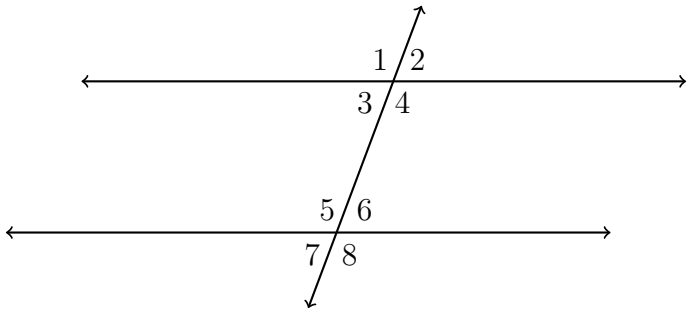
6.11 Homework pretest: Parallels, angle situations

1. Given two parallel lines and a transversal, as shown below.



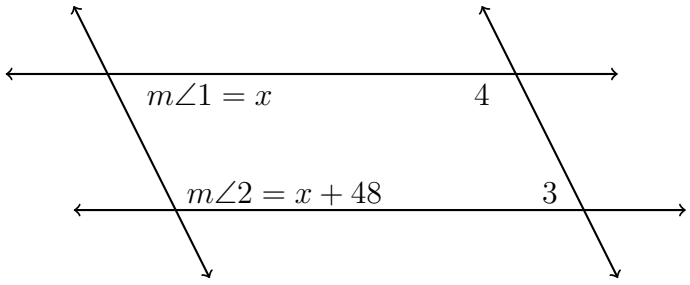
   (a) State the angle corresponding with $\angle 7$.

   (b) What theorem would justify $m\angle 4 + m\angle 6 = 180°$? _____

   (c) What theorem would justify $\angle 3 \cong \angle 6$? _____

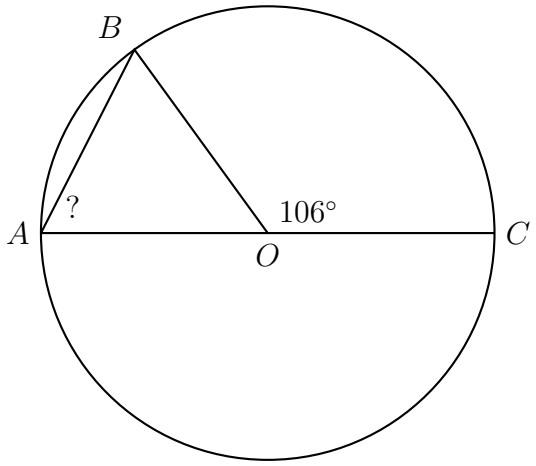
   (d) Given $m\angle 1 = 117°$ and $m\angle 8 = (4x - 3)°$. Find x.

2. Two parallel lines intersect a second set of parallel lines. Given $m\angle 1 = x$ and $m\angle 2 = x + 48$, find the measure of $\angle 4$.

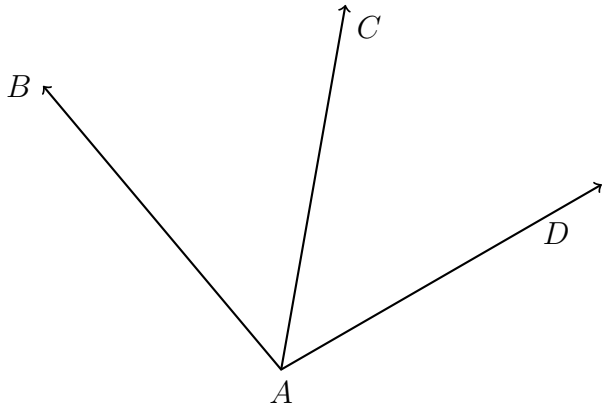


3. Of two supplementary angles, the measure of $\angle A$ is eight times that of $\angle B$. Find $m\angle A$.

4. The circle O is shown below with diameter $\overline{AOC}$ and radius $\overline{BO}$. Given that the central angle $m\angle COB = 106°$. Find the measure of angle A, that is, $m\angle BAO$.



