Unit 7, Lesson 3

Nonadjacent Angles

Let's look at angles that are not right next to one another.

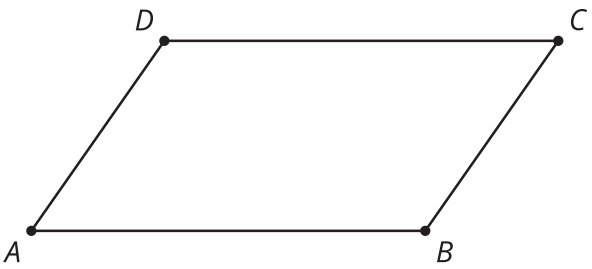
3.1 Finding Related Statements

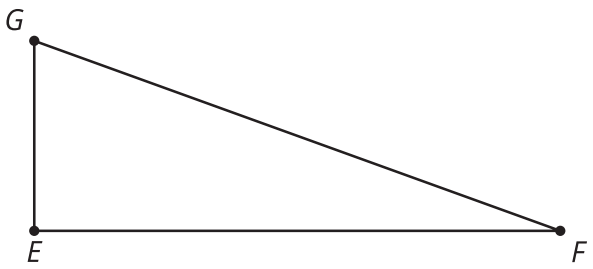
If $a + b = 180$ is true, which statements also must be true?

$a = 180 - b$ $\quad$ $a - 180 = b$ $\quad$ $360 = 2a + 2b$ $\quad$ $a = 90$ and $b = 90$

3.2 Polygon Angles

Identify any pairs of angles in these figures that are complementary or supplementary.





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3.3 Vertical Angles

Use a straightedge to draw two intersecting lines. Use a protractor to measure all four angles whose vertex is located at the intersection.

Compare your drawing and measurements to the drawings and measurements created by others in your group. What patterns do you notice about the relationships between angle measures at an intersection?

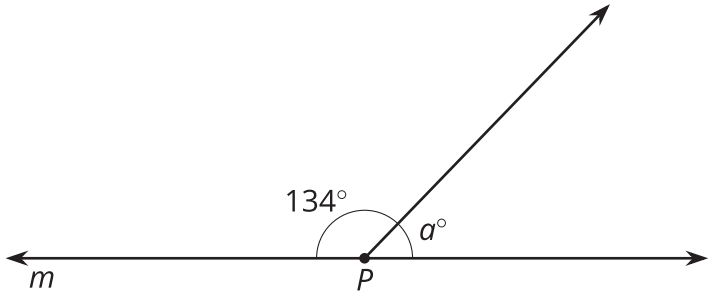
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3.4 Row Game: Angles

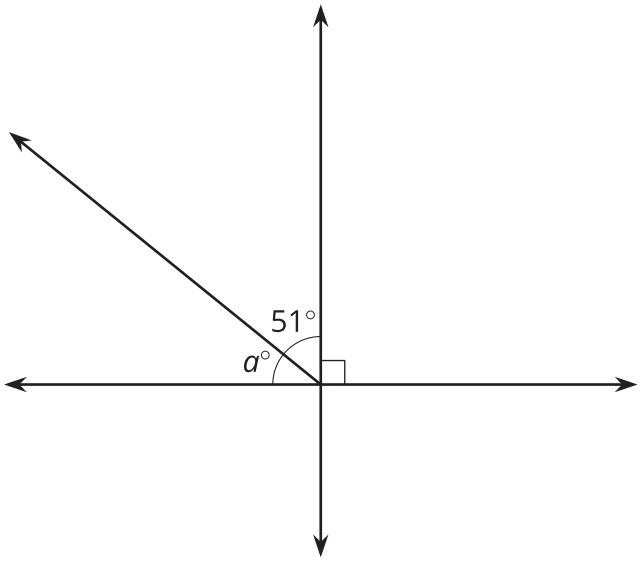
Find the measurement of the angles in one column. Your partner will work on the other column. Check in with your partner after you finish each row. Your answers in each row should be the same. If your answers aren't the same, work together to find the error and correct it.

column A

P is on Line m. Find the value of a.

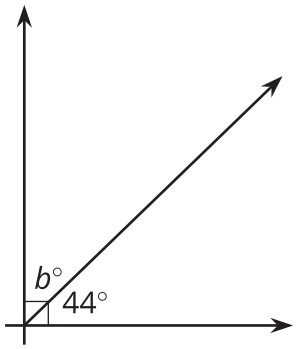


Find the value of a.

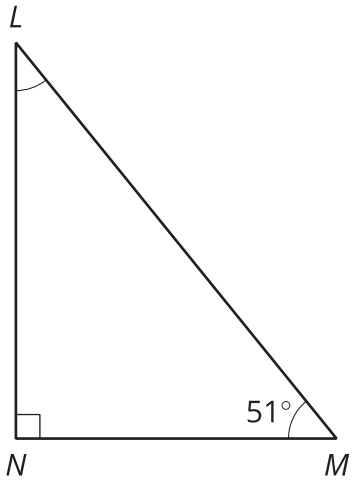


column B

Find the value of b.

