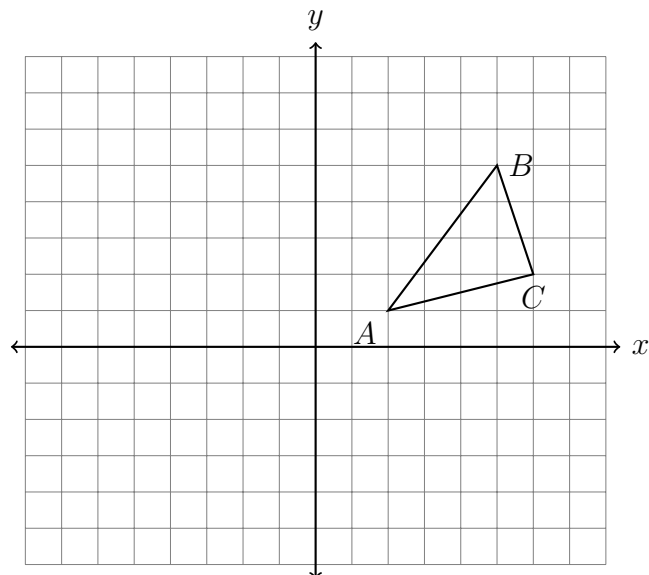


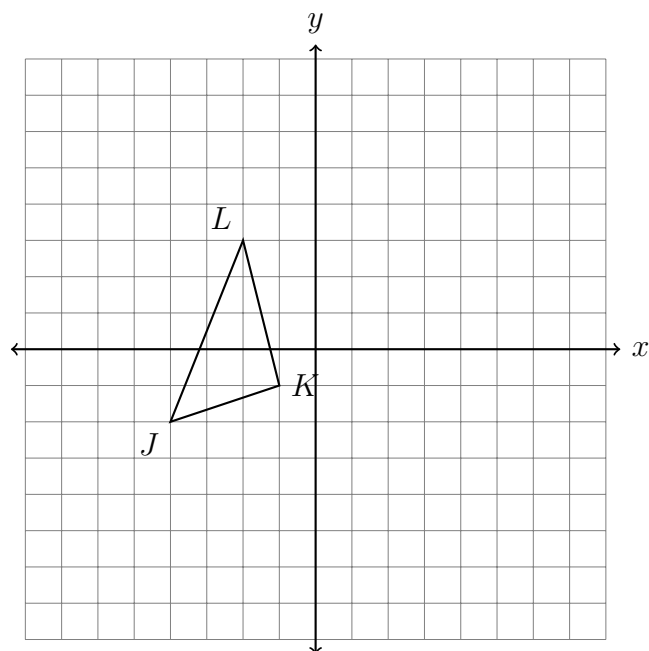
**5-9PreExam-Transformations**

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

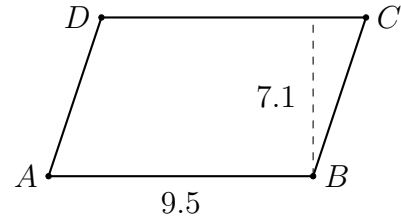


2. The vertices of  $\triangle JKL$  have the coordinates  $J(-4, -2)$ ,  $K(-1, -1)$ , and  $L(-2, 3)$ , as shown below.

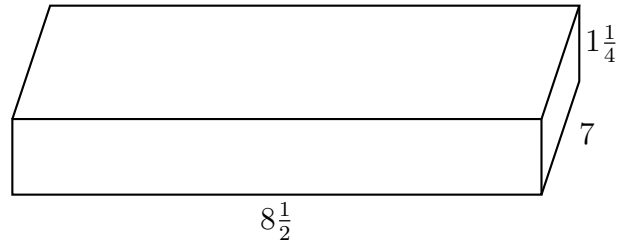
Apply a translation of  $(x, y) \rightarrow (x - 3, y + 2)$  to  $\triangle JKL$  and then reflect the image across the  $y$ -axis. Draw both images  $\triangle J'K'L'$  and  $\triangle J''K''L''$  on the set of axes below, labeling the vertices.