5. An angle bisector is shown below, with $\overrightarrow{AC}$ bisecting $\angle BAD$. Given $m\angle BAC = 6x+10$ and $m\angle CAD = 14x - 30$, find $m\angle BAD$. (Show check)



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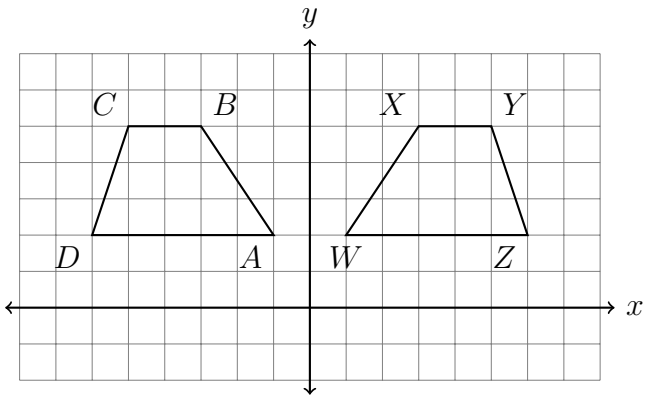
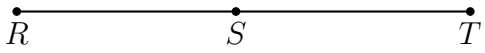
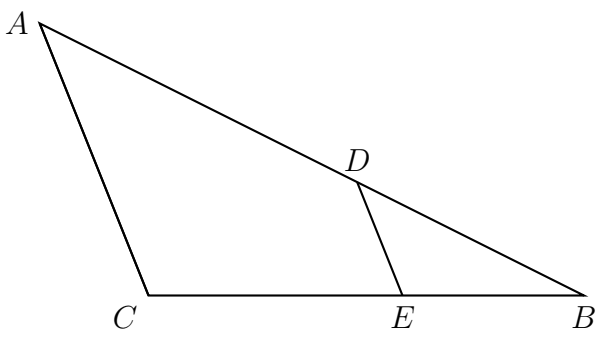
6. The trapezoid $ABCD$, shown below, undergoes a rigid transformation carrying it onto trapezoid $WXYZ$. State the transformation. (be specific)



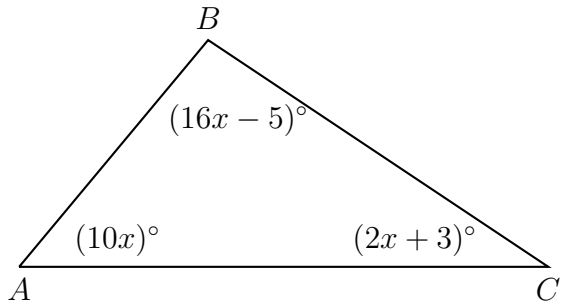
7. The points R, S, and T are collinear, with $RS = 4x - 8$, $ST = 21$, and $RT = 6x - 1$. Find RT.



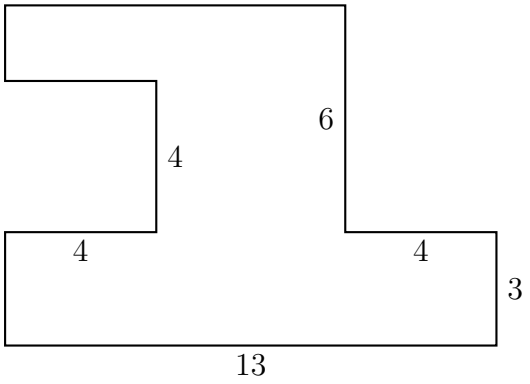
8. Given $\triangle ABC$ point D on $\overline{AB}$ and point E on $\overline{BC}$ such that $\triangle ABC \sim \triangle DBE$. If $AB = 15$, $BC = 10$, and $AD = 9$, what is the length of $\overline{BE}$?



