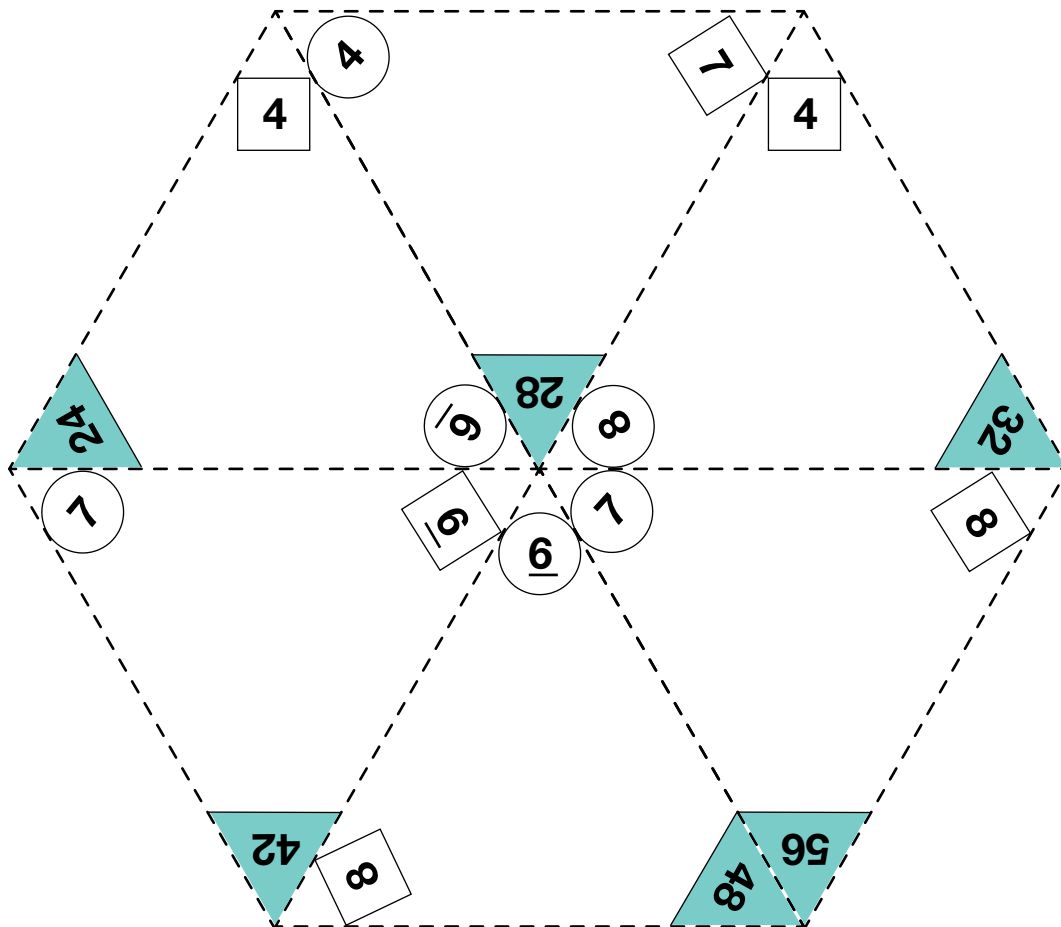