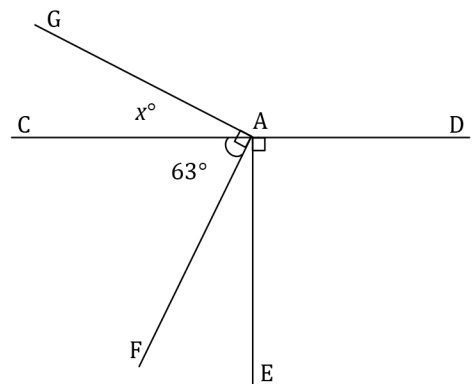


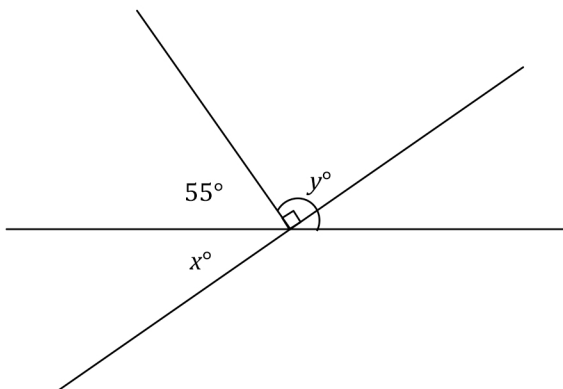
## Complementary and Supplementary Angles

1. Students set up and solve an equation to solve for the value of  $x$ . Use the value of  $x$  and a relevant angle relationship in the diagram to determine the measure of  $\angle FAE$ .

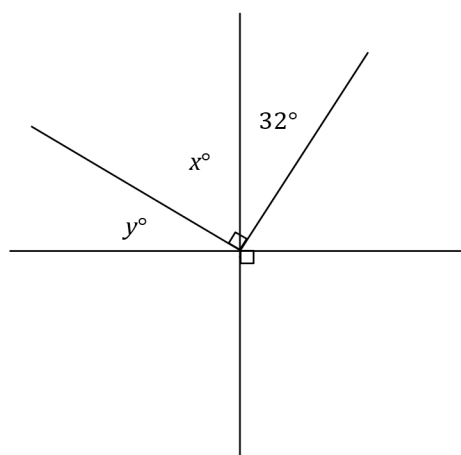


2. The measurement of the supplement of an angle is  $10^\circ$  more than half the angle. Find the measurement of the angle and its supplement.

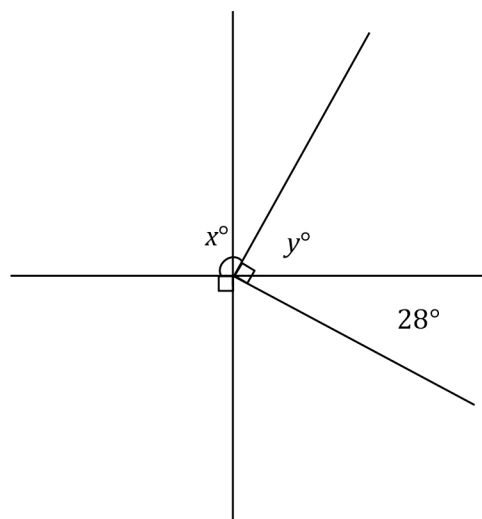
- Two lines meet at the common vertex of two rays. Set up and solve the appropriate equations to determine  $x$  and  $y$ .



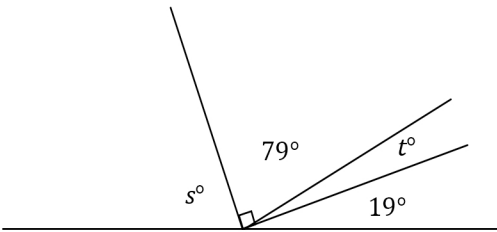
- Two lines meet at the common vertex of two rays. Set up and solve the appropriate equations to determine  $x$  and  $y$ .



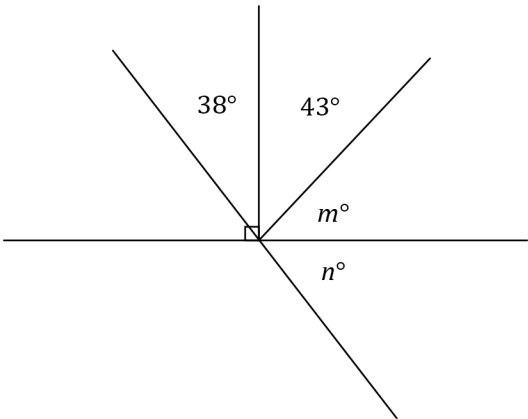
- Two lines meet at the common vertex of two rays. Set up and solve an appropriate equation for  $x$  and  $y$ .