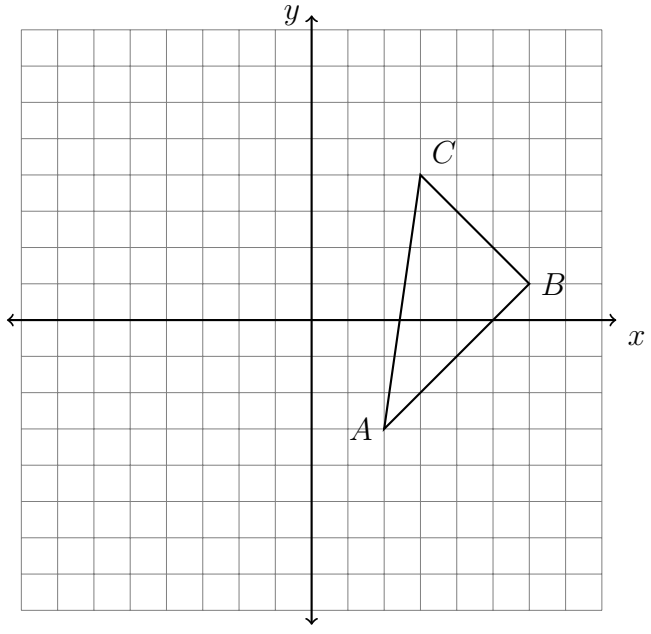
9. In $\triangle ABC$ shown below, $m\angle A = (10x)^\circ$, $m\angle B = (16x - 5)^\circ$, and $m\angle C = (2x + 3)^\circ$. Find $m\angle A$. (show the check for full credit)



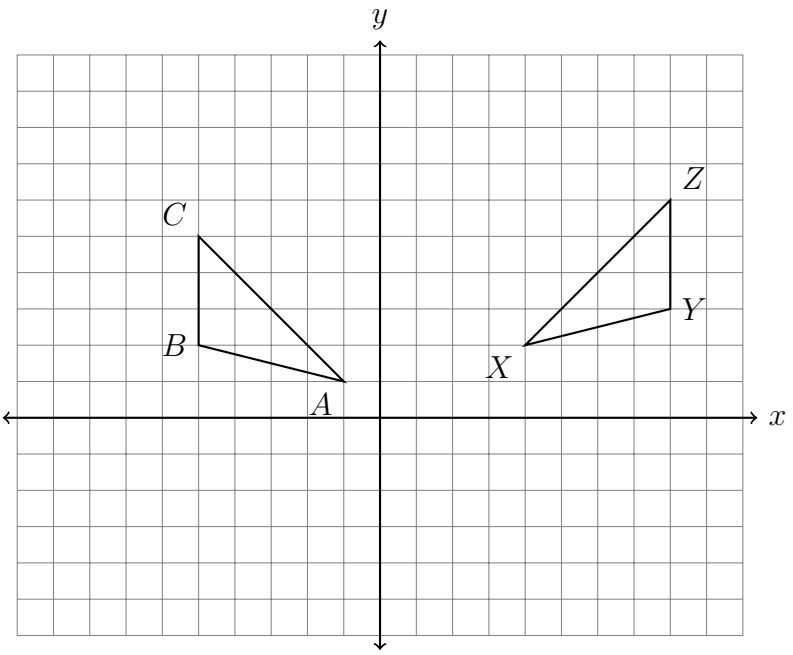
10. The shape shown below is composed of straight lines and right angles, with some lengths as marked. Find the area of the figure. (the figure is not drawn to scale)



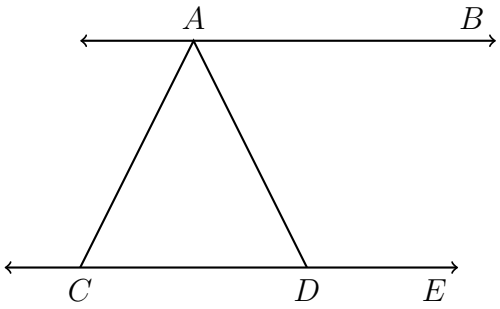
11. $\triangle ABC$ is shown with vertices $A(2,-3)$, $B(6,1)$, and $C(3,4)$. Reflect the triangle across the x-axis. Write down its coordinates in a table and plot and label it on the graph.



