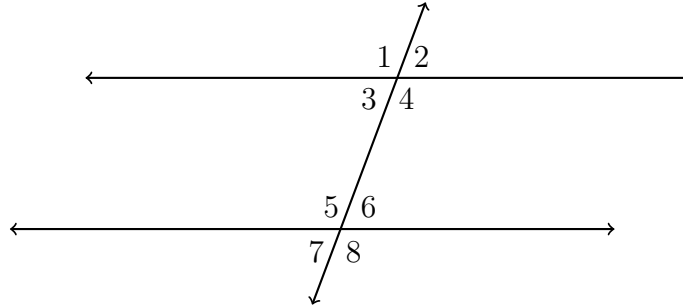**Pre Test**

1. 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 $\angle 2$.

   (b) Given $m\angle 8 = 115°$ and $m\angle 4 = 5x°$. Find x.

   (c) Given $m\angle 7 = 65°$. Find $m\angle 2$.

   (d) In a proof, what reason would justify $\angle 4 \cong \angle 5$? _____

2. Given two vertical angles, $m\angle 1 = 5x + 9$, $m\angle 2 = 6x - 1$. Find $m\angle 1$.
   For full credit, check by comparing to $m\angle 2$.
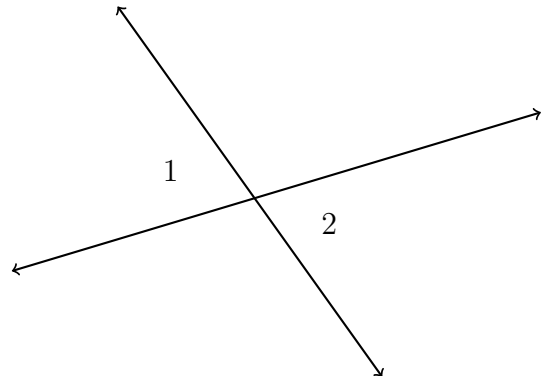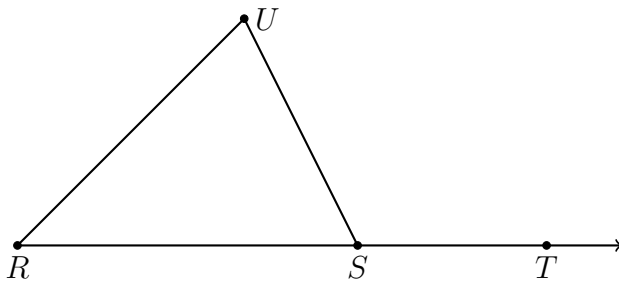
3. Express the result to the nearest thousandth.

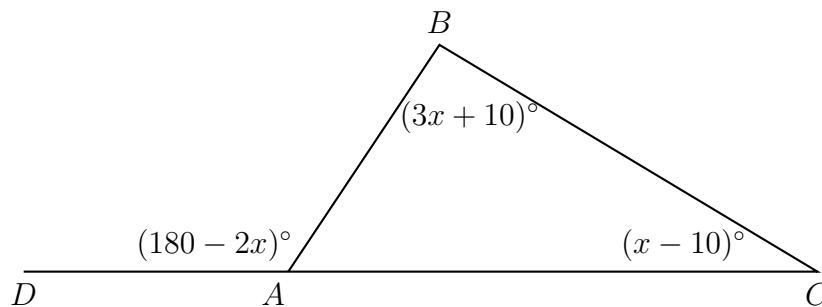   (a) $\cos 60° =$ (c) $\sin 48° =$

    (b) $\tan 45° =$ (d) $\cos 15° =$

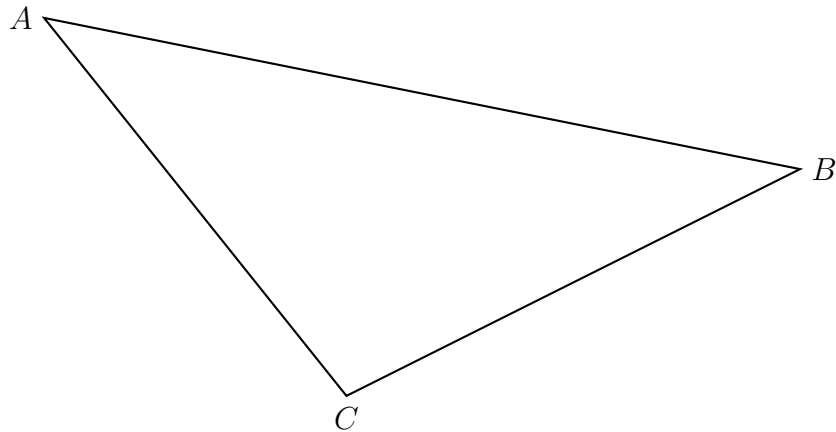4. Given $m\angle R = 53$ and $m\angle UST = 117$. Find $m\angle U$.

