Chapter 11

School-Home Letter

Dear Family,

Throughout the next few weeks, our math class will be learning about angles and angle measures. We will also learn to use a protractor to measure and draw angles.

You can expect to see homework in which students find and compute with angle measures.

Here is a sample of how your child will be taught how to relate degrees to fractional parts of a circle.

Vocabulary

clockwise The direction the clock hands move

counterclockwise The direction opposite from the way clock hands move

degree (°) A unit for measuring angles

protractor A tool for measuring the size of an angle

MODEL Find Angle Measures

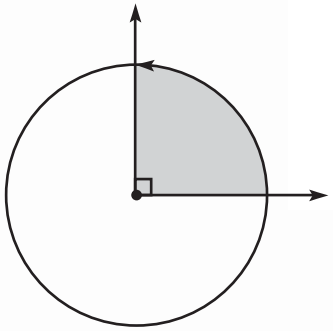
Find the measure of a right angle.

STEP 1

A right angle turns $\frac{1}{4}$ through a circle. Write $\frac{1}{4}$ as an equivalent fraction with 360 in the denominator: $\frac{1}{4} = \frac{90}{360}$

STEP 2

A $\frac{1}{360}$ turn measures 1°. So, a $\frac{90}{360}$ turn measures 90°.



Tips

Classifying Angles

An *acute* angle measures *less than* 90°. An *obtuse* angle measures *more than* 90° and *less than* 180°. A *straight* angle measures 180°.

Activity

Help your child measure angles in pictures of buildings and bridges and decide whether certain angle measures are more common. Then have your child draw his or her own building or bridge design and label each angle measure.

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Capítulo 11

Carta para la casa

Vocabulario

en el sentido de las manecillas del reloj La dirección en que se mueven las manecillas del reloj

en sentido contrario a las manecillas del reloj La dirección opuesta a cómo se mueven las manecillas del reloj

grado (°) Una unidad para medir los ángulos

transportador Una herramienta para medir el tamaño de un ángulo

Querida familia,

Durante las próximas semanas, en la clase de matemáticas aprenderemos sobre ángulos y medidas de los ángulos. También aprenderemos a usar un transportador y a medir y trazar ángulos.

Llevaré a casa tareas en las que tenga que hallar y hacer cálculos con medidas de ángulos.

Este es un ejemplo de cómo vamos a relacionar los grados con las partes fraccionarias de un círculo.

MODELO Hallar medidas de ángulos

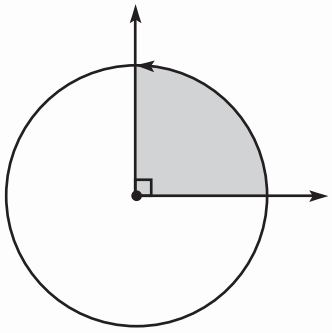
Halla la medida de un ángulo recto.

PASO 1

Un ángulo recto gira $\frac{1}{4}$ de un círculo. Escribe $\frac{1}{4}$ como una fracción equivalente con 360 en el denominador: $\frac{1}{4} = \frac{90}{360}$

PASO 2

Un giro de $\frac{1}{360}$ mide 1°. Por lo tanto, un giro de $\frac{90}{360}$ mide 90°.



Pistas

Clasificar ángulos

Un ángulo *agudo* mide *menos de* 90°. Un ángulo *obtuso* mide *más de* 90° y *menos de* 180°. Un ángulo *llano* mide 180°.

Actividad

Ayude a su hijo o hija a medir ángulos en dibujos de edificios y puentes y decidan si ciertas medidas de ángulos son más comunes. Luego pídale que dibuje su propio diseño de edificio o puente y que le ponga nombre a cada medida de ángulo.

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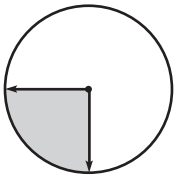
Name _____

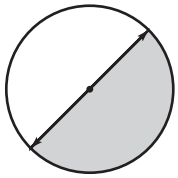
Angles and Fractional Parts of a Circle

COMMON CORE STANDARD—4.MD.5a
Geometric measurement: understand concepts of angle and measure angles.

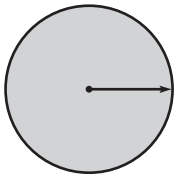
Tell what fraction of the circle the shaded angle represents.