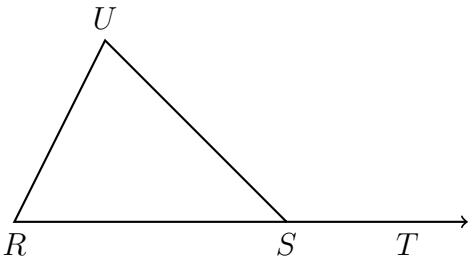
12. The triangle ABC, shown below, undergoes two rigid motions carrying it onto triangle XYZ. State the two isometric transformations. (be specific)



13. Given parallel lines $\overleftrightarrow{AB} \parallel \overleftrightarrow{CDE}$ with $\overline{AC} \cong \overline{CD}$. If $m\angle BAD = 68$ find $m\angle ACD$.

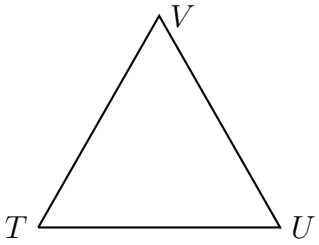


14. Given isosceles $\triangle RSU$ with $\overline{US} \cong \overline{RS}$. If $m\angle UST = 150$ find $m\angle U$.

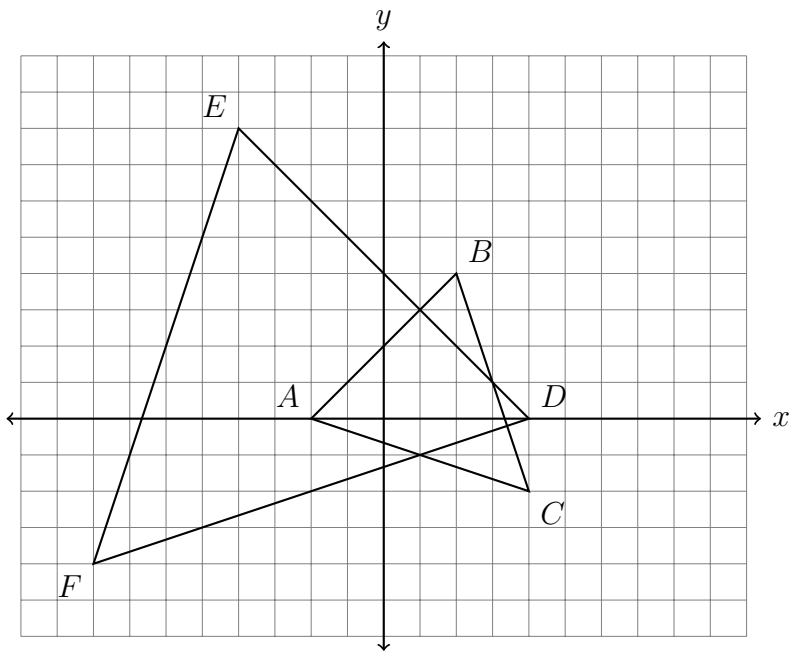


15. Given isosceles $\triangle TUV$ with $\overline{TU} \cong \overline{UV}$ and $m\angle T = 55$. Find $m\angle U$ and $m\angle V$.

(*the diagram is not to scale*)



16. On the set of axes below, $\triangle ABC$ has vertices at $A(-2,0)$, $B(2,4)$, $C(4,-2)$, and $\triangle DEF$ has vertices at $D(4,0)$, $E(-4,8)$, $F(-8,-4)$.



Which tranformations map $\triangle ABC \to \triangle DEF$? Mark each statement True or False

(a) A dilation with a scale factor of -2 centered at the origin True False

(b) A dilation with a scale factor of $\frac{1}{2}$ centered at point A True False

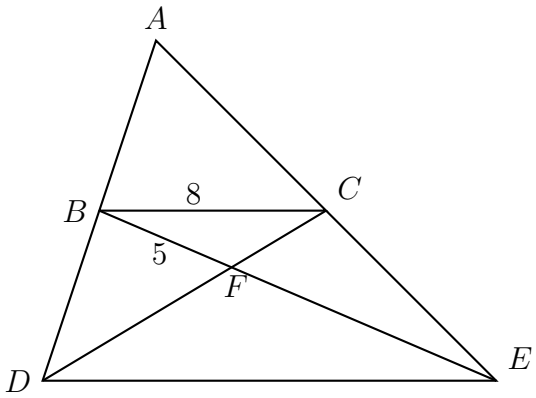
(c) A dilation with a scale factor of 2 centered at the origin, followed by a rotation of $180°$ about the origin True False

(d) A dilation with a scale factor of 2 centered at the origin, followed by a reflection across the y-axis True False

17. Triangle ADE and its midline $\overline{BC}$ are drawn, with B the midpoint of $\overline{AD}$ and C the midpoint of $\overline{AE}$. The two medians $\overline{AE}$ and $\overline{AE}$ are drawn, as shown, intersecting in point F, the centroid.