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

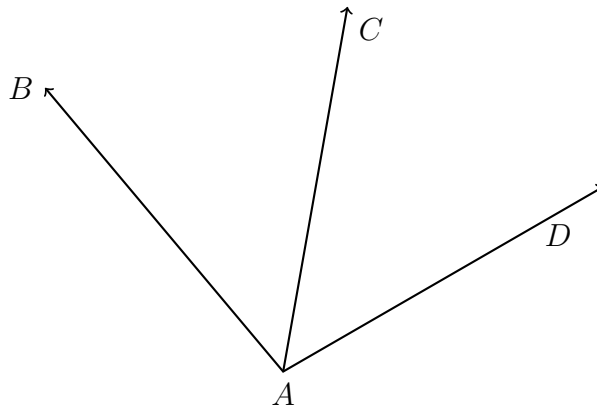


4. Find the sum of the measures of the internal angles of a hexagon. Show the formula.
5. A wooden cutting board is  $8\frac{1}{2}$  inches long, 7 inches wide, and  $1\frac{1}{4}$  inches thick. Find the volume of the box. Show the calculation.

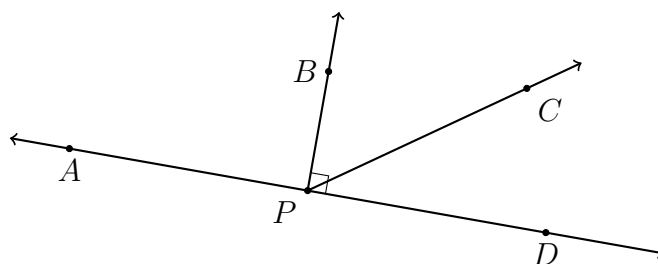


6. Of two complementary angles, the measure of  $\angle A$  is two times that of  $\angle B$ . Find  $m\angle A$ .

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)



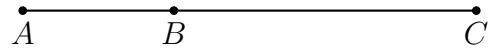
8. Angles  $APC$  and  $CPD$  form a linear pair.  $m\angle APC = 10x - 10$  and  $m\angle CPD = 3x - 5$ . Find  $m\angle CPD$ . Check your answer for full credit.



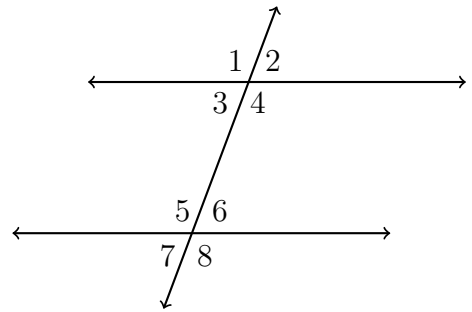
**Do Not Solve!**

**Model the situation with an equation in terms of  $x$ .**

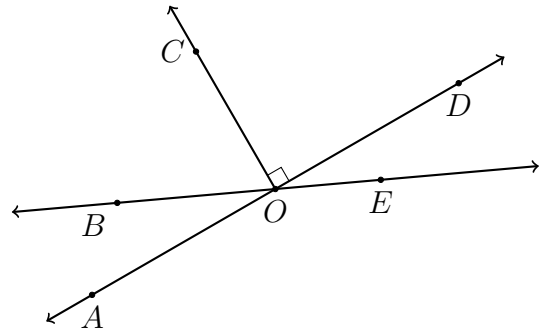
9. Given  $\overline{ABC}$ , with  $AB = 2x - 1$ ,  $BC = 3x + 7$ , and  $AC = 21$ . Find  $x$ .



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  $x$ .

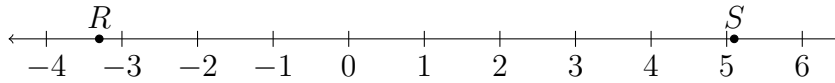


12. The point  $K$  is the midpoint of  $\overline{JL}$ ,  $JK = 3x + 15$ , and  $JL = 9x + 9$ . Find  $x$ .



13. The measures in degrees of the three angles of a triangle are  $3x$ ,  $\frac{1}{2}x + 7$ , and  $5x - 65$ . Find  $x$ .

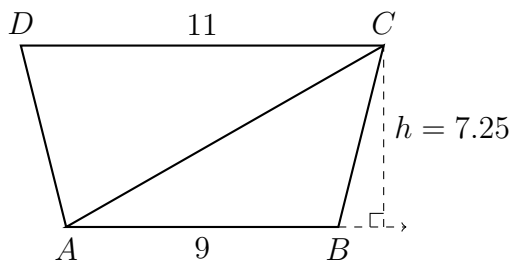
14. Given  $\overleftrightarrow{RS}$  as shown on the number line, with  $R = -3.3$  and  $S = 5.1$ .



