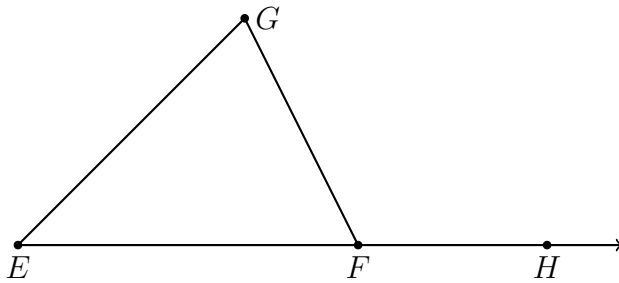


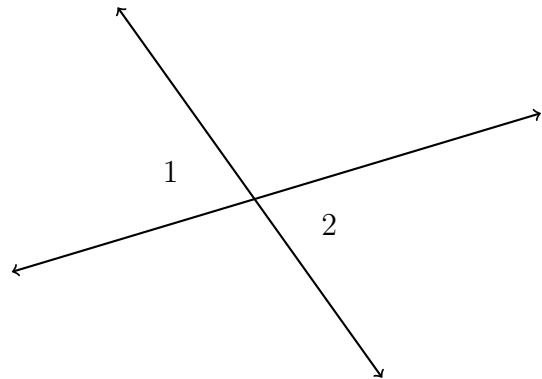
Take-home Test

Open book, open notes. You may use your notebook, papers, and online resources. No working with classmates or other human help.

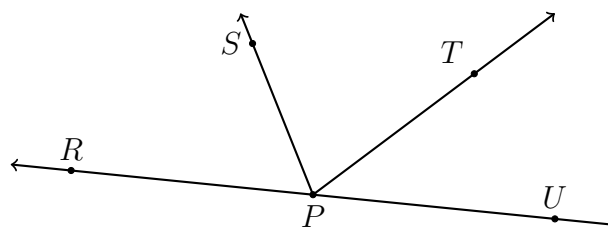
1. Given $m\angle E = 44$, and $m\angle GFH = 112$. Find $m\angle G$.



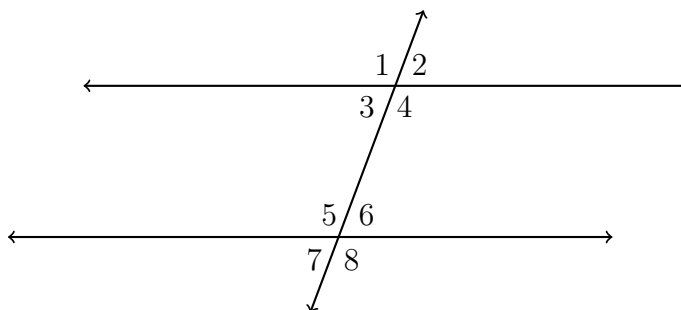
2. Given two vertical angles, $m\angle 1 = 4x + 5$, $m\angle 2 = \frac{9x - 7}{2}$. Find $m\angle 1$.
For full credit, check by comparing to $m\angle 2$.