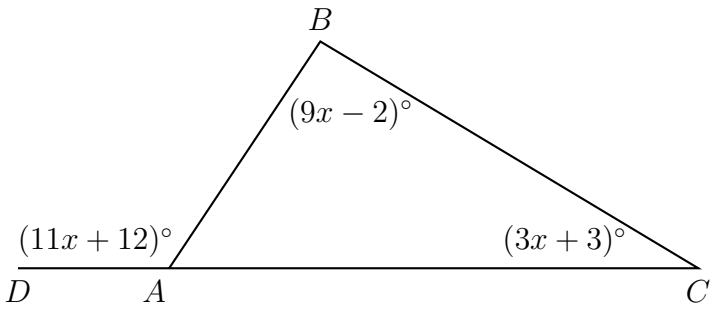
    $\triangle FCB \sim \triangle FDE$ with scale factor $k = 2$. Given $BC = 8$ and $BF = 5$.

    Find DE and FE.



18. In $\triangle ABC$ shown below, side $\overline{AC}$ is extended to point D with $m\angle DAB = (11x + 12)°$, $m\angle C = (3x + 3)°$, and $m\angle B = (9x + 2)°$.

    What is $m\angle BAC$?



19. Write down the slope perpendicular to the given slope.

    (a) $m = \frac{2}{3}$ $\quad m_\perp =$

    (b) $m = -2$ $\quad m_\perp =$

    (c) $m = 0.25$ $\quad m_\perp =$

    (d) $m = -\frac{1}{5}$ $\quad m_\perp =$

20. The line l has the equation $y = \frac{5}{2}x + 9$.

    (a) What is the slope of the line k, given $k \parallel l$?

    (b) What is the slope of the line j, given $j \perp l$?

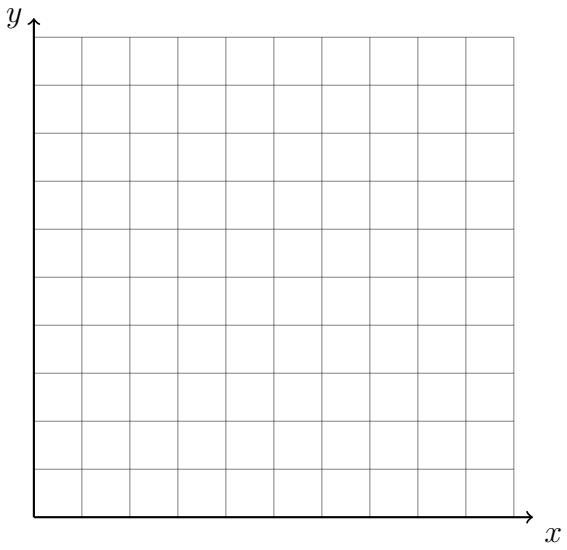
21. What is the slope of a line parallel to the line $2x + 2y = 14$?

22. What is the slope of a line perpendicular to the line $-2x + y = 1$?

Note: The formula for distance is $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

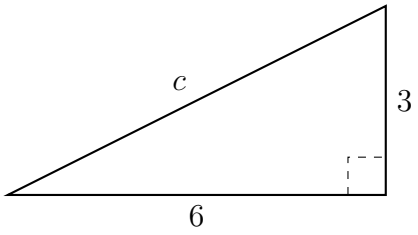
23. Graph and label $\triangle ABC$ and find the lengths of its sides. $A(1, 2)$, $B(9, 8)$, $C(9, 2)$.