4. Set up and solve the appropriate equations for  $s$  and  $t$ .

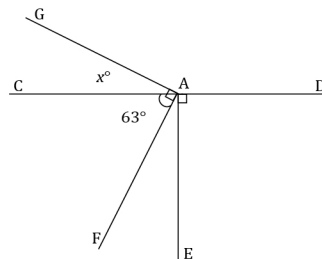


5. Two lines meet at the common vertex of two rays. Set up and solve the appropriate equations for  $m$  and  $n$ .



6. The supplement of the measurement of an angle is  $10$  less than three times the angle. Find the angle and its supplement.
7. The measurement of the complement of an angle exceeds the measure of the angle by  $20$ . Find the angle and its complement.
8. The ratio of the measurement of an angle to its complement is  $\frac{2}{3}$ . Find the angle and its complement.
9. The ratio of the measurement of an angle to its supplement is  $\frac{1}{4}$ . Find the angle and its supplement.
10. Let  $x$  represent the measurement of an acute angle in degrees. The ratio of the complement of  $x$  to the supplement of  $x$  is  $\frac{1}{3}$ . Guess and check to determine the value of  $x$ . Explain why your answer is correct.

1. Students set up and solve an equation to solve for the value of  $x$ . Use the value of  $x$  and a relevant angle relationship in the diagram to determine  $\angle GAF$ .



The measurement of  $\angle GAF$  is  $63^\circ$ .

Similar to  $\angle GAF$ , the measurements of  $\angle GAC$  and  $\angle FAE$  are the complements of  $x^\circ$ ; therefore, they are both  $x^\circ$ .

1. The measurement of the supplement of an angle is  $180^\circ$  more than half the angle. Find the measurement of the angle and its supplement.

—

The measurement of the angle is  $72^\circ$ .

The measurement of the supplement:  $108^\circ$ .

OR

— —

The measurement of the angle is  $72^\circ$ .

The measurement of the supplement:  $108^\circ$ .

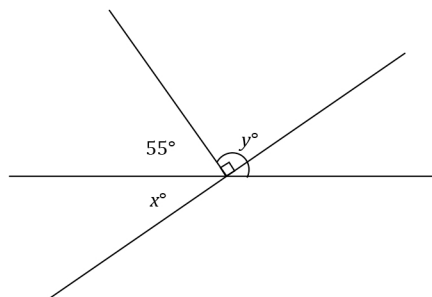
**Scaffolding:**

As shown in Exercise 4, some students may benefit from a scaffolded task. Use the five-part scaffold to help organize the question for those students who might benefit from it.

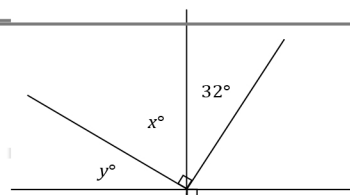
1. Two lines meet at the common vertex of a ray. Set up and solve the appropriate equations to determine  $x$  and  $y$ .

complementary angles

angles add



2. Two lines meet at the common vertex of two rays. Set up and solve the



appropriate equations to determine  $x$  and  $y$ .

*complementary angles*

*complementary angles*

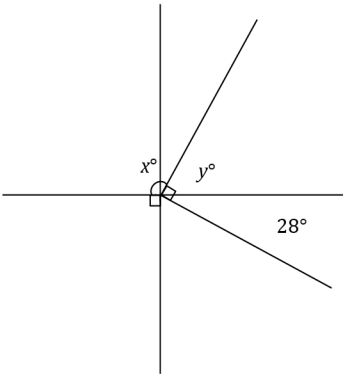
*complementary angles*

2. Two lines meet at the common vertex of two rays. Set up and solve an appropriate equation for  $x$  and  $y$ .

*supplementary angles*

*complementary angles*

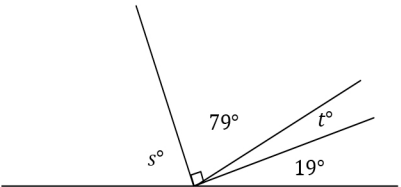
*supplementary angles*



3. Set up and solve the appropriate equations for  $s$  and  $t$ .

*complementary angles*

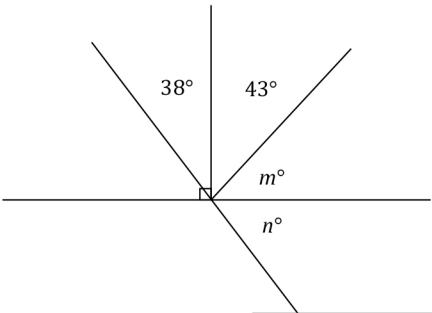
*angles on a line*



4. Two lines meet at the common vertex of two rays. Set up and solve the appropriate equations for  $m$  and  $n$ .

*complementary angles*

*angles on a line*



*Scaffolding:*

As shown in Exercise 4, some students may benefit from a scaffolded task. Use the five-part scaffold to help organize the question for those students who might benefit from it.

5. The supplement of the measurement of an angle is less than three times the angle. Find the angle and its supplement.

— —

*Angle*

*Supplement*

6. The measurement of the complement of an angle exceeds the measure of the angle by . Find the angle and its complement.

—  
—  
—  
— — —

*Angle*

*Complement* —

7. The ratio of the measurement of an angle to its complement is . Find the angle and its complement.

— —

*Angle*

*Complement*

8. The ratio of the measurement of an angle to its supplement is . Find the angle and its supplement.

— —

*Angle*

*Supplement*

9. Let represent the measurement of an acute angle in degrees. The ratio of the complement of to the supplement of is . Guess and check to determine the value of . Explain why your answer is correct.

*Solutions will vary; .*