

Division; Angles

Division

In Unit 6 your child will divide multidigit numbers using extended division facts, multiples, area models, and partial quotients. Working with more than one division strategy helps students build conceptual knowledge and means that they have more than just one method to choose from. Throughout the unit students solve multistep division number stories involving dividends with multiple digits, learn the meaning of the remainders, and apply their division skills in real-life contexts.

The unit begins with extended division facts. Knowing that $24 \div 4 = 6$ enables students to see that $240 \div 4 = 60$; $240 \div 40 = 6$; $2,400 \div 4 = 600$; and so forth. Students play *Divide and Conquer*, where they practice dividing with extended facts. The confidence they build by working with extended division facts will help them to divide larger numbers with ease.

Students also learn the partial-quotients division method, in which the dividend is divided in a series of steps. The first example below illustrates a model of the partial-quotients method for $1,325 \div 9$. When students partition, or divide, the 1,325 into parts ($900 + 360 + 63 + 2$), it helps them develop their understanding of the algorithm. The second example uses the partial-quotients method. The quotients for each step are added together to give the final answer.

<div style="text-align: center; margin-bottom: 5px;">9</div> <div style="border: 1px solid black; width: 150px; height: 150px; display: flex; align-items: center; justify-content: center; margin: 0 auto;"> 1,325 </div>	\div	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 5px;">$100 * 9 = 900$</td> <td style="padding: 5px; text-align: right;">100</td> </tr> <tr> <td style="border-top: 1px solid black; padding: 5px;">$40 * 9 = 360$</td> <td style="border-top: 1px solid black; padding: 5px; text-align: right;">40</td> </tr> <tr> <td style="border-top: 1px solid black; padding: 5px;">$7 * 9 = 63$</td> <td style="border-top: 1px solid black; padding: 5px; text-align: right;">7</td> </tr> <tr> <td style="border-top: 1px solid black; padding: 5px;"></td> <td style="border-top: 1px solid black; padding: 5px; text-align: right;">147</td> </tr> </table>	$100 * 9 = 900$	100	$40 * 9 = 360$	40	$7 * 9 = 63$	7		147	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 5px;">1325</td> <td style="padding: 5px; text-align: right;">100</td> </tr> <tr> <td style="padding: 5px;">$- 900$</td> <td style="padding: 5px;"></td> </tr> <tr> <td style="padding: 5px;">425</td> <td style="padding: 5px; text-align: right;">+</td> </tr> <tr> <td style="padding: 5px;">$- 360$</td> <td style="padding: 5px;"></td> </tr> <tr> <td style="padding: 5px;">65</td> <td style="padding: 5px; text-align: right;">+</td> </tr> <tr> <td style="padding: 5px;">$- 63$</td> <td style="padding: 5px;"></td> </tr> <tr> <td style="padding: 5px;">2</td> <td style="padding: 5px; text-align: right;">147</td> </tr> </table>	1325	100	$- 900$		425	+	$- 360$		65	+	$- 63$		2	147	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 5px;">$9 \overline{)1,325}$</td> <td style="padding: 5px;"></td> </tr> <tr> <td style="padding: 5px;">$- 900$</td> <td style="padding: 5px; text-align: right;">100</td> </tr> <tr> <td style="padding: 5px;">425</td> <td style="padding: 5px;"></td> </tr> <tr> <td style="padding: 5px;">$- 360$</td> <td style="padding: 5px; text-align: right;">40</td> </tr> <tr> <td style="padding: 5px;">65</td> <td style="padding: 5px;"></td> </tr> <tr> <td style="padding: 5px;">$- 63$</td> <td style="padding: 5px; text-align: right;">7</td> </tr> <tr> <td style="padding: 5px;">2</td> <td style="padding: 5px; text-align: right;">147</td> </tr> </table>	$9 \overline{)1,325}$		$- 900$	100	425		$- 360$	40	65		$- 63$	7	2	147
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Angles

Students continue their work with angle measurement and learn to use both full-circle and half-circle protractors. They learn that angle measurements can be added, and they use this understanding and properties of angles to find unknown angle measures.