3. Given the situation in the diagram, answer each question. Circle True or False.

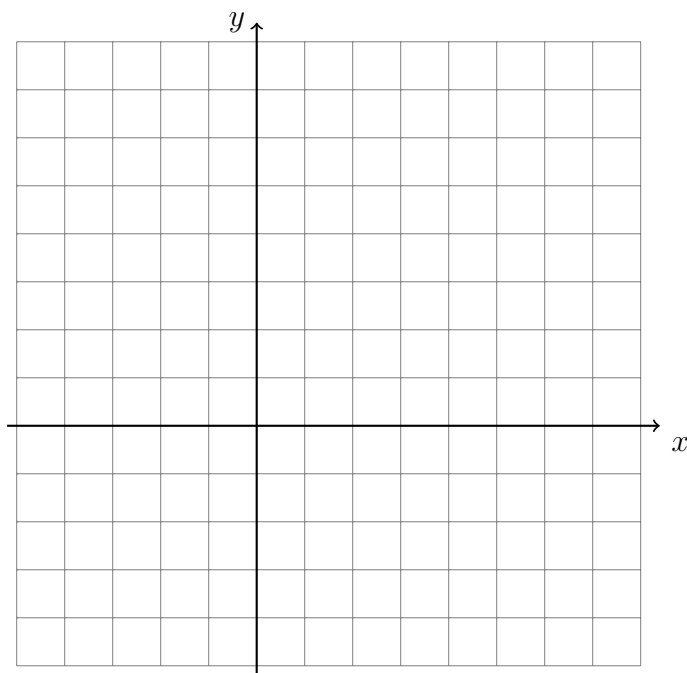


- (a) True or False: $\angle SPU$ is an obtuse angle.
 (b) True or False: \overrightarrow{SP} and \overrightarrow{PS} are opposite rays.
 (c) True or False: $\angle RPT$ and $\angle TPU$ are a linear pair.
 (d) True or False: $\angle SPT$ and $\angle RPS$ are adjacent.
4. Given two parallel lines and a transversal, as shown. Apply the theorem, “If a transversal intersects two parallel lines, then corresponding angles are congruent.”



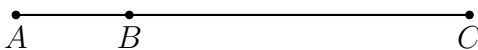
- (a) State the angle corresponding with $\angle 7$.
 (b) Given $m\angle 2 = 68^\circ$. Find $m\angle 3$.
 (c) In a proof, what reason would justify $\angle 4 \cong \angle 5$? _____
 (d) Given $m\angle 5 = 112^\circ$ and $m\angle 3 = 4x^\circ$. Find x .

5. On the graph below, draw \overline{CD} , with $C(-1, 6)$ and $D(7, 3)$, labeling the end points. Determine and state the coordinates of the midpoint M of \overline{CD} and mark and label it on the graph.

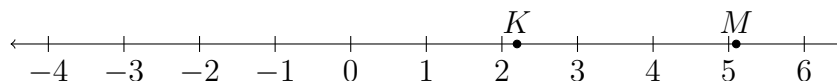


6. Given \overline{ABC} , $AC = 24$, and the point B partitions \overline{AC} in a ratio of 1:3.

Find AB .



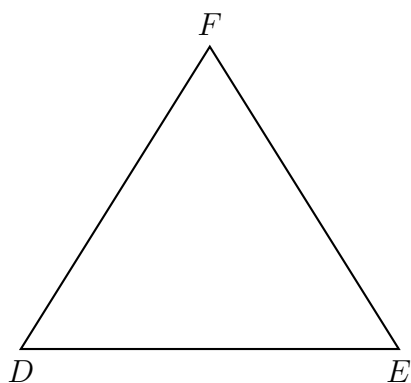
7. Given \overleftrightarrow{KM} as shown on the number line, with K having the coordinate 2.2 and M the coordinate 5.1



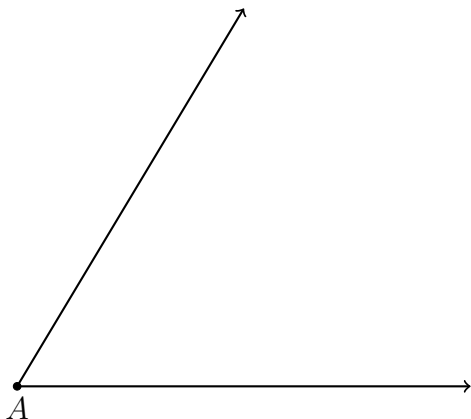
- (a) Find the value of the coordinate of the point L , the midpoint of \overline{KM} .

- (b) The point J is collinear with \overleftrightarrow{KM} such that K is the midpoint of \overleftrightarrow{JM} . Mark J on the line and state the value of its coordinate.

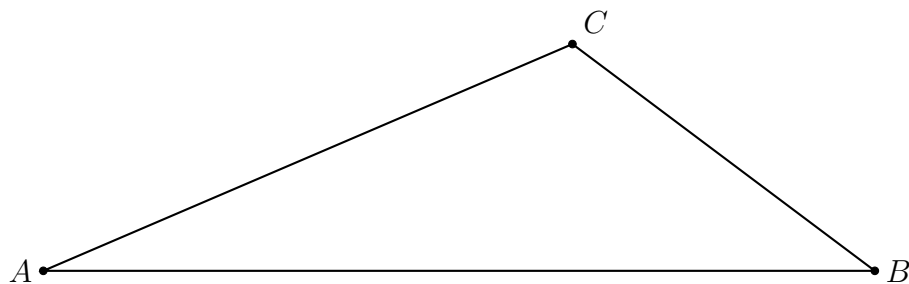
8. Given $\triangle DEF$. $\overline{DF} \cong \overline{EF}$, $m\angle F = 68$. Find $m\angle D$.