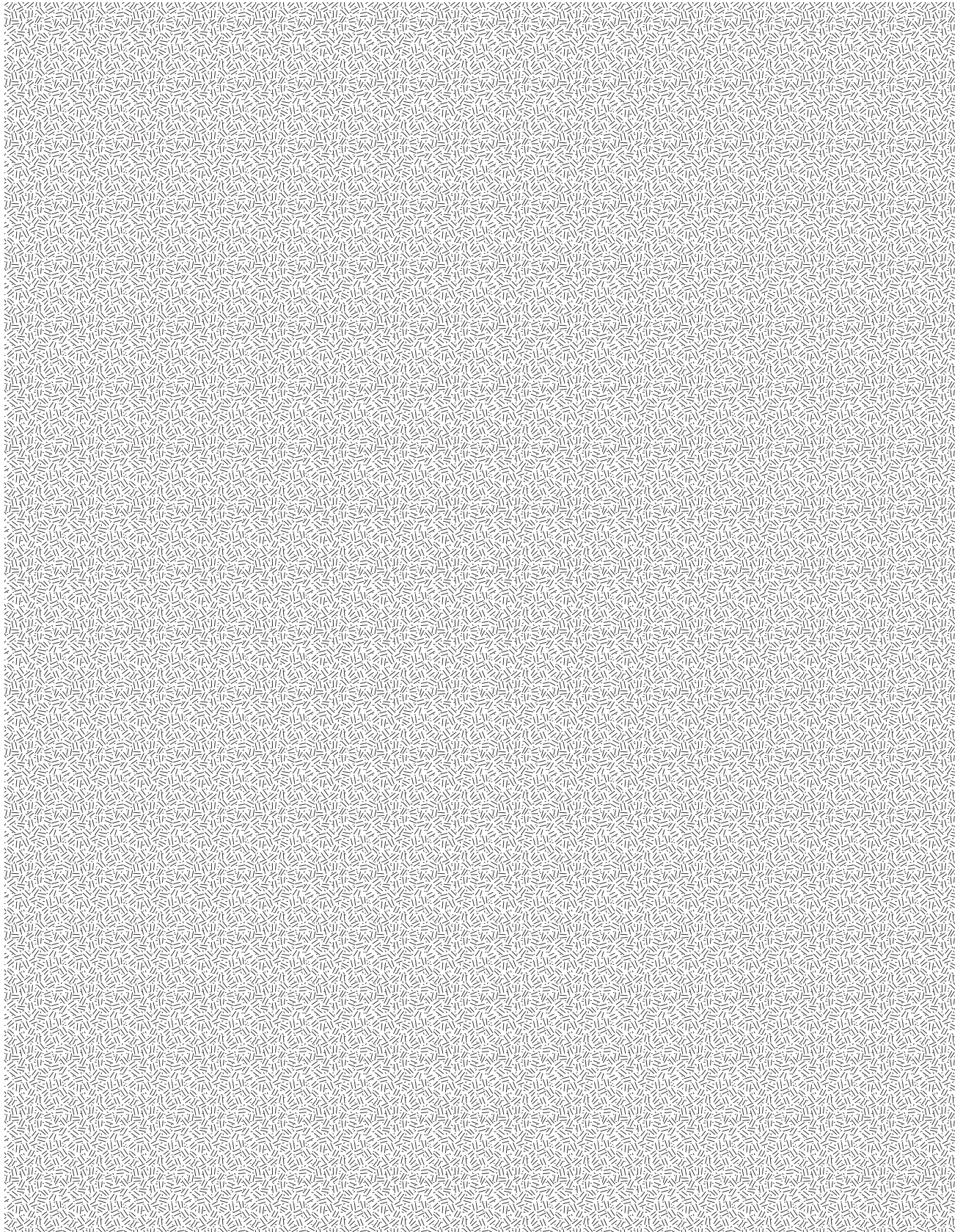
Multiplication Facts I Know