(a) $AC =$



(b) $BC =$

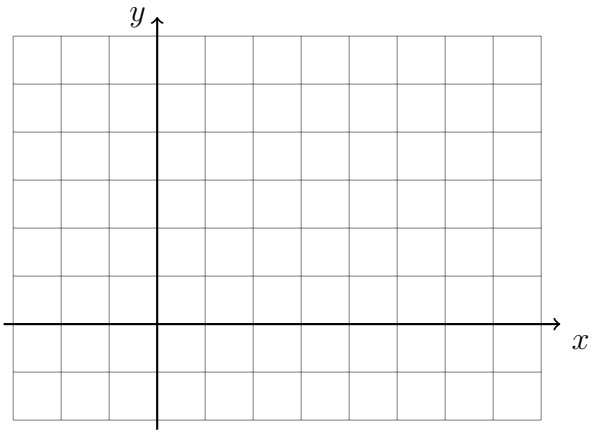
(c) $AB =$



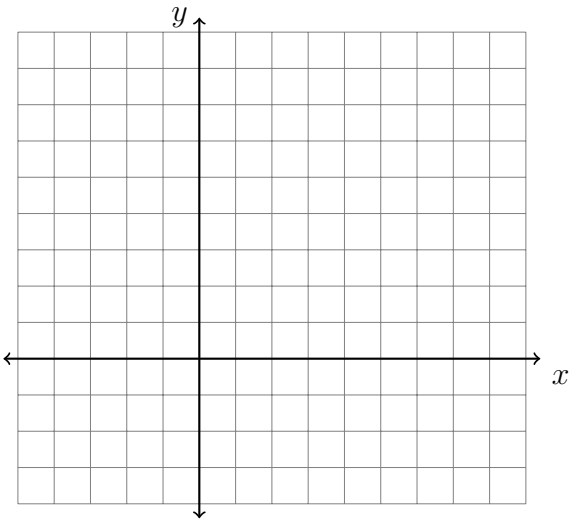
24. Find c.

25. What is the length of $\overline{CD}$ if $C(3, -1)$ and $D(-2, 11)$?

26. On the graph below, draw $\overline{AB}$, with $A(-2,3)$ and $B(5,1)$, labeling the end points. Determine and state the coordinates of the midpoint M of $\overline{AB}$ and mark and label it on the graph.



27. Spicy: On the set of axes below, graph the quadrilateral $ABCD$ having coordinates $A(-3,-3)$, $B(5,1)$, $C(6,8)$, and $D(-2,4)$. Find the slope of each of the four sides. What type of quadrilateral is $ABCD$? Justify your answer.



