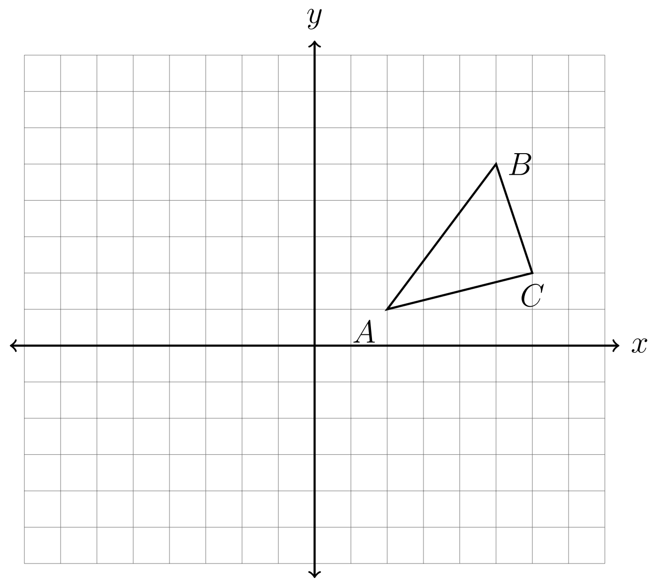
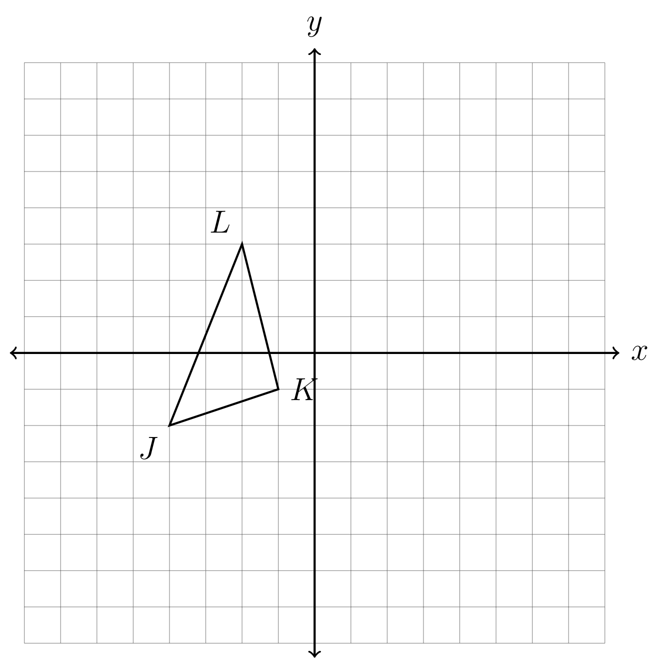
5.9 Pre-Exam: Transformations, parallels, volume; angle relationships

1. Apply a rotation of 90° centered at the origin to $\triangle ABC$. Plot and label the image on the axes below and make a table of its coordinates.

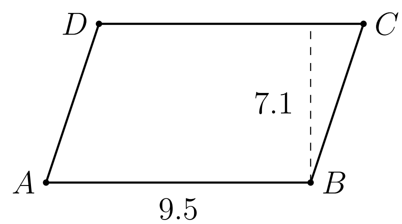


2. The vertices of $\triangle JKL$ have the coordinates $J(-4,-2)$, $K(-1,-1)$, and $L(-2,3)$, as shown below.

   Apply a translation of $(x,y) \rightarrow (x-3, y+2)$ to $\triangle JKL$ and then reflect the image across the y-axis. Draw both images $\triangle J'K'L'$ and $\triangle J''K''L''$ on the set of axes below, labeling the vertices.