5. In $\triangle ABC$ shown below, side $\overline{AC}$ is extended to point D with $m\angle DAB = (180 - 2x)°$, $m\angle C = (x - 10)°$, and $m\angle B = (3x + 10)°$.
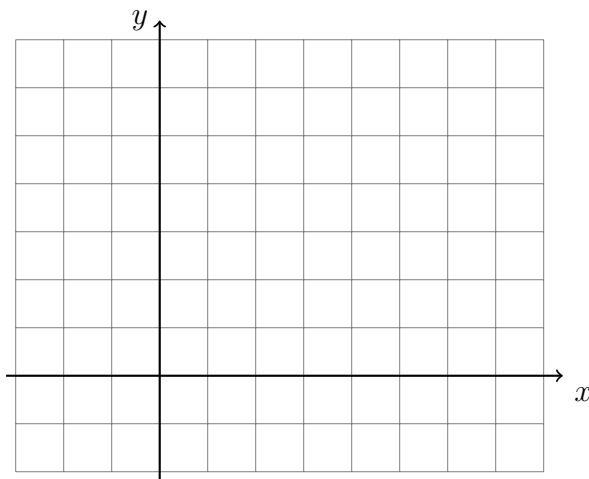

    What is $m\angle BAC$?

6. Using a compass and straightedge, construct the median to side $\overline{AC}$ in $\triangle ABC$ below. (Leave all construction marks.)
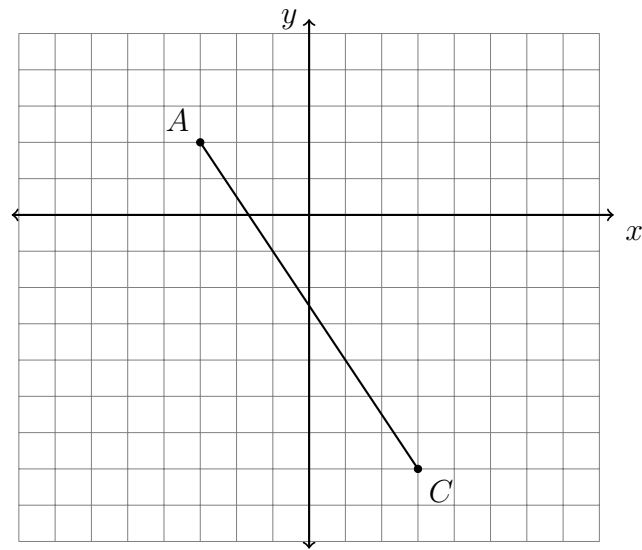
7. On the graph below, draw $\overline{AB}$, with $A(-1, 5)$ and $B(7, 0)$, labeling the end points. Determine and state the coordinates of the midpoint M of $\overline{AB}$ and mark and label it on the graph.
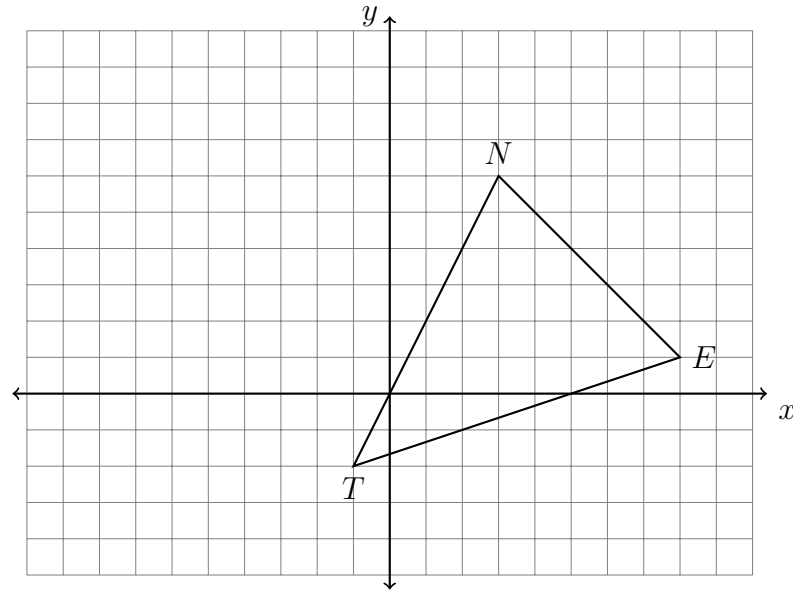

Midpoint on the x-y plane

8. In the diagram below, $\overleftrightarrow{AC}$ has endpoints with coordinates $A(-3, 2)$ and $C(3, -7)$.

If B is a point on and $AB{:}BC = 1{:}2$, what are the coordinates of B?