- **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

Division Facts I Know

- **Circle the facts you know well.**
- **Keep this table and use it to help you divide.**
- **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

Divisor

Digit Cards 0–9

5	0
6	1
7	2
8	3
9	4

Paper-and-Pencil Division Quiz

Answer the questions using any method you choose, except calculators. Show your work and how you know your answer is reasonable. Use the *Multiplication and Division Facts* page in the *Student Guide* Reference section.

1. A flower mart has 5040 flowers in 7 refrigerator cases. If each case contains the same number of flowers, about how many flowers are in each case?

2. A. The fifth grade class is preparing math station tables for Family Math Night in the school gym. Each math station table will seat 15 people. How many math stations do the fifth graders need to prepare for 186 people?

B. Show or tell how you know your answer is reasonable.

3. Solve the following problems using the partial quotients method.

    A. $15\overline{)3109}$ **B.** $3\overline{)1972}$

4. Use multiplication to show how you know your answer to Question 3A is reasonable.

5. Write a multiplication sentence for your answer to Question 3A. Include the divisor, the quotient, and the remainder.

6. A. Frank solved 7209 divided by 11 using the column method, which he called the "fair shares" method. Show how his solution would look if he had used the partial quotients method. Use the same estimates that Frank used.

Frank's work

5	5	5	5	5	5	5	5	5	5	5
50	50	50	50	50	50	50	50	50	50	50
300	300	300	300	300	300	300	300	300	300	300
200	200	200	200	200	200	200	200	200	200	200
100	100	100	100	100	100	100	100	100	100	100
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**

$$100 + 200 + 300 + 50 + 5 = 655 \text{ R4}$$

Partial Quotients Method

Into Columns	Left to Divide
$11 \times 100 = 1100$	$7209 - 1100 = 6109$
$11 \times 200 = 2200$	$6109 - 2200 = 3909$
$11 \times 300 = 3300$	$3909 - 3300 = 609$
$11 \times 50 = 550$	$609 - 550 = 449$
$11 \times 5 = 55$	$59 - 55 = 4$

```
        [    ]
11) 7209          100
    1100
    6109          [    ]
  − 2200
 [    ]           [    ]
  − 3300
 [    ]            50
  −  550
     59           [    ]
 [    ]
  _____
      4           [    ]
```

B. Show how Frank could have solved the problem using fewer steps. Hint: Think about the division facts.

Name ———————————————————————— Date ————————————

Paper-and-Pencil Division Quiz **Feedback Box**	**Expec-tation**	**Check In**	**Comments**
Divide multidigit numbers by one- and two-digit divisors using paper and pencil. [Q# 1–6] • Check work using multiplication. • Check for reasonableness using mental math or estimation. [Q# 4]	E7		
Interpret remainders from division of multidigit numbers. [Q# 2]	E3		
Divide numbers that are multiples of ten. [Q# 1]	E6		
Show connections between models and strategies for multidigit division. [Q# 6]	E2		

	Yes . . .	**Yes, but . . .**	**No, but . . .**	**No. . .**
MPE3. Check for reasonableness. I look back at my solution to see if my answer makes sense. If it does not, I try again. [Q# 2]				
MPE4. Check my calculations. If I make mistakes, I correct them. [Q# 2]				
MPE5. Show my work. I show or tell how I arrived at my answer so someone else can understand my thinking. [Q# 2]				

Division Digits Game

The object of the game is to get the smallest or largest correct answer to a division problem. Any number of people can play.

Materials
- one set of Digit Cards 0–9
- paper and pencil

Directions

1. One person is the leader and the others are players. The leader decides whether the smallest or largest quotient will win and draws one playing board so that all of the players can see it. The playing board is a set of boxes arranged like a division problem. The leader draws one playing board for each game. Here are some examples of playing boards:
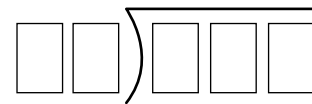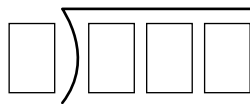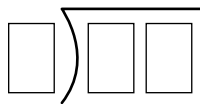
2. Each player draws the playing board on his or her paper.

3. The leader shuffles the cards, places them face down, picks the top card, and reads the digit to all the players.

4. Each player writes that digit in one of the boxes on his or her playing board. Each player must decide where to place the digit in order to get the smallest or largest answer. Once a player has written down a digit, it may not be moved. No digit will be repeated.

5. The leader places the first card in a discard pile, then reads the next card. Players place this digit in another unfilled box. Play continues until all the boxes are filled.