Fraction Operations

Students continue working with addition and subtraction of fractions and mixed numbers. They apply their knowledge of multiplication to explore multiplying a fraction by a whole number.

Please keep this Family Letter for reference as your child works through Unit 6.

Vocabulary

Important terms in Unit 6:

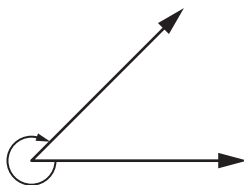
complementary angles Angles with measures that equal 90° when added together.

extended division facts Variations of division facts involving multiples of 10, 100, and so on. For example, $720 \div 8 = 90$ is an extended fact related to $72 \div 8 = 9$.

partial quotients A way to divide in which the dividend is divided in a series of steps. The quotients for each step (called partial quotients) are added to give the final answer.

protractor A tool that measures angles in degrees.

reflex angle An angle measure that is between 180° and 360° .



straight angle An angle that measures 180° .

supplementary angles Angles with measures that equal 180° when added together.

Do-Anytime Activities

To work with your child on concepts taught in this unit, try these activities.

1. Practice extended division facts, such as $1,800 \div 30$.
2. Ask your child to help you divide something for dinner into equal portions for each member of your family. For example, ask, "How can we divide the 5 chicken breasts equally for the 4 of us?"
3. Ask questions like these:
 - What kind of angles do you see on a stop sign?
 - What types of angles are on our tile or wood floors, or on the walls?
 - What types of angles are in a rectangular sign?
 - What types of angles do you see in the supports for the bridge?
4. Make up some situations such as those listed directly above, and encourage your child to draw a picture or diagram to show you how to solve it.

Building Skills through Games

In this unit your child will play the following games to increase his or her understanding of division and angles. For detailed instructions on how to play these games, please see the *Student Reference Book*.

Angle Add-Up See *Student Reference Book*, page 248. This game provides practice adding and subtracting angle measures.

Divide and Conquer See *Student Reference Book*, page 254. This game for three players—the Caller, the Brain, and the Calculator—provides practice with extended division facts.

As You Help Your Child with Homework

As your child brings assignments home, it may be helpful to review the instructions together, clarifying them as necessary. The answers listed below will guide you through some of the Home Links in Unit 6.

Home Link 6-1

1. 4; 40
3. a. 5 b. 50 c. 500 d. 5
5. a. 2 b. 20 c. 200 d. 2
7. 2,280 9. 6,335

Home Link 6-2

1. Sample answer: $2 * s = 60$; 30 meters
3. 3; 7; 45; 10 5. 60 7. 60

Home Link 6-3

1. 40, 42, 44, 46, 48, 50;
 $46 / 2 = b$; 23 packages; $46 / 2 = 23$
3. 820 5. 999

Home Link 6-4

1. Sample estimate: $45 / 3 = 15$; $48 \div 3 = p$;
16 pounds
3. Sample answer: $\frac{3}{6}, \frac{4}{8}$
5. Sample answer: $\frac{1}{4}, \frac{3}{12}$

Home Link 6-5

1. Sample answer: 115 is the total number of students. 4 is the number of buses. 28 is the number of students per bus. 3 is the number of students left over after dividing evenly.
2. Sample answer: Because 28 students from each class can be on a bus and there are 3 students left over, 3 buses will have 29 students. Then, because each bus needs a teacher, 3 buses will have 30 passengers on them and 1 bus will have 29 passengers.

Mr. Atkins's class has too many students to fit on one bus. So he can go on the bus with most of his students, and 2 students will have to ride on another bus. His bus will have 30 passengers.

Mrs. Gonzales's class has the fewest students. Because she has 27 students and adding herself makes 28 passengers, her bus will have room for Mr. Atkins's 2 extra students.

Mr. Bates and his students are a perfect fit for a bus. There will be 30 passengers on his bus.

Ms. Smith and her students fit on a bus, with room for one more. However, that spot is not needed.