Distance formula and slope

9. Triangle $\triangle DAN$ is graphed on the set of axes below. The vertices of $\triangle DAN$ have the coordinates $T(-1, -2)$, $E(8, 1)$, and $N(3, 6)$.

(a) Draw an altitude through point N perpendicular to $\overline{TE}$.

(b) What is the length of the altitude drawn through N?

(c) What is the length of the base, TE?
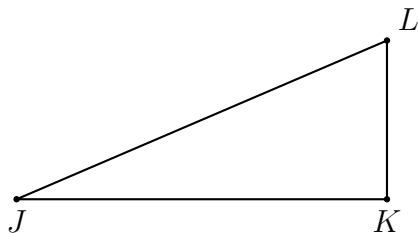
(d) Find the area of $\triangle DAN$.

10. In a proof, each of the following statements are written. Write down the reason that would justify each step.

    (a) $MN + NO = MN + LM$ _____ property

    (b) $\overline{MN} \cong \overline{MN}$ _____ property

    (c) $2(a + b) = 2a + 2b$ _____ property

11. Given right $\triangle JKL$ with $\overline{JK} \perp \overline{KL}$, $JL = 10$, $m\angle J = 327°$.

    (a) Find the length JK

    (b) Find the length KL

12. Given a circle O with radius 5.

    (a) Find the circumference of O.

    (b) Find the area of O.

### Circle the appropriate equation and state the justification

Use the postulates and theorems you have learned. You may abbreviate them as follows: "def. of bisector," "$\perp$ rays meet at 90°," "complementary $\angle$s add to 90," "linear pairs add to 180," "vertical $\angle$s are $\cong$," "corresponding $\angle$s of parallel lines are $\cong$."

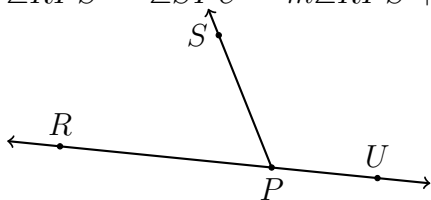13. Given $m\angle R = m\angle U = 65$, and $m\angle UST = 130$. Find $m\angle RSU$.
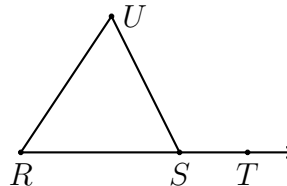
    $\angle UST \cong \angle RSU \qquad m\angle UST + m\angle RSU = 180$ _____

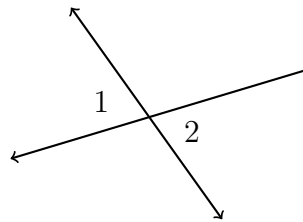14. Given $\overrightarrow{BA} \perp \overrightarrow{BC}$, $m\angle ABD = 2x - 5$, and $m\angle DBC = x - 10$.
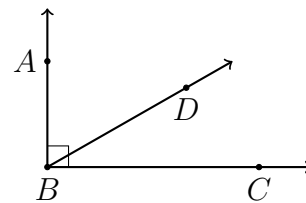
    $\angle ABD \cong \angle DBC \qquad m\angle ABD + m\angle DBC = 90$ _____

15. $\angle RPS \cong \angle SPU \qquad m\angle RPS + m\angle SPU = 180°$ _____

16. Given corresponding angles of a transversal and two parallel lines, $\angle A$, $\angle B$.

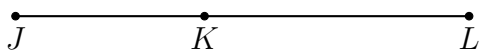 $\angle A \cong \angle B \qquad m\angle A + m\angle B = 180°$ _____

17. Given $m\angle 1 = 4x + 6$, $m\angle 2 = 6x - 32$. Find $m\angle 1$.

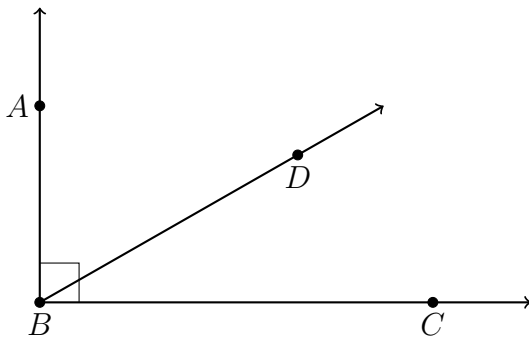 $\angle 1 \cong \angle 2 \qquad m\angle 1 + m\angle 2 = 180$ _____