6. When all the boxes are filled, players divide to find their answers. Since the player with the smallest or largest correct answer wins the game, players should check their answers using a second strategy such as multiplication or estimate to see if their answers are reasonable.
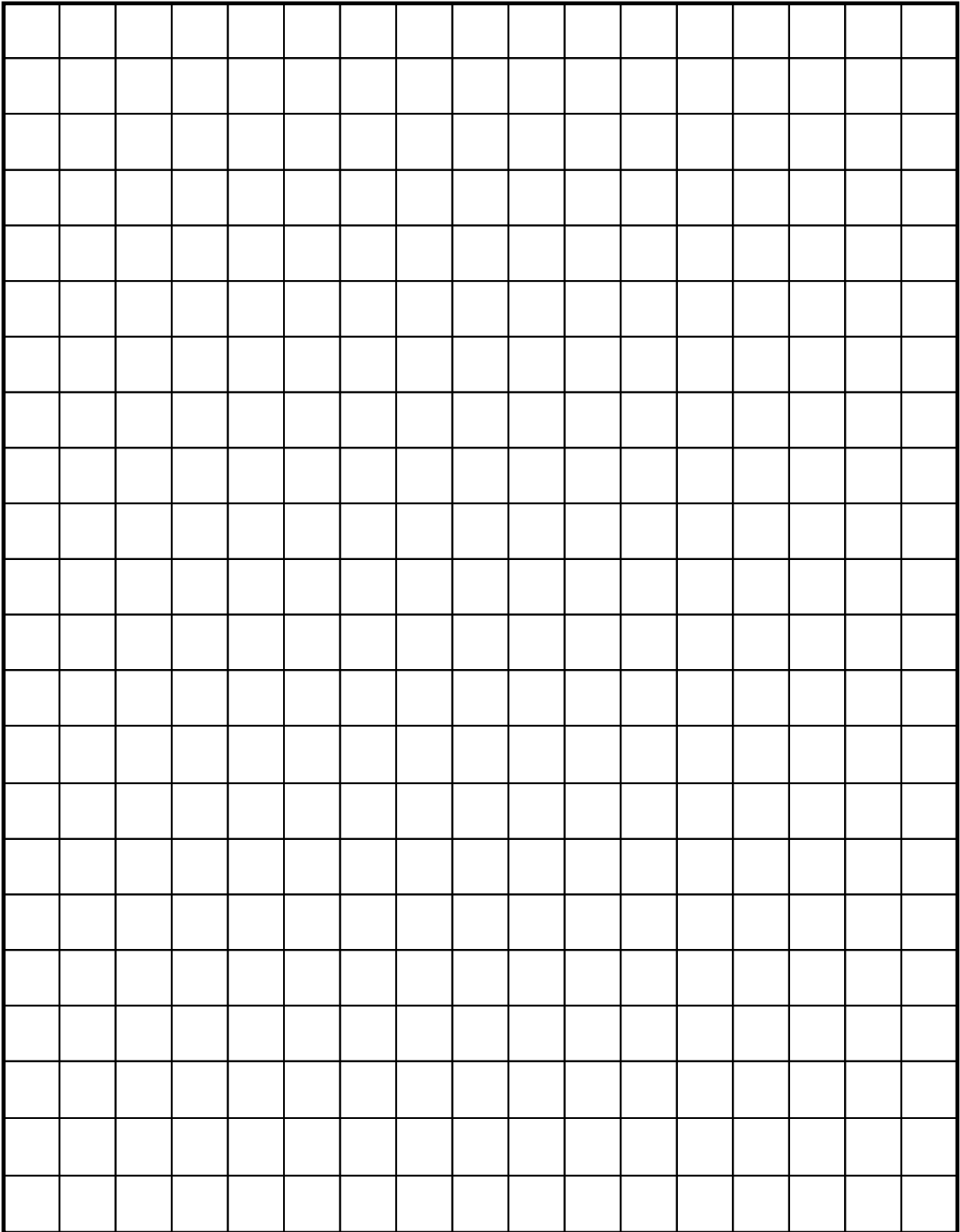
Name _____ Date _____

Workshop: Division Strategies
Check-In: Questions 11–12
Feedback Box

	Expec-tation	Check In	Comments
Demonstrate understanding of division using models. [Q# 11B, 12]	E1		
Show connections between models and strategies. [Q# 11C]	E2		
Interpret remainders. [Q#11E]	E3		
Estimate quotients. [Q# 11A]	E5		
Divide numbers that are multiples of ten. [Q# 12D]	E6		
Divide multidigit numbers by one- and two-digit divisors using paper and pencil. [Q# 11C, 12]	E7		

Name ———————————————————————————————— Date ——————————

	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# 11]				
MPE2. Find a strategy. I choose good tools and an efficient strategy for solving the problem. [Q# 11A, 12]				
MPE3. Check for reasonableness I look back at my solution to see if my answer makes sense. If it does not, I try again. [Q# 11A–C, 12]				
MPE5. Show my work. I show or tell how I arrived at my answer so someone else can understand my thinking. [Q# 11A, 12]				
MPE6. Use labels. I use labels to show what numbers mean. [Q# 11A–D]				

Name _____ Date _____

_____

Master

Name _____ Date _____

How Close Is Close Enough
Check-In: Questions 8–9
Feedback Box

	Expec-tation	Check In	Comments
Find the median of a data set.	E13		

	Yes . . .	Yes, but . . .	No, but . . .	No. . .
MPE5. Show my work. I show or tell how I arrived at my answer so someone else can understand my thinking.				