1. 

$\frac{1}{4}$

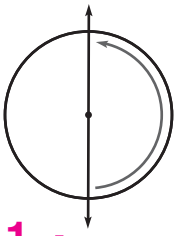
2. 

$\frac{1}{2}$

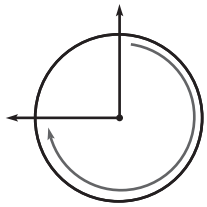
3. 

$\frac{1}{1}$, or 1

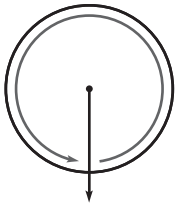
Tell whether the angle on the circle shows a $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$, or 1 full turn clockwise or counterclockwise.

4. 

$\frac{1}{2}$ turn counter-clockwise

5. 

$\frac{3}{4}$ turn clockwise

6. 

1 full turn counterclockwise

Problem Solving Real World

7. Shelley exercised for 15 minutes. Describe the turn the minute hand made.

Start

End

The minute hand made a $\frac{1}{4}$ turn clockwise.

8. Mark took 30 minutes to finish lunch. Describe the turn the minute hand made.

Start

End

The minute hand made a $\frac{1}{2}$ turn clockwise.

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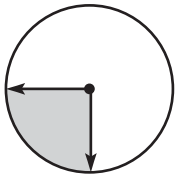
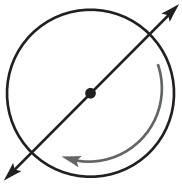
Lesson Check (4.MD.5a)

1. What fraction of the circle does the shaded angle represent?



$\frac{1}{4}$

2. Describe the turn shown below.



Possible answer: $\frac{1}{2}$ turn clockwise

Spiral Review (4.OA.4, 4.NF.1, 4.NF.4c, 4.NF.7)

3. Write $\frac{2}{3}$ and $\frac{3}{4}$ as a pair of fractions with a common denominator.

Possible answer: $\frac{8}{12}$ and $\frac{9}{12}$

4. Raymond bought $\frac{3}{4}$ of a dozen rolls. How many rolls did he buy?

9 rolls

5. List all the factors of 18.

1, 2, 3, 6, 9, 18

6. Jonathan rode 1.05 miles on Friday, 1.5 miles on Saturday, 1.25 miles on Monday, and 1.1 miles on Tuesday. On which day did he ride the shortest distance?

Friday

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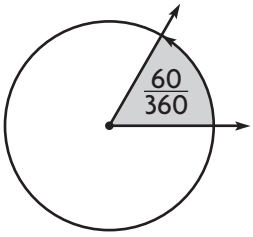
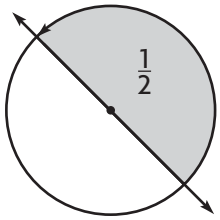
Degrees

COMMON CORE STANDARDS—4.MD.5a, 4.MD.5b *Geometric measurement: understand concepts of angle and measure angles.*

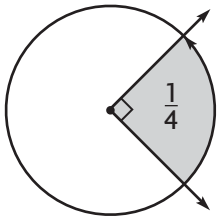
Tell the measure of the angle in degrees.

1. 

60°

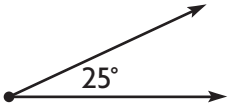
2. 

180°

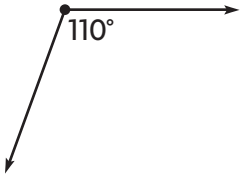
3. 

90°

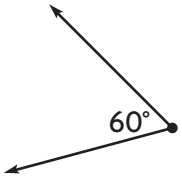
Classify the angle. Write *acute*, *obtuse*, *right*, or *straight*.

4. 

acute

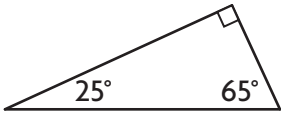
5. 

obtuse

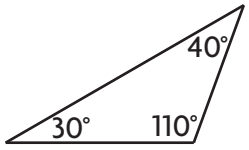
6. 

acute

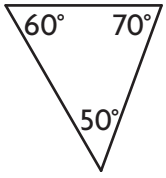
Classify the triangle. Write *acute*, *obtuse*, or *right*.