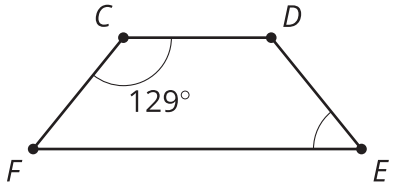


In right triangle LMN, angles L and M are complementary. Find the measure of angle L.

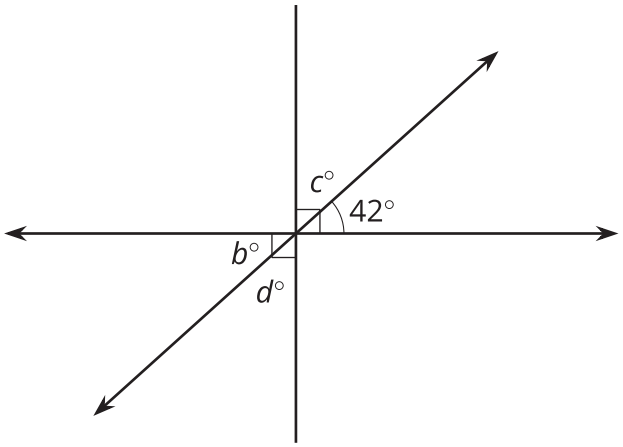


column A

Angle C and angle E are supplementary. Find the measure of angle E.



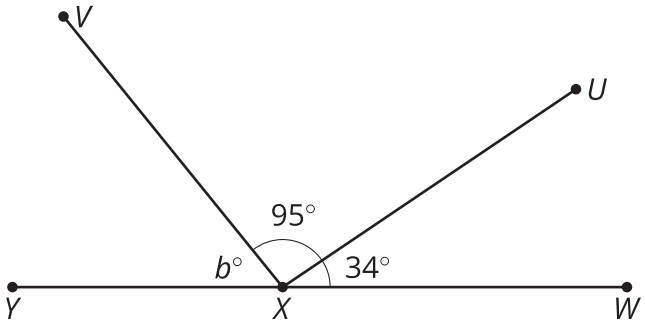
Find the value of c.



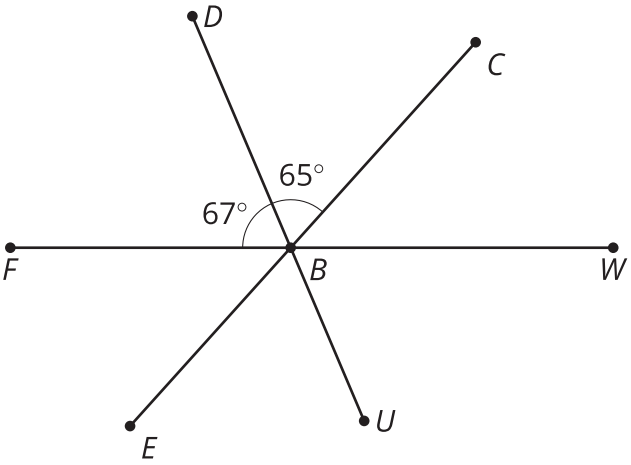
Two angles are complementary. One angle measures 37 degrees. Find the measure of the other angle.

column B

X is on line WY. Find the value of b.



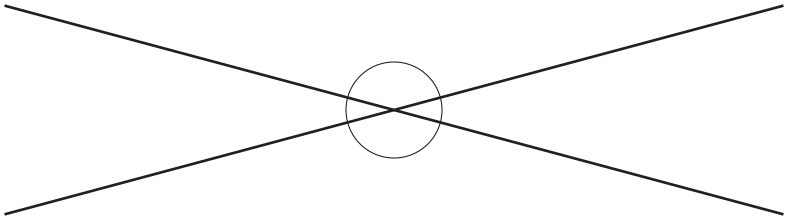
B is on line FW. Find the measure of angle CBW.



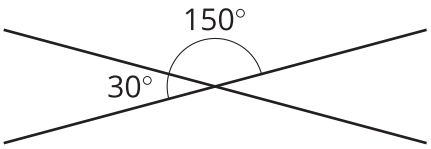
Two angles are supplementary. One angle measures 127 degrees. Find the measure of the other angle.

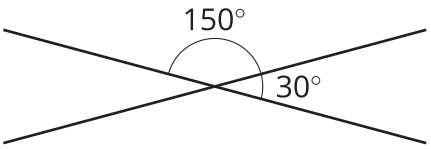
Lesson 3 Summary

When two lines cross, they form two pairs of **vertical angles**. Vertical angles are across the intersection point from each other.

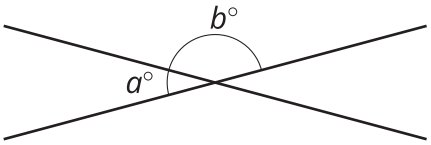


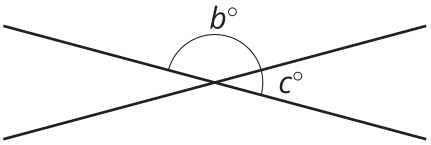
Vertical angles always have equal measure. We can see this because they are always supplementary with the same angle. For example:





This is always true!





$a + b = 180$ so $a = 180 - b$.

$c + b = 180$ so $c = 180 - b$.

That means $a = c$.