Name _____ Date _____

Mean or Median
Check-In: Questions 21–22
Feedback Box

	Expec-tation	Check In	Comments
Follow the order of operations (e.g., using parentheses).	E4		
Find the mean and median of a data set.	E13		

	Yes . . .	Yes, but . . .	No, but . . .	No. . .
MPE5. Show my work. I show or tell how I arrived at my answer so someone else can understand my thinking. [Q# 22C]				

Bar Graph or Point Graph

Searching the Forest
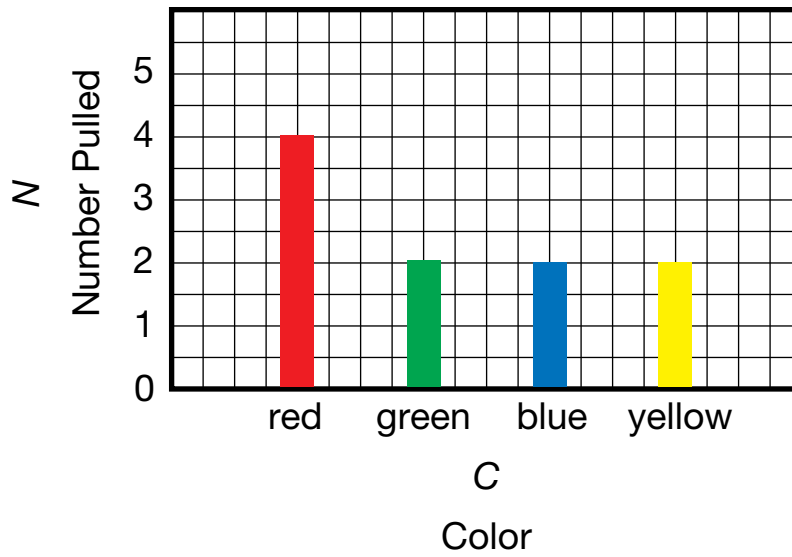
Distance vs. Time
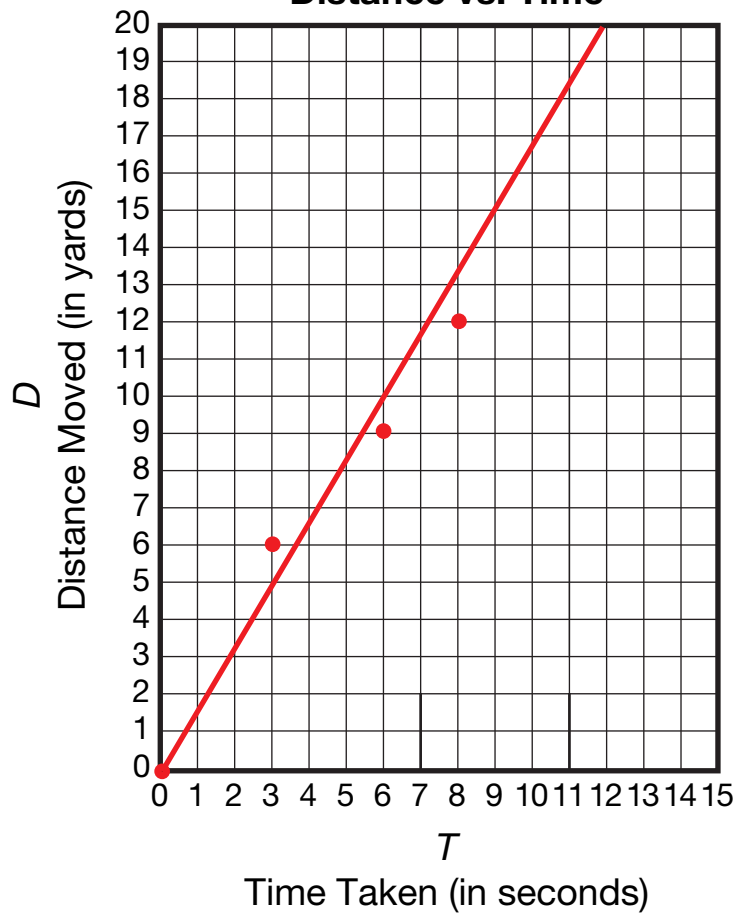
Spot Check

