1.5 Start Thinking

Angle measures are classified into four separate categories: acute $(0° < x < 90°)$, right $(90°)$, obtuse $(90° < x < 180°)$, and straight $(180°)$.

Explain how you can use the definition of a right angle to determine whether an unknown angle measure is acute or obtuse.

1.5 Warm Up

Solve the equation to find the value of the variable.

1. $x° + 40° = 110°$

2. $r° - 44° = 135°$

3. $n° - 19° = 125°$

4. $y° - 55° = 35°$

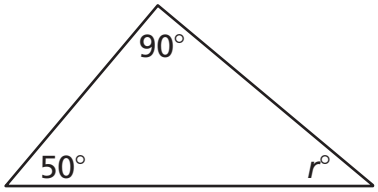
5. $2t° + 10° = 140°$

6. $2w° - 65° = 175°$

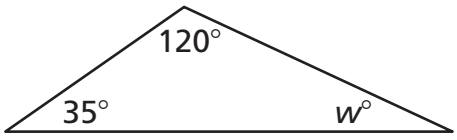
1.5 Cumulative Review Warm Up

Find the value of the variable.

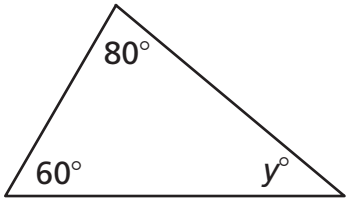
1.



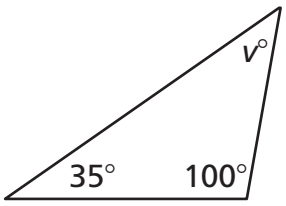
2.



3.



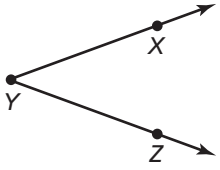
4.



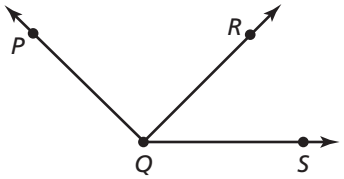
Name_____ Date _____

1.5 Practice A

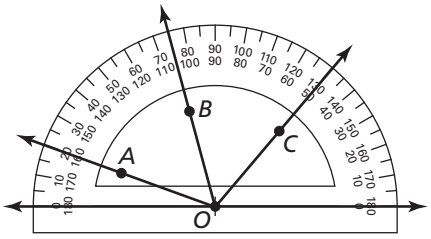
1. Write three names for the angle.



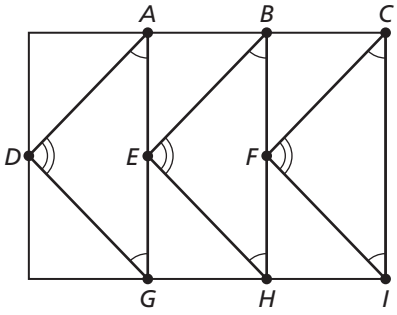
2. Name three different angles in the diagram.



3. Find the angle measure of $\angle COA$. Then classify the angle.



In Exercises 4–7, $m\angle ADG = 92°$ and $m\angle DAG = 44°$.



4. Identify the angles congruent to $\angle ADG$.

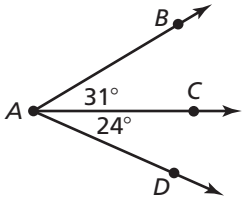
5. Identify the angles congruent to $\angle DAG$.

6. Find $m\angle CFI$.

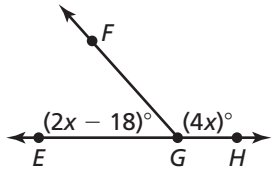
7. Find $m\angle EHB$.

In Exercises 8 and 9, find the indicated angle measure.

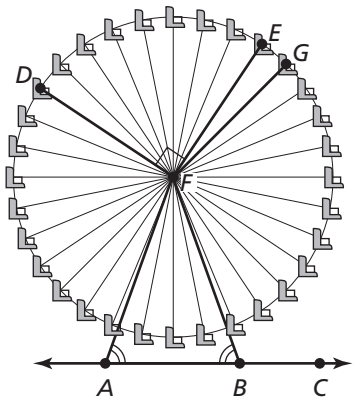
8. Find $m\angle BAD$.



9. Find x.



10. In the Ferris wheel, the measure of $\angle EFG$ is 11.25° and the measure of $\angle BAF$ is 70°.



a. Name an example of each of the four types of angles according to their measures in the diagram.

b. How many angles are congruent to $\angle EFG$?

c. What is the measure of $\angle ABF$?

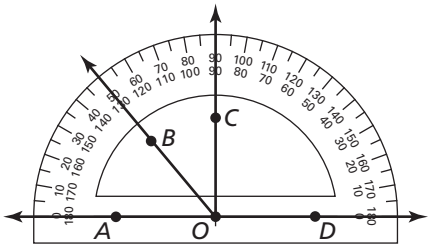
d. What is the measure of $\angle CBF$?

Name _____ Date _____

1.5 Practice B

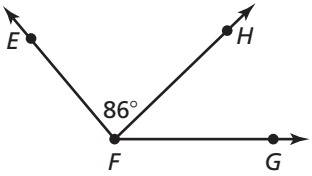
In Exercises 1–4, find the angle measure. Then classify the angle.

1. $m\angle AOB$
2. $m\angle COD$
3. $m\angle BOD$
4. $m\angle AOD$

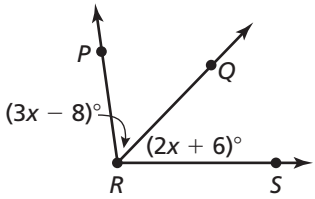


In Exercises 5–8, find the indicated angle measure.