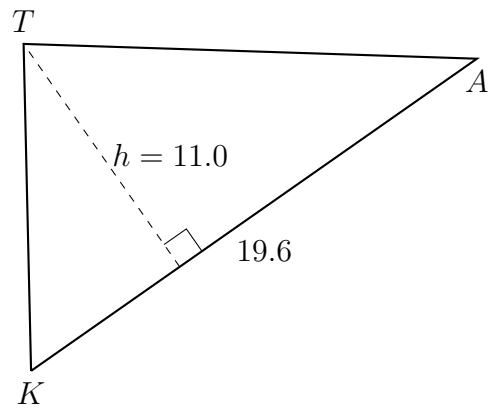
- (a) What is the exact distance on the number line between the points  $R$  and  $S$ ?

- (b) The point  $T$  bisects  $\overleftrightarrow{RS}$ . Find the value of  $T$ , and mark and label it on the numberline  $\overleftrightarrow{RS}$  shown above.

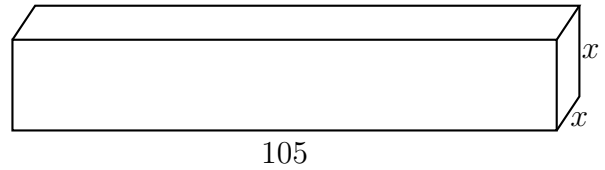
15. The trapezoid  $ABCD$  has two parallel sides,  $\overline{AB} \parallel \overline{CD}$  with lengths  $AB = 9$  and  $CD = 11$ . The trapezoid's height is  $h = 7.25$ . Find the area of the trapezoid.



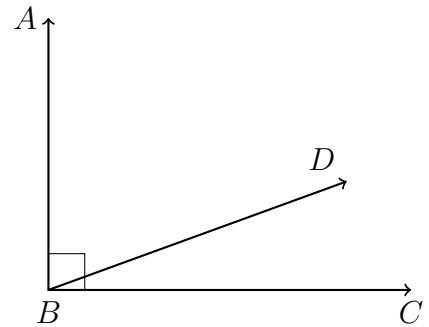
16. Find the area of  $\triangle KAT$ . The altitude  $h$  of the triangle is 11.0 centimeters and the base  $KA = 19.6$  cm. Show work by writing an equation before making the calculation.



17. A feeding trough in the shape of a rectangular prism is 105 inches long. The trough's cross section is square. If its volume is 15,120 cubic inches, what is the dimension of each side of its square end,  $x$ ? (drawing not to scale)

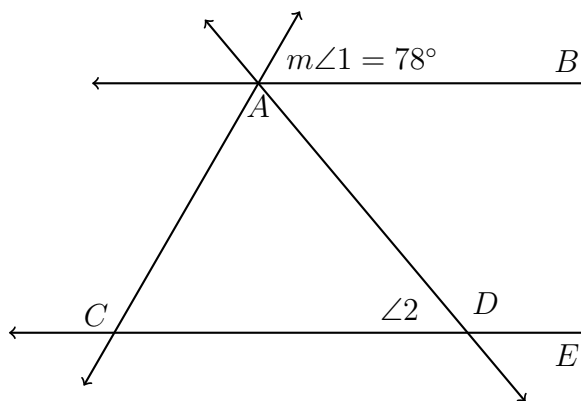


18. Given  $\overrightarrow{BA} \perp \overrightarrow{BC}$ ,  $m\angle ABD = 2x$ , and  $m\angle DBC = x - 15$ . Find  $m\angle DBC$ .  
For full credit, show the check using both angle measures.





19. Given parallel lines  $\overleftrightarrow{AB} \parallel \overleftrightarrow{CE}$  with  $\overline{AD} \cong \overline{CD}$ . If  $m\angle 1 = 78$  find  $m\angle 2$ .



20. The volume of the rectangular prism shown is 120 cubic feet. Its length is length is ten feet longer than its height  $x$ . Its depth is 5 feet. Find the length of the prism.  
(not drawn to scale)