Bottom
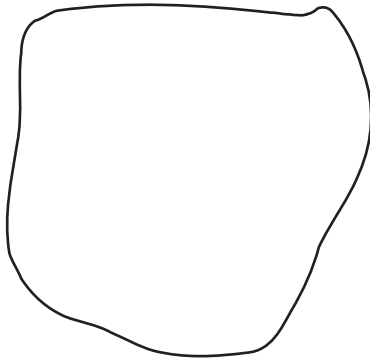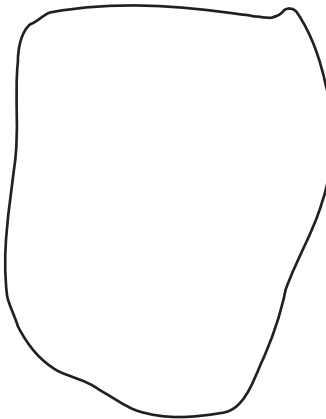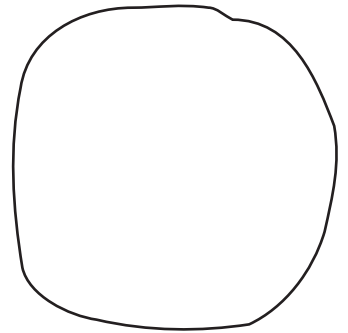
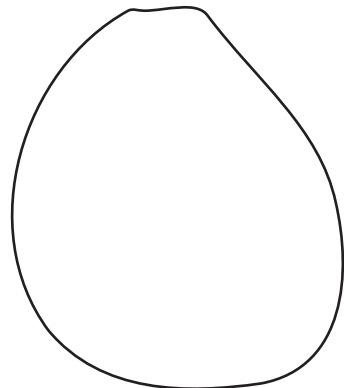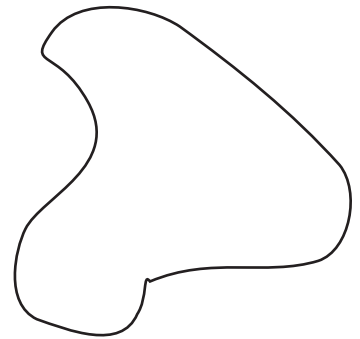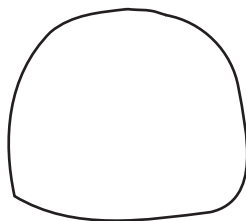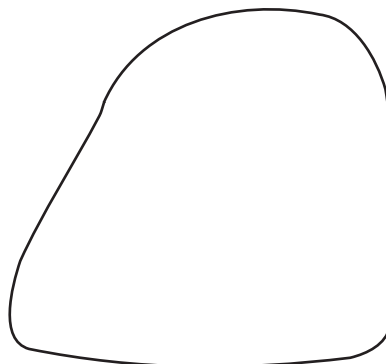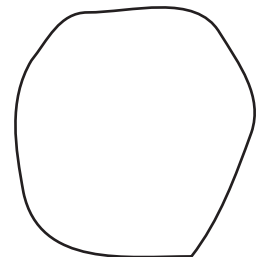4 drops   4 drops   4 drops

Middle

2 drops   2 drops   2 drops

Top

1 drop   1 drop   1 drop

How Many Drops

Use one sheet of the paper towels and the data you collected and graphed in the Spreading Out lab to solve the problem below.

Estimate the number of drops of water one sheet of your paper towel will absorb. Explain how you solved this problem.

Name ————————————————————————————— Date —————————

Reviewed by ————————————————————————

How Many Drops Feedback Box Student to Student	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.				
MPE2. Find a strategy. I choose good tools and an efficient strategy for solving the problem.				
MPE5. Show my work. I show or tell how I arrived at my answer so someone else can understand my thinking.				
MPE6. Use labels. I use labels to show what numbers mean.				

Name ———————————————————————— Date ————————————————

How Many Drops
Feedback Box
Teacher to Student

	Expec-tation	Check In	Comments
Use ratios to solve problem.	E8		
Make predictions and generalizations using date tables, graphs, and averages.	E14		

	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.				
MPE2. Find a strategy. I choose good tools and an efficient strategy for solving the problem.				
MPE5. Show my work. I show or tell how I arrived at my answer so someone else can understand my thinking.				
MPE6. Use labels. I use labels to show what numbers mean.				