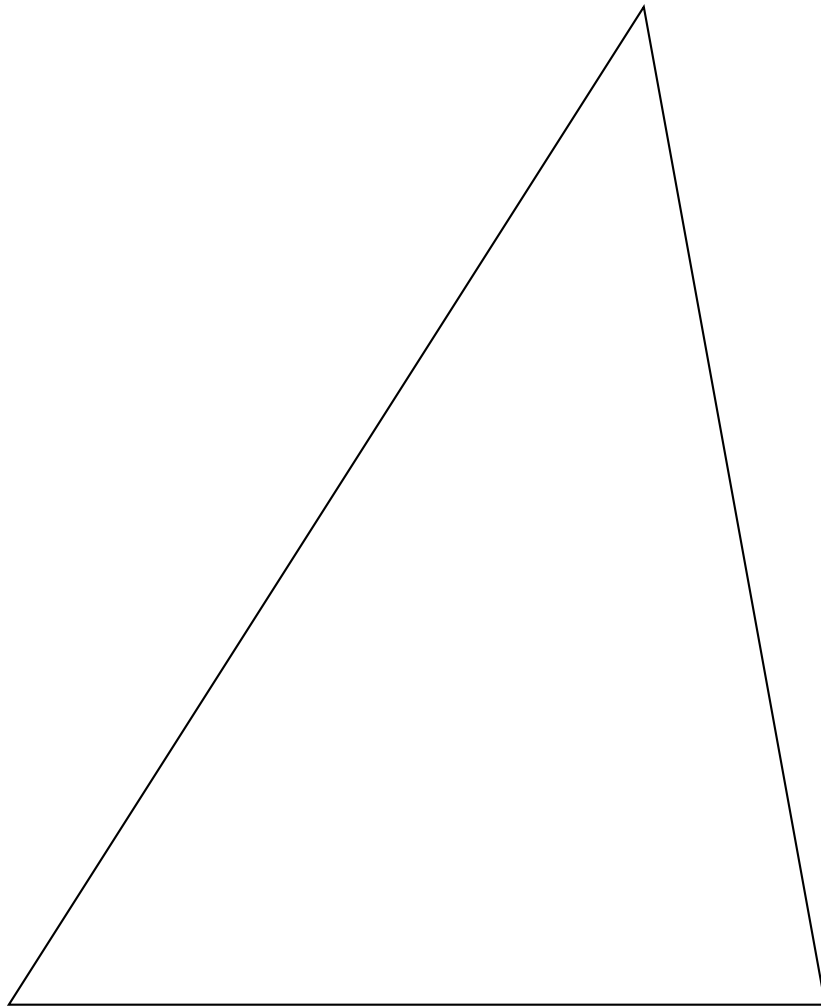
9. Construct a duplicate of the given angle A . [Leave all construction marks.]



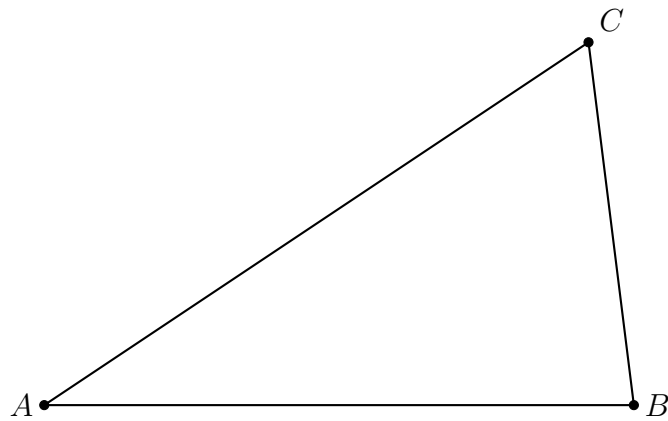
10. Construct a perpendicular to \overline{AB} through C .



