Home Link 5-14

NAME DATE TIME

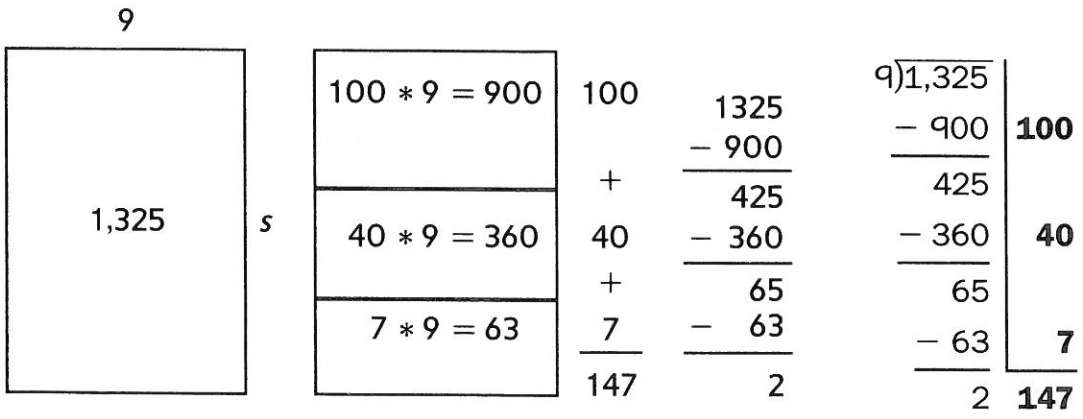
# Division; Angles

## 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.




## 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:

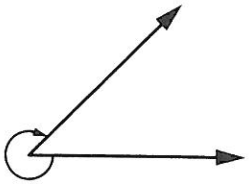
**complementary angles** Angles with measures that equal 90° when added together.

**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:

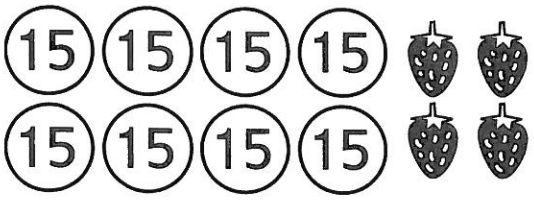
$$\begin{array}{r|l} 5\overline{)360} & \\ -\,350 & 70 \\ \hline 10 & \\ -\,10 & 2 \\ \hline 0 & 72 \end{array}$$

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

**1.** 


Sample number models are given.

$124 / 8 = s$; $15\frac{4}{8}$, or $15\frac{1}{2}$ strawberries;
$124 / 8 \rightarrow 15$ R4;

**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

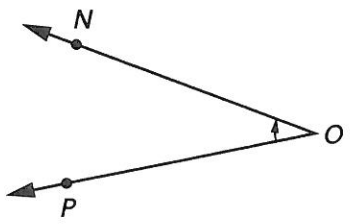
**7.** 680

## Home Link 6-10

**1.** 60°

**3.** 84°

**5.**




**7.** 65,811

**9.** 64,091

## Home Link 6-11

**1.** Sample answer: $30° + y = 90°$; 60°

**3.** Sample answer: $90° - z = 75°$; 15°

**5.** Sample answer: $180° - 60° = a$; 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

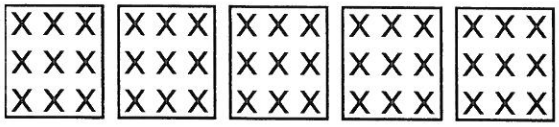
**b.** $\frac{3}{12} - \frac{1}{12} = p$; $\frac{2}{12}$ pound