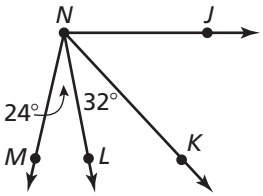
5. $m\angle EFG = 130°$. Find $m\angle HFG$.



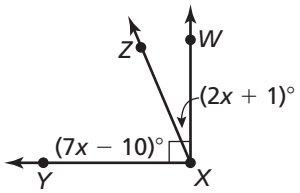
6. $m\angle PRS = 98°$. Find $m\angle QRS$.



7. $m\angle JNM = 103°$. Find $m\angle JNK$.

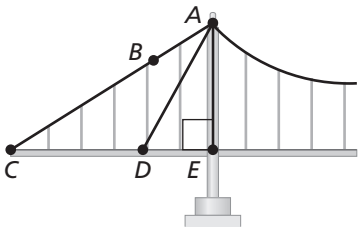


8. Find $m\angle WXZ$.



9. Your friend claims it is possible for a straight angle to consist of three acute angles. Is your friend correct? Explain your reasoning.

10. In the suspension bridge, $m\angle AEC = 90°$, $m\angle CAD = 29°$, $m\angle ADE = 61°$, and $\overrightarrow{AD}$ bisects $\angle CAE$.



   a. Name an example of an acute angle, right angle, and straight angle according to their angle measures.

   b. Which angle is congruent to $\angle CAD$?

   c. What is the measure of $\angle CAE$?

   d. What is the measure of $\angle CDA$?

Name_____ Date _____

1.5 Enrichment and Extension

Measuring and Constructing Angles

1. Let $(2x - 12)°$ represent the measure of an acute angle. What are the possible values of x?

2. Point G lies in the interior of $\angle DEF$. The ratio of $\angle GEF$ to $\angle GED$ is 3 to 5, and $m\angle DEF = 64°$. Find $m\angle DEG$ and $m\angle FEG$.

3. Point O lies in the interior of $\angle MNP$. If $m\angle MNO = x^2 + 10x$, $m\angle ONP = x^2 - 2x$, and $m\angle MNP = 3x^2 + 12$, find the value of x. Then find $m\angle ONP$. (*Hint:* Disregard any answers that do not make sense in the context of the exercise.)

4. Point M lies in the interior of $\angle GEO$. If $m\angle GEM = \frac{2}{3}x$, $m\angle MEO = \frac{1}{4}x$, and $m\angle GEO = \frac{11}{x}$, find the value of x.

5. Angles A and B are complementary, and $m\angle A$ is 8 times greater than $m\angle B$. Find the measure of the angle that forms a linear pair with $\angle A$.

6. Ray SU bisects $\angle RST$. If $m\angle RSU = 2x + \frac{5}{6}y$, $m\angle UST = -4x + 5y$, and $m\angle RST = 40°$, find the values of x and y.

7. Draw a sketch using the given information.

D is in the interior of $\angle BAE$.	$m\angle BAC = 130°$
E is in the interior of $\angle DAF$.	$m\angle EAC = 90°$
F is in the interior of $\angle EAC$.	$m\angle BAD = m\angle EAF = m\angle FAC$

In Exercises 8–13, use the information from Exercise 7 to find the angle measurement.

8. Find $m\angle FAC$.

9. Find $m\angle BAD$.

10. Find $m\angle FAB$.

11. Find $m\angle DAE$.

12. Find $m\angle FAD$.

13. Find $m\angle BAE$.

Name _____ Date _____

1.5 Puzzle Time

Why Shouldn't You Tell A Pigeon A Secret? Because It …

Write the letter of each answer in the box containing the exercise number.

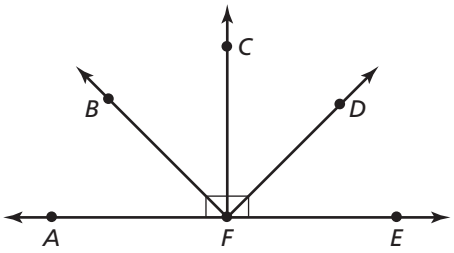
Use the diagram to identify an angle with the given classification.

1. right angle

2. obtuse angle

3. straight angle

4. acute angle

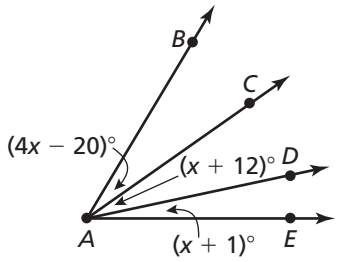


Use the diagram to solve for the angle measurement, given that $\angle BAE = 59°$.

5. $\angle BAC$

6. $\angle CAD$

7. $\angle DAE$

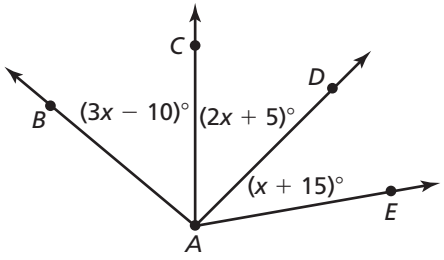


Use the diagram to solve for the angle measurement, given that $\angle BAE = 130°$.

8. $\angle BAC$

9. $\angle CAD$

10. $\angle DAE$



Answers

I. 23°

H. 40°

A. $\angle AFC$

D. 20°

S. 35°

C. 12°

O. 17°

R. $\angle AFD$

U. 70°

I. 45°

P. 11°

R. 24°

T. 37°

A. $\angle AFB$

M. 27°

E. $\angle AFE$

U. 75°

R. 50°

9	10		4		7	1	2	8	6	3	5