7. 

right

8. 

obtuse

9. 

acute

Problem Solving Real World

Ann started reading at 4:00 P.M. and finished at 4:20 P.M.

10. Through what fraction of a circle did the minute hand turn?

$\frac{1}{3}$ turn clockwise

11. How many degrees did the minute hand turn?

120°

Start

End

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Lesson Check (4.MD.5a, 4.MD.5b)

1. What kind of angle is shown?

straight

2. How many degrees are in an angle that turns through $\frac{1}{4}$ of a circle?

90°

Spiral Review (4.OA.3, 4.NF.3b, 4.NF.4a, 4.NF.5)

3. Mae bought 15 football cards and 18 baseball cards. She separated them into 3 equal groups. How many sports cards are in each group?

11 cards

4. Each part of a race is $\frac{1}{10}$ mile long. Marsha finished 5 parts of the race. How far did Marsha race?

Possible answer: $\frac{1}{2}$ mile

5. Jeff said his city got $\frac{11}{3}$ inches of snow. Write this fraction as a mixed number.

$3\frac{2}{3}$

6. Amy ran $\frac{3}{4}$ mile. Write the distance Amy ran as a decimal.

0.75

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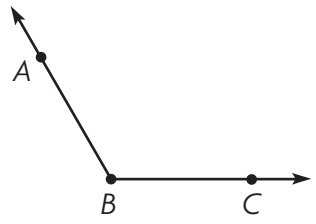
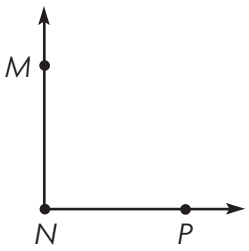
Measure and Draw Angles

COMMON CORE STANDARD—4.MD.6
Geometric measurement: understand concepts of angle and measure angles.

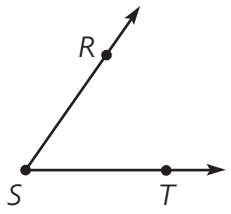
Use a protractor to find the angle measure.

1. 

m∠*ABC* = 120°

2. 

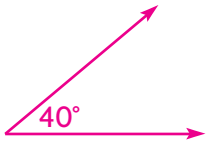
m∠*MNP* = 90°

3. 

m∠*RST* = 55°

Use a protractor to draw the angle. Check students' drawings.

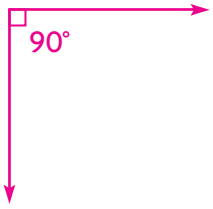
4. 40°



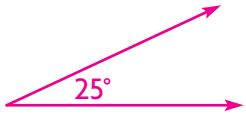
5. 170°

Draw an example of each. Label the angle with its measure. Possible drawings and measures are given.

6. a right angle

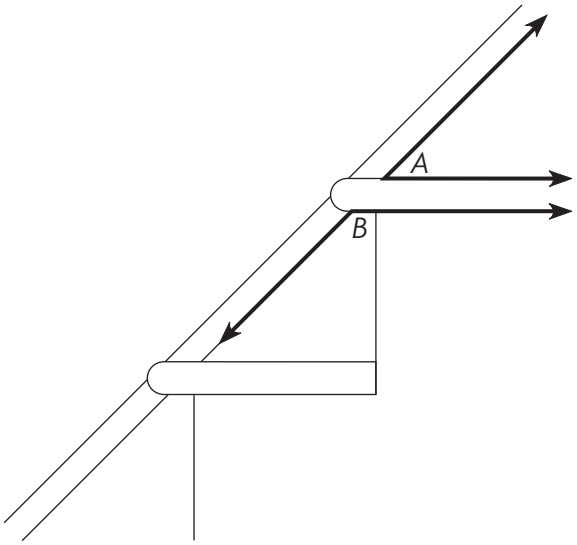


7. an acute angle



Problem Solving Real World

The drawing shows the angles a stair tread makes with a support board along a wall. Use your protractor to measure the angles.