**3.** $4\frac{2}{8} + 1\frac{3}{8} = p$; $5\frac{5}{8}$ pounds

**5.** 2,400

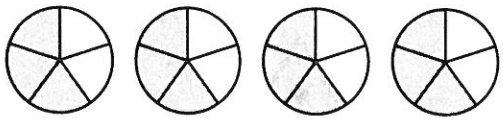
## Home Link 6-13

**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

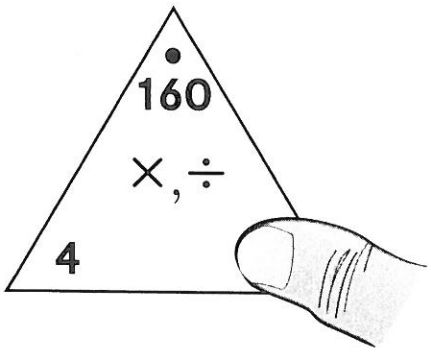
# Solving Extended Division Facts

**Home Link 6-1**

NAME DATE TIME

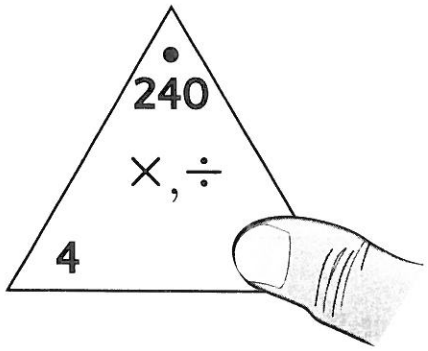
Write a basic division fact and an extended division fact for each Fact Triangle.

SRB 110

① 


Basic fact: 16 ÷ 4 = _____

Extended fact: 160 ÷ 4 = _____

② 


Basic fact: _____

Extended fact: _____

Solve.

③ **a.** 25 ÷ 5 _____

**b.** 250 ÷ 5 = _____

**c.** 2,500 ÷ 5 = _____

**d.** 250 ÷ 50 = _____

④ **a.** 36 ÷ 4 = _____

**b.** 360 ÷ 4 = _____

**c.** 3,600 ÷ 4 = _____

**d.** 360 ÷ 40 = _____

⑤ **a.** 18 ÷ 9 = _____

**b.** 180 ÷ 9 = _____

**c.** 1,800 ÷ 9 = _____

**d.** 180 ÷ 90 = _____

⑥ **a.** 42 / 7 = _____

**b.** 420 / 7 = _____

**c.** 4,200 / 7 = _____

**d.** 420 / 70 = _____

## Practice

⑦ 456 * 5 = _____

⑧ 720 * 8 = _____

⑨ 905 * 7 = _____

# Finding the Unknown Side Length

**Home Link 6-2**

NAME DATE TIME

Solve.

SRB 111-112, 204

① 2 meters | *s* | 60 square meters |

How long is the unknown side *s*?

Equation with unknown: _____

Answer: _____ meters

② 6 meters | *t* | 420 square meters |

What is the length of the unknown side *t*?

Equation with unknown: _____

Answer: _____ meters

③ Fill in the unknown information about some rectangular rooms in a museum.

| Room | Length in Yards | Width in Yards | Area in Square Yards |
|---|---|---|---|
| A | 6 | | 18 |
| B | | 8 | 56 |
| C | 9 | 5 | |
| D | | 9 | 90 |

④ A store is rectangular in shape with an area of 2,700 square feet. It has a length of 90 feet. How wide is it?

Equation with unknown: _____

Answer: _____ feet

## Practice

⑤ 420 ÷ 7 = _____ ⑥ _____ = 3,600 / 6 ⑦ 5,400 ÷ 90 = _____

# Solving Division Number Stories

**Home Link 6-3**

NAME DATE TIME

Fill in the lists of multiples to help you, if needed.

SRB 55, 110, 114

(1) Rosario sells bicycle wheels in packages of 2. If a store orders 46 wheels, how many packages will she send?

20 [2s] = _____ Number model with unknown: _____

21 [2s] = _____ Answer: _____ packages

22 [2s] = _____ Number model with answer: _____

23 [2s] = _____

24 [2s] = _____

25 [2s] = _____

(2) Doug is placing apples in bags for a picnic. He can fit 6 apples in a bag. If he has 92 apples, how many bags will he need?