11. Construct the angle bisectors of the angles of the triangle and their intersection, the incenter.



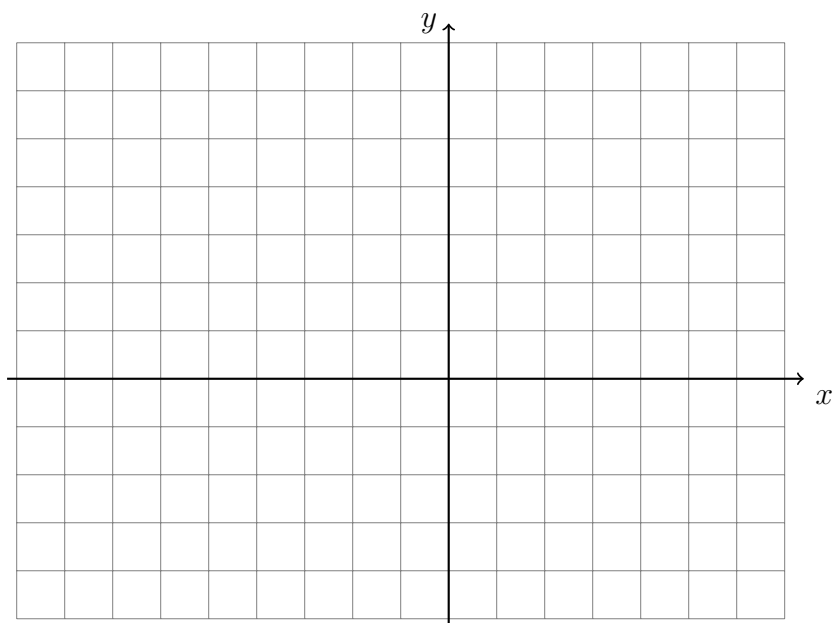
12. Construct the centroid of $\triangle ABC$, leaving all construction marks.



13. Given $M(-7, 10)$ and $N(-2, -2)$, find the length of \overline{MN} .

14. Given $\triangle GEM$ with $G(-9, -3)$, $E(6, -3)$, and $M(6, 5)$.

- (a) Plot and label $\triangle GEM$ on the graph, labeling its vertices.
- (b) Find the lengths of each side of the triangle. Show the substitution into the proper formulas for full credit.

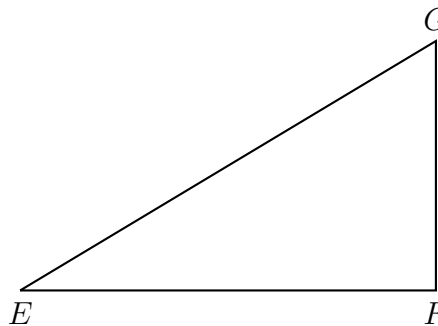


15. Given right $\triangle EFG$ with $m\angle G = 90^\circ$, $EG = 8$, and $m\angle E = 43^\circ$. Express each trig ratio as a fraction.

(a) $\sin E =$

(b) $\tan E =$

(c) Find EF .