8. What is the measure of ∠*A*? 45°

9. What is the measure of ∠*B*? 135°

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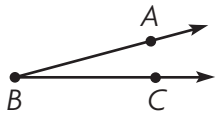
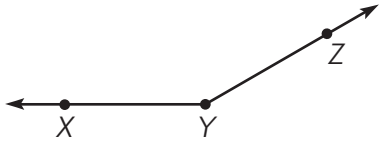
Lesson Check (4.MD.6)

1. What is the measure of $\angle ABC$?



15°

2. What is the measure of $\angle XYZ$?



150°

Spiral Review (4.NBT.6 , 4.NF.3c, 4.MD.5a, 4.G.1)

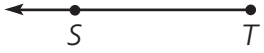
3. Derrick earned $1,472 during the 4 weeks he had his summer job. If he earned the same amount each week, how much did he earn each week?

$368

4. Arthur baked $1\frac{7}{12}$ dozen muffins. Nina baked $1\frac{1}{12}$ dozen muffins. How many dozen muffins did they bake?

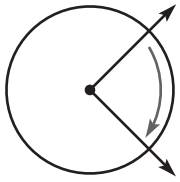
Possible answer: $2\frac{2}{3}$

5. Trisha drew the figure below. What figure did she draw?



ray *TS*

6. Measure and describe the turn shown by the angle. Be sure to tell about the size and direction of the turn.



$\frac{1}{4}$ turn clockwise

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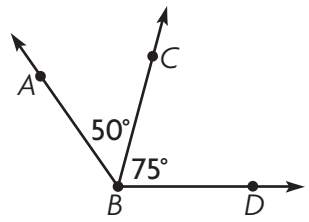
Join and Separate Angles

COMMON CORE STANDARD—4.MD.7
Geometric measurement: understand concepts of angle and measure angles.

Add to find the measure of the angle. Write an equation to record your work.

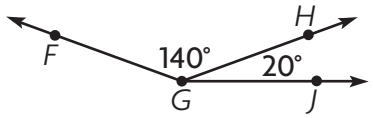
1.



50° + 75° = 125°

m∠*ABD* = 125°

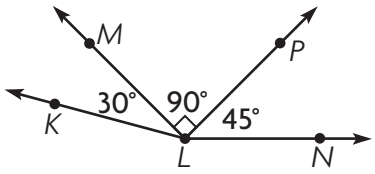
2.



140° + 20° = 160°

m∠*FGJ* = 160°

3.



30° + 90° + 45° = 165°

m∠*KLN* = 165°

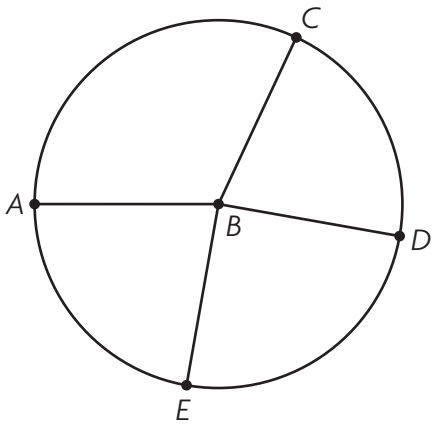
Use a protractor to find the measure of each angle in the circle.

4. m∠*ABC* = 115°

5. m∠*DBE* = 90°

6. m∠*CBD* = 75°

7. m∠*EBA* = 80°



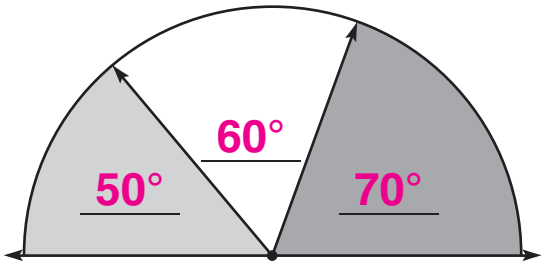
8. Write the sum of the angle measures as an equation.