10 [6s] = _____ Number model with unknown: _____

11 [6s] = _____ Answer: _____ bags

12 [6s] = _____ Number model with answer: _____

13 [6s] = _____

14 [6s] = _____

15 [6s] = _____

16 [6s] = _____

17 [6s] = _____

18 [6s] = _____

## Practice

(3) 82 * 10 = _____ (4) _____ = 25 * 30 (5) 333 * 3 = _____

# Partial-Quotients Division

**Home Link 6-4**

NAME DATE TIME

**Family Note** In this lesson students are introduced to the partial-quotients method, in which a number is divided in a series of steps. The quotients for each step (called partial quotients) are added to give the final answer. For example, to divide 96 by 6, students use extended multiplication facts such as 6 * **10** = 60 to find the partial quotient. Then with the remaining 36, they use an "easy" multiplication fact, 6 * **6**, to finish solving the problem. These two partial quotients are added together, 10 + 6, to find the exact quotient of 16. So 96 ÷ 6 = 16.

Estimate. Write a number model with an unknown to represent the problem. Then solve using partial quotients.

SRB 47, 111-114

① Jordan has 3 Great Dane puppies. At 6 weeks old, their combined weight is 48 pounds. Assuming that they all weigh about the same amount, how much does each puppy weigh?

Estimate: _____

Number model with unknown: _____

Answer: _____ pound(s)

② Four sisters love barrettes. They have a value pack that contains 92 barrettes. How many barrettes can each sister have if they share equally?

Estimate: _____

Number model with unknown _____

Answer: _____ barrette(s)

## Practice

Name two equivalent fractions for each fraction given.

③ $\frac{1}{2}$ ____ ____ ④ $\frac{1}{3}$ ____ ____ ⑤ $\frac{25}{100}$ ____ ____ ⑥ $\frac{6}{8}$ ____ ____

# Assigning People to Buses

**Home Link 6-5**

NAME DATE TIME

Mr. Atkins is organizing the 4th- and 5th-grade field trip to the science museum. He asked his students to help him figure out which students and teachers should go on each bus. The number of students in each class is shown in the table below:

SRB 113-115

| | |
|---|---|
| Mr. Atkins's 4th-grade class | 31 students |
| Ms. Smith's 4th-grade class | 28 students |
| Mr. Bates's 5th-grade class | 29 students |
| Mrs. Gonzales's 5th-grade class | 27 students |

Important information:

- 4 buses have been ordered.
- The maximum number of passengers is 30 per bus.
- Each bus must have 1 teacher.

Cary said he solved the problem this way:

*115 / 4 is 28 with a remainder of 3.*

① What do the numbers in his sentence mean?

② Which students and teachers should go on each bus? Explain why.



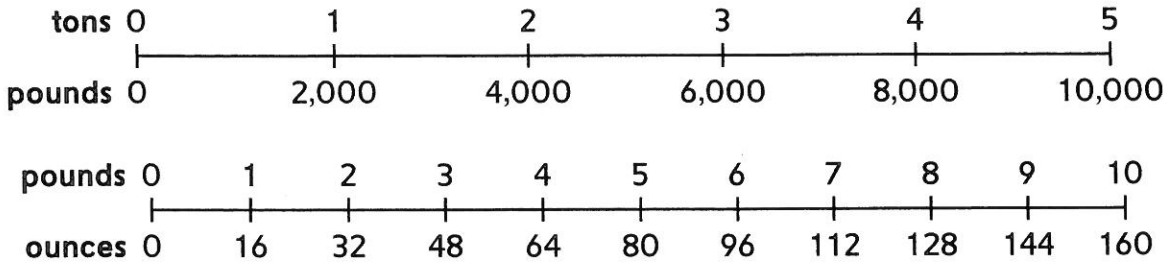
## Practice

③ $\frac{3}{8} + \frac{4}{8} =$ ____ ④ $\frac{5}{6} + \frac{3}{6} =$ ____ ⑤ $\frac{4}{5} - \frac{2}{5} =$ ____ ⑥ $\frac{7}{10} - \frac{3}{10} =$ ____

# Converting Units of Weight

**Home Link 6-6**

NAME DATE TIME




SRB 190-192

Use the measurement scales to help you solve the problems.

① 

| Tons | Pounds |
|---|---|
| 1 | 2,000 |
| 6 | |
| | 14,000 |
| 8 | |
| | 22,000 |

② 

| Pounds | Ounces |
|---|---|
| 1 | 16 |
| 5 | |
| 9 | |
| | 160 |
| 15 | |

③ The army chef is ordering food for the troops. She ordered 2 tons of rice, 1 ton of pasta, and 1 ton of flour. How many pounds of food did she order?