28. Checklist:

    ☐ I used a straight edge to make the lines

    ☐ I labeled each line with its original equation

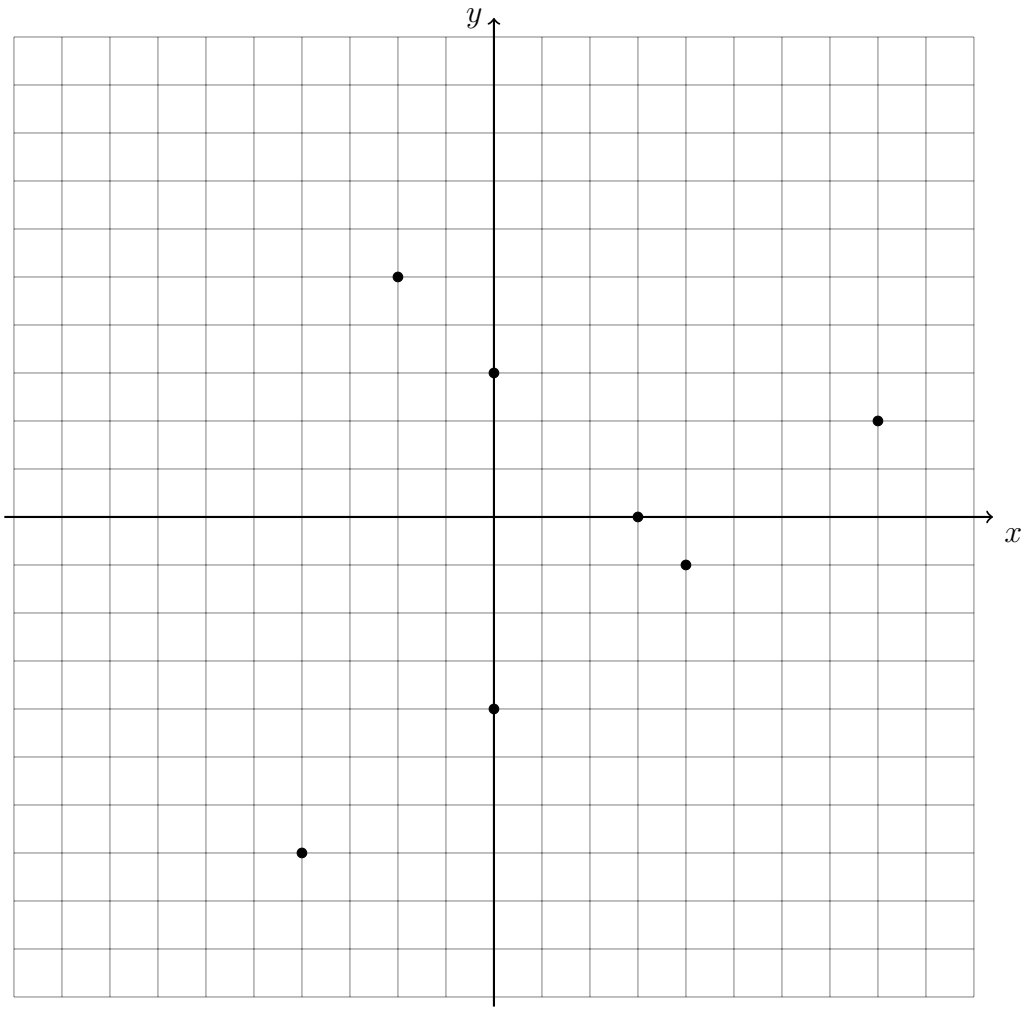
    ☐ I labeled the intersection as an ordered pair

    ☐ I answered the question, explained, and wrote down the two slopes

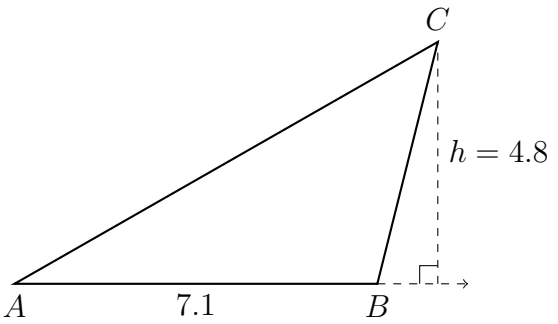
    Graph and label the two equations. Mark their intersection as an ordered pair.

$y = -x + 3$ $y = \frac{3}{4}x - 4$

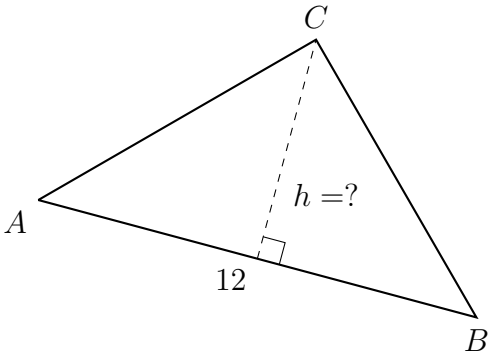
Are the lines parallel, perpendicular, or neither? Justify your answer.



29. The side $\overline{AB}$ of triangle ABC is extended and an altitude to the vertex C is drawn, as shown below. The triangle's height is $h = 4.8$ and its base measures $AB = 7.1$. Find the area of the triangle.

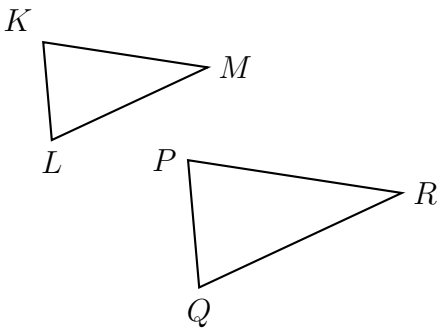


30. One side of the $\triangle ABC$ has a length $AB = 12$. The triangle's area is 45. Find the length of the altitude h of the triangle to vertex C and perpendicular to side $\overline{AB}$.