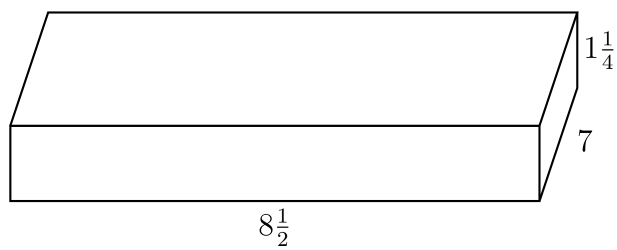


3. Find the area of the parallelogram $ABCD$ shown below, with $AB = 9.5$ and height $h = 7.1$.



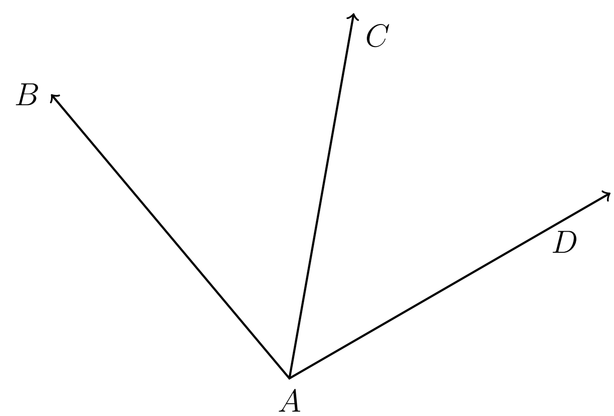
4. Find the sum of the measures of the internal angles of a hexagon. Show the formula.

5. A wooden cutting board is $8\frac{1}{2}$ inches long, 7 inches wide, and $1\frac{1}{4}$ inches thick. Find the volume of the box. Show the calculation.

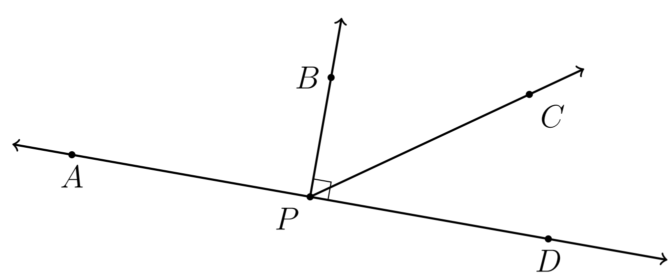


6. Of two complementary angles, the measure of $\angle A$ is two times that of $\angle B$. Find $m\angle A$.

7. An angle bisector is shown below, with $\overrightarrow{AC}$ bisecting $\angle BAD$. Given $m\angle BAC = 6x - 5$ and $m\angle BAD = 9x + 17$, find $m\angle BAD$. (Show check)

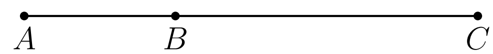


8. Angles APC and CPD form a linear pair. $m\angle APC = 10x - 10$ and $m\angle CPD = 3x - 5$. Find $m\angle CPD$. Check your answer for full credit.

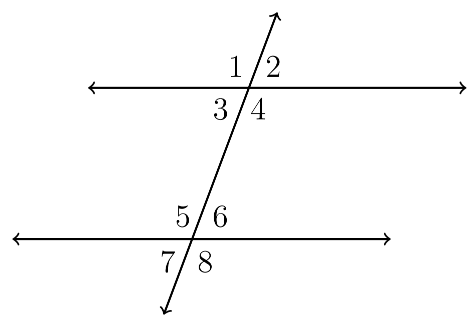


Do Not Solve!
Model the situation with an equation in terms of x.

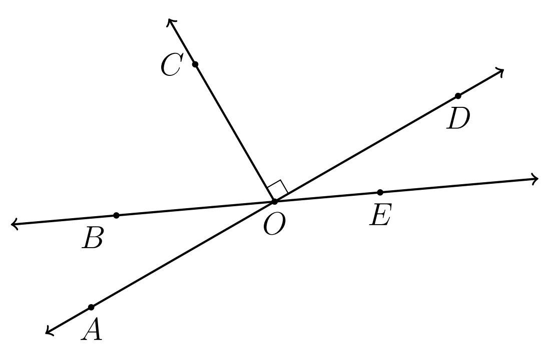
9. Given $\overline{ABC}$, with $AB = 2x - 1$, $BC = 3x + 7$, and $AC = 21$. Find x.



10. Given $m\angle 3 = x + 35$ and $m\angle 5 = 4x - 25$. Find x.



11. In the diagram below $m\angle AOB = 6x + 5$ and $m\angle COB = 8x + 15$. Find x.



12. The point K is the midpoint of $\overline{JL}$, $JK = 3x + 15$, and $JL = 9x + 9$. Find x.