Answer: _____ pound(s)

④ Potatoes come in 8-pound bags. How many ounces do 12 bags weigh?

Answer: _____ ounce(s)

## Practice

⑤ $\frac{4}{8} + \frac{3}{8} =$ ____ ⑥ ____ $= \frac{5}{8} - \frac{3}{8}$ ⑦ ____ $= \frac{5}{10} + \frac{3}{100}$ ⑧ $\frac{60}{100} + \frac{4}{10} =$ ____

# Partial Quotients

**Home Link 6-7**

NAME DATE TIME

Estimate. Write a number model to represent the problem. Solve using partial quotients.

SRB 47, 113-114

① The carnival committee has 360 small prizes to distribute to 5 booths. How many prizes will each booth get?

Estimate: _____

Number model with unknown:

_____

② The mall needs a row of parking spaces. The length of the parking area is 2,711 feet. If each parking space is 9 feet wide, how many spaces will there be?

Estimate: _____

Number model with unknown:

_____

Answer: _____ prizes

How many prizes are left over? ___ prizes

Answer: _____ spaces

How many feet are left over? ___ feet

Solve using partial quotients. Show your work on the back of this page.

③ 161 / 7 Estimate: _____ Answer: _____

④ 576 / 4 Estimate: _____ Answer: _____

## Practice

Put these decimals in order from least to greatest.

⑤ 0.98, 0.34, 9.8, 0.08 _____, _____, _____, _____

⑥ 0.11, 0.01, 0.10, 1.0 _____, _____, _____, _____

Use <, >, or = to compare the decimals.

⑦ 0.65 _____ 0.5

⑧ 37.9 _____ 37.96

# Interpreting Remainders

**Home Link 6-8**

NAME DATE TIME

① Mrs. Patel brought a box of 124 strawberries to the party. She wants to divide the strawberries evenly among 8 people. How many strawberries will each person get?

Number model with unknown:

_____

Answer:

_____ strawberries

Number model with answer:

_____

What did you do about the remainder? Circle the answer.

**A.** Ignored it

**B.** Reported it as a fraction

**C.** Rounded the answer up

Why? _____

_____

_____

② Mr. Chew has a box of 250 pens. He asks Maurice to divide the pens into groups of 8. How many groups can Maurice make?

SRB 47, 113-116

Number model with unknown:

_____

Answer:

_____ groups

Number model with answer:

_____

What did you do about the remainder? Circle the answer.

**A.** Ignored it

**B.** Reported it as a fraction

**C.** Rounded the answer up

Why? _____

_____

_____

## Practice

Order the fractions from smallest to largest.

③ $\frac{3}{6}, \frac{3}{3}, \frac{3}{5}, \frac{3}{8}$ ____, ____, ____, ____

④ $\frac{1}{4}, \frac{1}{8}, \frac{1}{2}, \frac{1}{5}$ ____, ____, ____, ____

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

⑥ $\frac{4}{5}, \frac{81}{100}, \frac{4}{6}, \frac{2}{10}$ ____, ____, ____, ____

# Measuring Angles

**Home Link 6-9**

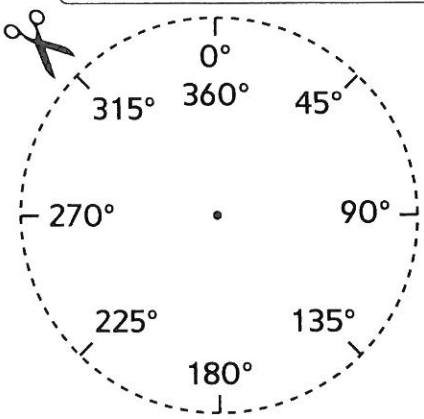
NAME DATE TIME

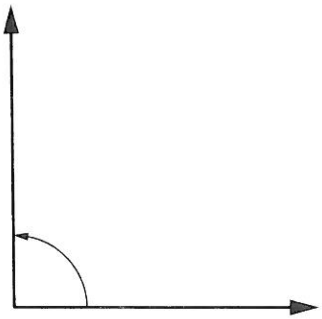
SRB 207, 228-229

Cut out the angle measurer and use a pencil to poke a hole through the center.