18. Given $\overline{JKL}$, $JL = 24$, and the point K partitions $\overline{JL}$ in a ratio of 1:3.

Find JK.

$$\overset{\bullet}{J} \rule{1cm}{0.4pt} \overset{\bullet}{K} \rule{2cm}{0.4pt} \overset{\bullet}{L}$$

19. Given $\overrightarrow{BA} \perp \overrightarrow{BC}$, $m\angle ABD = 10x + 15$, and $m\angle DBC = 5x$. Find $m\angle DBC$.

For full credit, show the check using both angle measures.

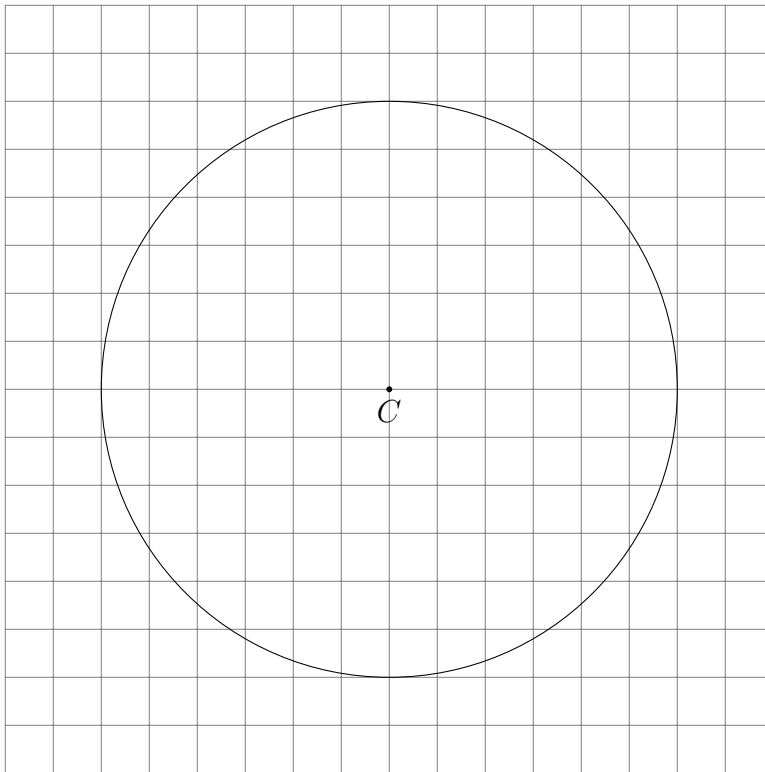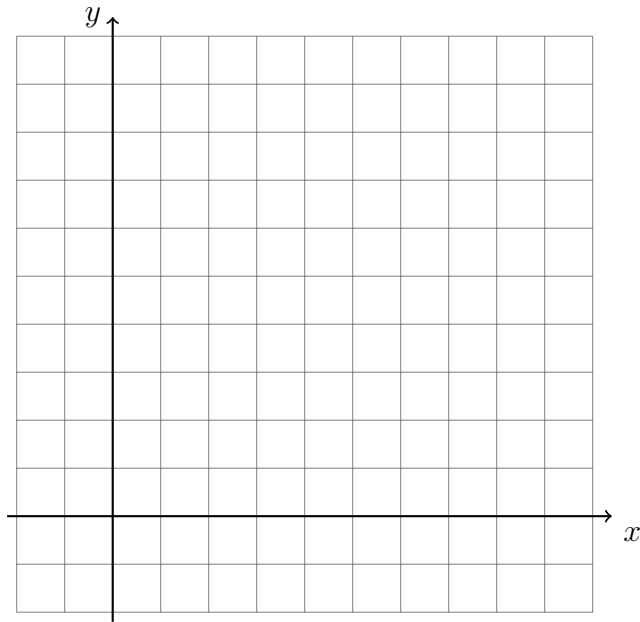20. Given $P(3, 4)$ and $Q(11, -2)$, find the length of $\overline{PQ}$.

21. Given the circle C with circumference 12π.

    (a) Write down the formula for the circumference of a circle and solve for the radius yielding a circumference of 12π.

    (b) Find the area of the circle.

22. On the graph, draw polygon ABCDEF with vertices A(1, 1), B(1, 4), C(3, 4), D(3, 7), E(8, 7), and F(8, 1). Find the perimeter and the area of the polygon.

Honor pledge

I have not received human help with this test.

Signed: _____