115° + 75° + 90° + 80° = 360°

Problem Solving Real World

9. Ned made the design at the right. Use a protractor. Find and write the measure of each of the 3 angles.

50°; 60°; 70°



10. Write an equation to find the measure of the total angle.

50° + 60° + 70° = 180°

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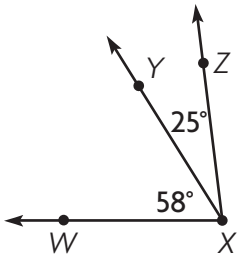
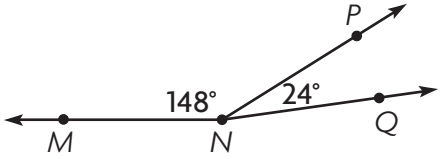
Lesson Check (4.MD.7)

1. What is the measure of $\angle WXZ$?



83°

2. Write an equation that you can use to find the m$\angle MNQ$.



148° + 24° = ▢

Spiral Review (4.NBT.5, 4.NF.3d, 4.MD.5a, 4.MD.5b, 4.G.2)

3. Joe bought 6 packages of envelopes. Each package contains 125 envelopes. How many envelopes did he buy?

750 envelopes

4. Bill hiked $\frac{3}{10}$ mile on the Lake Trail. Then he hiked $\frac{5}{10}$ mile on the Rock Trail to get back to where he started. How many miles did he hike?

$\frac{8}{10}$ mile

5. Ron drew a quadrilateral with 4 right angles and 4 sides with the same length. What figure did he draw?

square

6. How many degrees are in an angle that turns through $\frac{3}{4}$ of a circle?

270°

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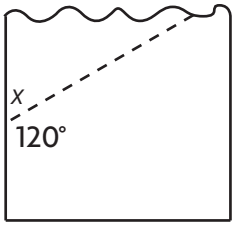
Name _____

Problem Solving • Unknown Angle Measures

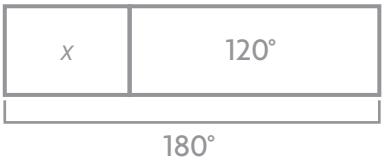
COMMON CORE STANDARD—4.MD.7
Geometric measurement: understand concepts of angle and measure angles.

Solve each problem. Draw a diagram to help.

1. Wayne is building a birdhouse. He is cutting a board as shown. What is the angle measure of the piece left over?



Draw a bar model to represent the problem.

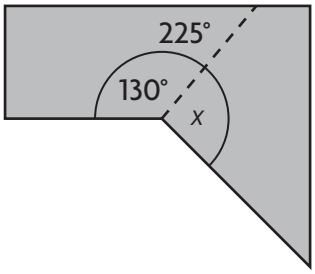


$x + 120° = 180°$
$x = 180° - 120°$
$x = 60°$

60°

---

2. An artist is cutting a piece of metal as shown. What is the angle measure of the piece left over?



95°

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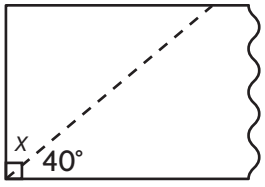
3. Joan has a piece of material for making a costume. She needs to cut it as shown. What is the angle measure of the piece left over?



50°

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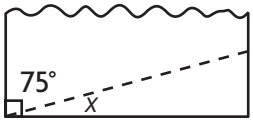
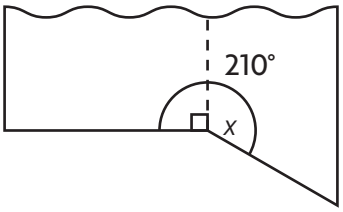
Lesson Check (4.MD.7)

1. Angelo cuts a triangle from a sheet of paper as shown. What is the measure of $\angle x$ in the triangle?



15°

2. Cindy cuts a piece of wood as shown. What is the angle measure of the piece left over?



120°

Spiral Review (4.OA.3, 4.NF.2, 4.NF.6, 4.MD.7)

3. Tyronne worked 21 days last month. He earned $79 each day. How much did Tyronne earn last month?

$1,659

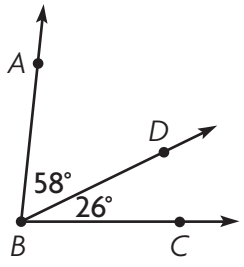
4. Meg inline skated for $\frac{7}{10}$ mile. Write this distance as a decimal.

0.7 mile

5. Kerry ran $\frac{3}{4}$ mile. Sherrie ran $\frac{1}{2}$ mile. Marcie ran $\frac{2}{3}$ mile. List the friends in order from who ran the least distance to who ran the greatest distance.

Sherrie, Marcie, Kerry

6. What is the measure of $\angle ABC$?



84°

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