31. The point K is the midpoint of $\overline{JL}$, $JK = -x + 13$, and $JL = 2x - 2$. Find JK.

32. A dilation maps triangle KLM onto triangle PQR, with $KM = 3$, $LM = 3.3$, $PR = 4$.



Write each corresponding object.

(a) $L \to$ _____

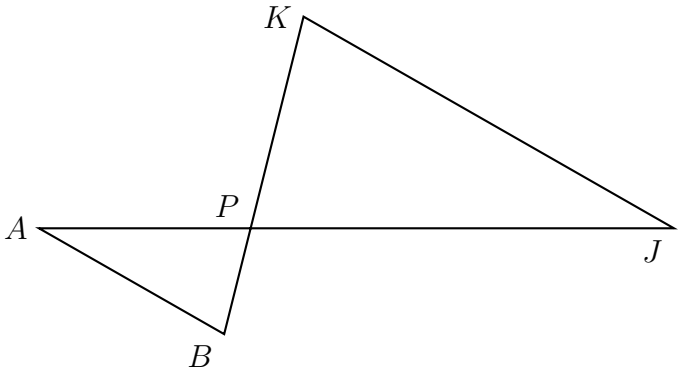
(b) $\angle M \cong$ _____

(c) $QR =$ _____

(d) Justify $\triangle KLM \sim \triangle PQR$. Use the words "maintains angles" and "dilation".

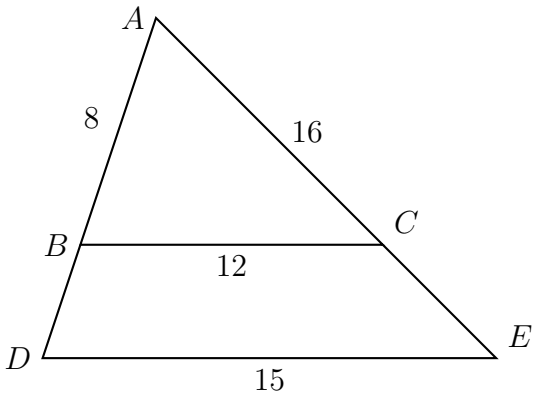
33. Given $\triangle ABC \sim \triangle DEF$. $m\angle C = 75°$ and $m\angle E = 35°$. Find the measure of $\angle F$.

34. Given $\triangle ABP \sim \triangle JKP$ as shown below. $AB = 10.0$, $AP = 28.6$, $BP = 16.0$, and $JK = 25.0$. Find JP.

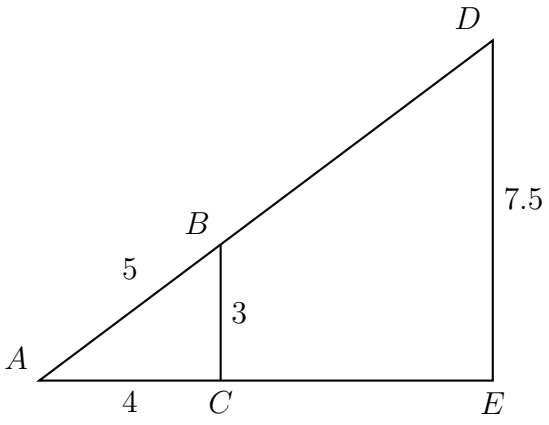


35. Triangle ABC is dilated with a scale factor of k centered at A, yielding $\triangle ADE$, as shown. Given $AB = 8$, $BC = 12$, $AC = 16$, and $DE = 15$.

    Find AD, CE, and k (the scale factor).



36. A dilation centered at A maps $\triangle ABC \to \triangle ADE$. Given the sides of the preimage, $AC = 4$, $BC = 3$, $AB = 5$, and of $DE = 7.5$ find the scale factor k and the lengths AD and AE.



37. Given $\triangle JKL \sim \triangle MNO$. $m\angle K = 40°$ and $m\angle M = 100°$.
    Find the measure of $\angle N$.