George and Irma's Work

I measured the length of the paper towel and the width of the paper towel and multiplied 29 X 29 because it was a square. The area of one sheet is about 841 sq cm. It would take about 168 drops to cover the sheet.
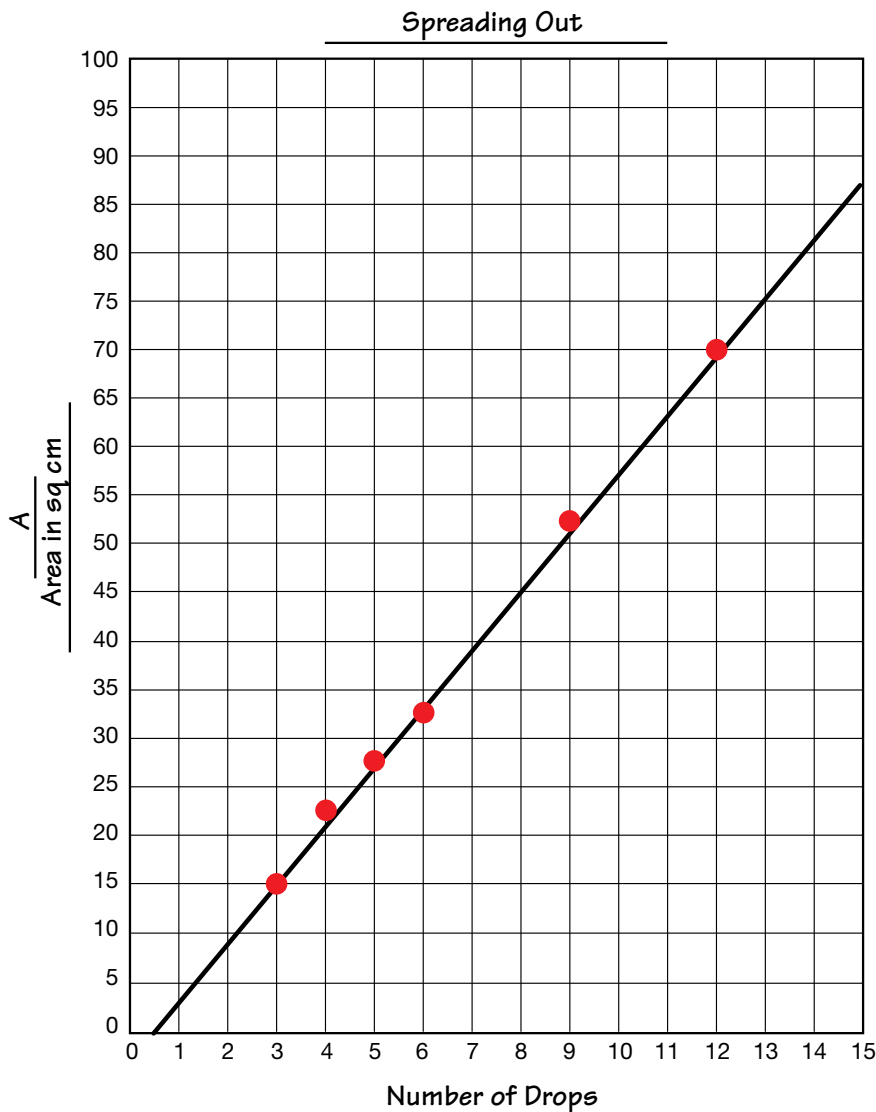
$$\frac{15}{3} = \frac{841}{168.2}$$

spreading out

Area in sq. cm.