Label each angle *acute, right,* or *obtuse*.

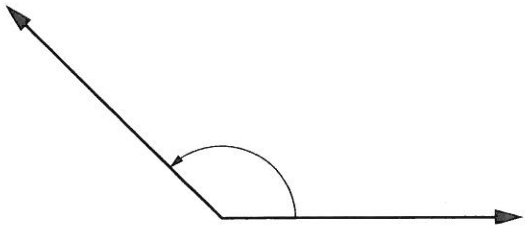
Then use the angle measurer to measure each angle.




① 

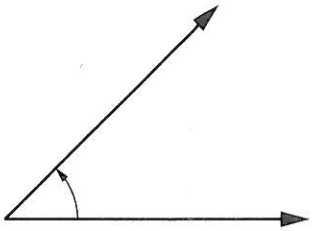
Type of angle: _____

Angle measure: _____

② 

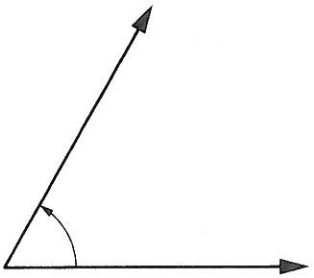
Type of angle: _____

Angle measure: _____

③ 

Type of angle: _____

Angle measure: _____

④ 

Type of angle: _____

Angle measure: _____

## Practice

Multiply.

⑤
$$\begin{array}{r} 173 \\ \times \quad 4 \\ \hline \end{array}$$

⑥
$$\begin{array}{r} 247 \\ \times \quad 6 \\ \hline \end{array}$$

⑦
$$\begin{array}{r} 34 \\ \times \quad 20 \\ \hline \end{array}$$

# Measuring Angles with a Protractor

**Home Link 6-10**

NAME DATE TIME

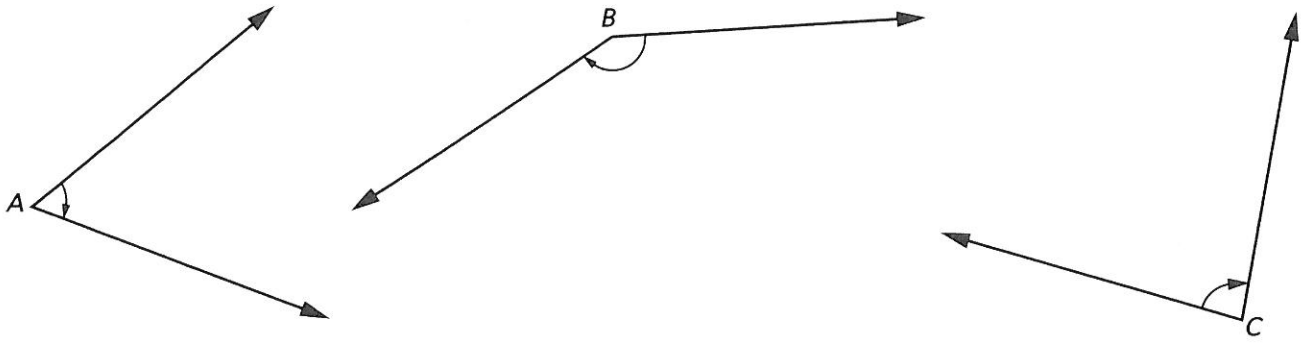
First estimate whether the angles measure more or less than 90°. Then use a half-circle protractor to measure them.

SRB 208-210

① ∠A: _____ °

② ∠B: _____ °

③ ∠C: _____ °




④ ∠QRS: _____ °

⑤ ∠NOP: _____ °

⑥ ∠KLM: _____ °

## Practice

⑦
$$\begin{array}{r} 23,807 \\ +\ 42,004 \\ \hline \end{array}$$

⑧
$$\begin{array}{r} 530,083 \\ +\ 283,690 \\ \hline \end{array}$$

⑨
$$\begin{array}{r} 87,942 \\ -\ 23,851 \\ \hline \end{array}$$

⑩
$$\begin{array}{r} 600,299 \\ -\ 510,345 \\ \hline \end{array}$$

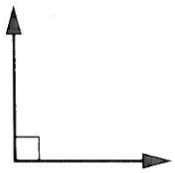
# Finding Angle Measures

**Home Link 6-11**

NAME DATE TIME

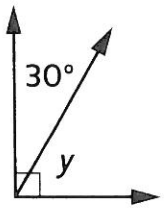
Find the unknown angle measures in Problems 1–6. Do *not* use a protractor.