16. Find the slope of each line.

(a) $y = -3x - 7$

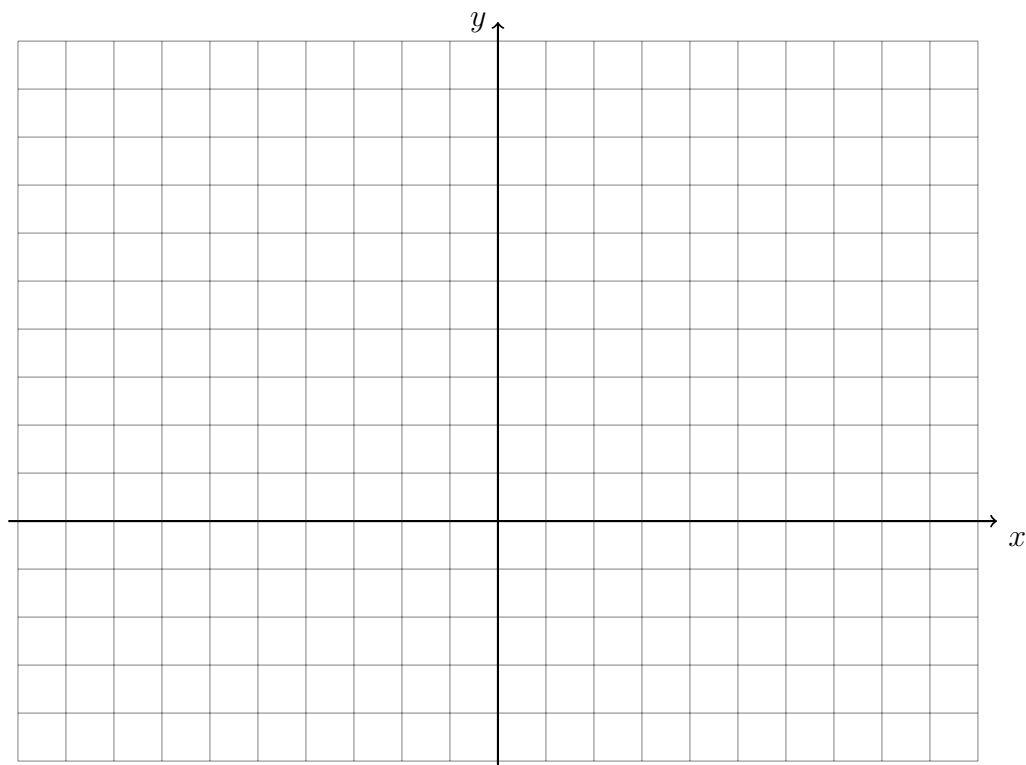
(b) $2x - 3y = 9$

17. Find the slope of the line through the points $A(5, 3)$ and $B(7, -1)$.

18. Given the quadrilateral $RSTU$ with $R(-8, -1)$, $S(2, -1)$, $T(10, 5)$, and $U(0, 5)$.

- (a) Plot and label $RSTU$ on the grid.
- (b) Find the slope of the diagonals \overline{RT} and \overline{SU} .
- (c) Theorem: A quadrilateral is a rhombus if and only if its diagonals are perpendicular.

Prove that $RSTU$ is a rhombus.

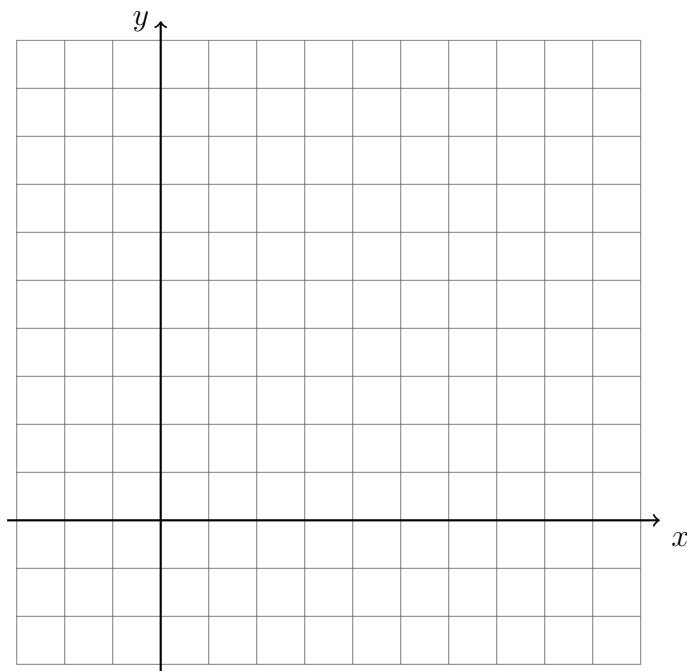


19. Given the square $EASY$ with $E(-1, 1)$, $A(6, 1)$, $S(6, 8)$, and $Y(-1, 8)$.

(a) Draw $EASY$ on the graph, labeling the vertices.

(b) Find the area of $EASY$.

(c) Find the perimeter of $EASY$.



20. Given a circle O with radius 2.2.

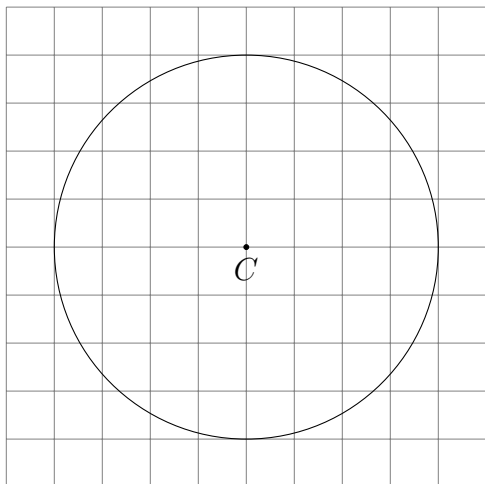
(a) Find the circumference of O .

(b) Find the area of O .

21. Given the circle C with circumference 8π .

(a) Write down the formula for the circumference of a circle and solve for the radius yielding a circumference of 8π .

(b) Find the area of the circle.



22. On the graph, draw polygon ABCDEF with vertices A(-1, 1), B(4, 1), C(4, 5), D(9, 5), E(9, 8), and F(-1, 8). Find the perimeter and the area of the polygon.