number of drops
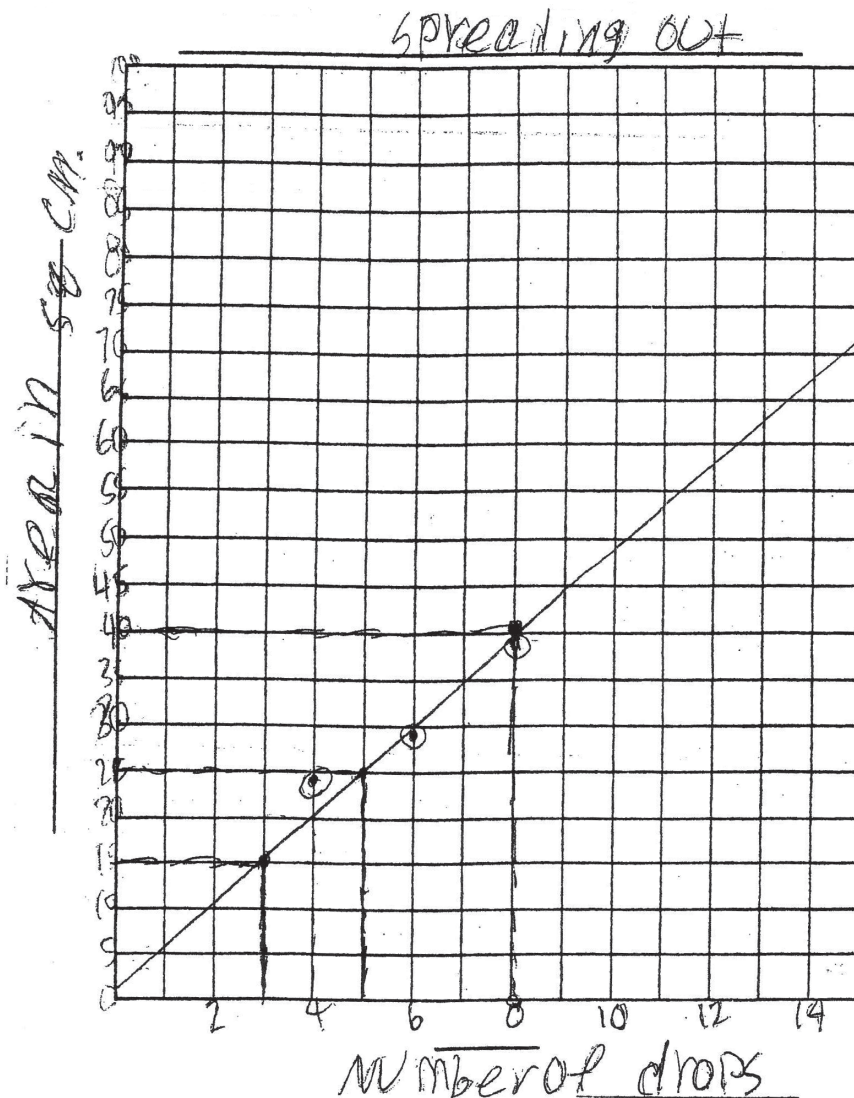
Debbie's Work

The area of the paper towel is 784 sq cm.
3 drops = 15 sq cm. It will take about 412
drops to cover the paper towel.

$$\frac{15}{3} = \frac{784}{412}$$

$$15\overline{)784} \quad \begin{array}{c} 412 \ R4 \end{array}$$

Spreading Out

A
Area in sq cm

Number of Drops

Math Practices Notes

Solving a problem:

1. Know the problem. I read the problem carefully. I know the questions to answer and what information is important.	**2. Find a strategy.** I choose good tools and an efficient strategy for solving the problem.
3. Check for reasonableness. I look back at my solution to see if my answer makes sense. If it does not, I try again.	**4. Check my calculations.** If I make mistakes, I correct them.

Showing or telling how I solve a problem:

5. Show my work. I show or tell how I arrived at my answer so someone else can understand my thinking.	**6. Use labels.** I use labels to show what numbers mean.

Ana's Work

STEP 1: first we found a grassy spot to start at.

STEP 2: then we used a toothpick to pull up the blades of grass and counted them with it.

STEP 3: then we measured the section grass. written marked off. (we used yards.)

STEP 4: then we wrote down the data we collected and did all of our math. we used multiplication and additions (11 yrd and 16" and 10 yrds and 21".)

STEP 5 IN OUR MATH. first we did, 10 times 36 because there are 36" in a yrd. then we added 21" to that because there was still 21" left over, and that was 381. then we multiplyed 11 times 36 because there are 36" in a yrd. and then added 16" because there was 16 inches left and that was 412. then we multiplyed 412 and 381 together and got 156,972. then we multiplyed 156,972 by 31 because we got 31 in a sq. inch and got 4,866,132 blades of grass in the section my teacher marked off.

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 36 inches          396 inches
x 11 yds          + 16 inches
  36              412 inches
+360
396 inches
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 412 inches         1 2 2 2
x381 inches       156,972 inches
 1412           x     31 blades of grass
32960            156972
+123600          4709160
156,972 inches  4,866,132 blades of grass
```

1. Answer: 4,866,132 blades of grass

Tim's Work

We all make an estimation ⁽w/ index cards⁾ on how many holes their are in square inches ⁽in the screen⁾ then we add the esitimates and divide by 5 to get the average. Then we figure out how many square inches are in the screen. We multiply the average times how many square inches in the screen and get our answer.

Estimates
18 - 324
17 - 289
16 - 256
14 - 196
15 - 225
÷ 1290
      5

Average = 258   sq. in
        × 860   43 inches × 20 inches = 860
      221,880

The holes in a Screen

1. We cut a square inch out of an index card.

2. Then we put it on the screen and counted the holes in one row. then multiplyed the number twice.

3. We added our estimations together and divided the number by 5 because there are 5 estimations. That is our average 258

4. We measured two of the sides on the screen and multiplyd them together to find out how many square inches there are in the screen

5. Then we multipiyed the square inches by the average we got the answer.

6. the answer is 221,880

That is our estimation we got for how many holes there are in the screen.

Name _____   Date _____

Reviewers _____

Grass Act Feedback Box

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MPE3. Check for reasonableness. I look back at my solution to see if my answer makes sense. If it does not, I try again.				
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