SRB 211-212



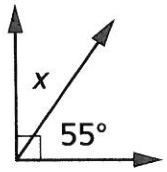
A **right angle** measures 90°.

A **straight angle** measures 180°.

① 

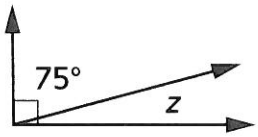

Equation with unknown: _____ °

Answer: _____

② 

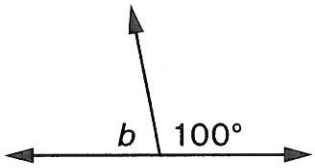

Equation with unknown: _____ °

Answer: _____

③ 

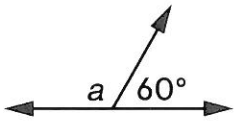

Equation with unknown: _____ °

Answer: _____

④ 

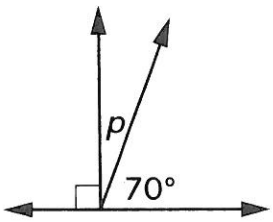

Equation with unknown: _____ °

Answer: _____

⑤ 


Equation with unknown: _____ °

Answer: _____

⑥ 


Equation with unknown: _____ °

Answer: _____

## Practice

Order the fractions from smallest to largest.

⑦ $\frac{7}{10}, \frac{7}{8}, \frac{7}{12}, \frac{7}{9}$ _____

⑧ $\frac{5}{9}, \frac{99}{100}, \frac{1}{4}, \frac{9}{10}$ _____

# Solving Number Stories

**Home Link 6-12**

NAME DATE TIME

Write a number model with an unknown to represent each problem. Then solve.

SRB 47, 162-165

(1) Martin had some leftover fruit from making fruit salad. He had $\frac{3}{12}$ pound of strawberries and $\frac{1}{12}$ pound of blueberries.

Which fruit weighed more? _____

**a.** How many pounds of fruit did Martin have left?

Number model with unknown: _____

Answer: _____ pound

**b.** How much more did the strawberries weigh than the blueberries?

Number model with unknown: _____

Answer: _____ pound

(2) Charlotte and Beth each made a vegetable salad to take to a reunion. Together the salads weighed 6 pounds. Charlotte's salad weighed $3\frac{1}{2}$ pounds.

**a.** How much did Beth's salad weigh?

Number model with unknown: _____

Answer: _____ pounds

**b.** How much more did Charlotte's salad weigh than Beth's?

Number model with unknown: _____

Answer: _____ pound

(3) Andy's potato salad weighed $1\frac{3}{8}$ pounds more than Mardi's. Mardi's potato salad weighed $4\frac{2}{8}$ pounds. How much did Andy's potato salad weigh?

Number model with unknown: _____

Answer: _____ pounds

## Practice

(4) $826 * 5 =$ _____

(5) $48 * 50 =$ _____

# Multiplying a Fraction by a Whole Number

**Home Link 6-13**

NAME DATE TIME

SRB 173-174

Solve. Use drawings, words, and equations to represent the problems.

① 5 vans were needed for a camp field trip. There were 9 children per van.

How many children went on the field trip? _____ children

Drawing:

Words: _____ groups of _____

Addition equation: _____

Multiplication equation: _____

② Penny and her 2 friends each ate $\frac{1}{6}$ of a cake. How much cake did they eat?

_____ of a cake

Drawing:

Words: _____ groups of _____

Addition equation: _____

Multiplication equation: _____

③ Christopher wants to give his 4 friends $\frac{3}{5}$ of a veggie pizza each.

How much veggie pizza will he need? _____ veggie pizzas

Drawing:

Words: _____ groups of _____

Addition equation: _____

Multiplication equation: _____

## Practice

④ 84 / 6 = _____ ⑤ 76 ÷ 4 = _____ ⑥ _____ = 90 ÷ 5