3. $\frac{7}{8}$ 5. $\frac{2}{5}$

Home Link 6-6

1. 12,000; 7; 16,000, 11 3. 8,000 pounds
5. $\frac{7}{8}$ 7. $\frac{53}{100}$

Home Link 6-7

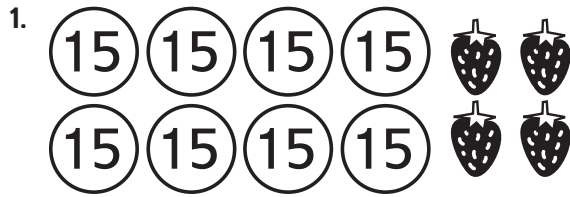
1. Sample answer:

$$\begin{array}{r} 5 \overline{)360} \\ - 350 \\ \hline 10 \\ - 10 \\ \hline 0 \end{array} \quad \left| \begin{array}{l} 70 \\ 2 \\ 72 \end{array} \right.$$

Sample estimate: $350 \div 5 = 70$; $360 \div 5 = p$;
72 prizes; 0 prizes

3. Sample estimate: $160 / 8 = 20$; 23
5. 0.08, 0.34, 0.98, 9.8 7. >

Home Link 6-8



Sample number models are given.

$124 \div 8 = s$; $15 \frac{4}{8}$; or $15 \frac{1}{2}$ strawberries;
 $124 \div 8 \rightarrow 15 \text{ R}4$;

B. Reported it as a fraction;
 Sample answer: You can cut the remaining strawberries into halves.

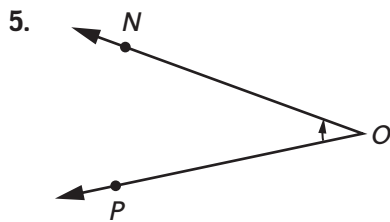
3. $\frac{3}{8}, \frac{3}{6}, \frac{3}{5}, \frac{3}{3}$ 5. $\frac{1}{2}, \frac{2}{3}, \frac{6}{8}, \frac{99}{100}$

Home Link 6-9

1. Right; 90° 3. Acute; 45°
 5. 692 7. 680

Home Link 6-10

1. 60° 3. 84°



7. 65,811 9. 64,091

Home Link 6-11

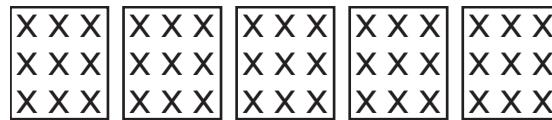
1. Sample answer: $30^\circ + y = 90^\circ$; 60°
 3. Sample answer: $90^\circ - z = 75^\circ$; 15°
 5. Sample answer: $180^\circ - 60^\circ = a$; 120°
 7. $\frac{7}{12}, \frac{7}{10}, \frac{7}{9}, \frac{7}{8}$

Home Link 6-12

1. a. Strawberries; $\frac{3}{12} + \frac{1}{12} = b$; $\frac{4}{12}$ pound
 b. $\frac{3}{12} - \frac{1}{12} = p$; $\frac{2}{12}$ pound
 3. $4 \frac{2}{8} + 1 \frac{3}{8} = p$; $5 \frac{5}{8}$ pounds
 5. 2,400

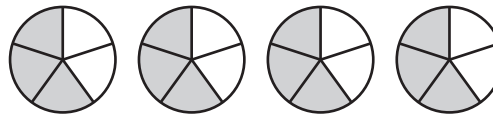
Home Link 6-13

1. 45 children; Sample answer:



5 groups of 9;
 $9 + 9 + 9 + 9 + 9 = 45$; $5 * 9 = 45$

3. $2 \frac{2}{5}$ veggie pizzas; Sample answer:



4 groups of $\frac{3}{5}$;
 $\frac{3}{5} + \frac{3}{5} + \frac{3}{5} + \frac{3}{5} = \frac{12}{5}$; $4 * \frac{3}{5} = \frac{12}{5}$

5. 19