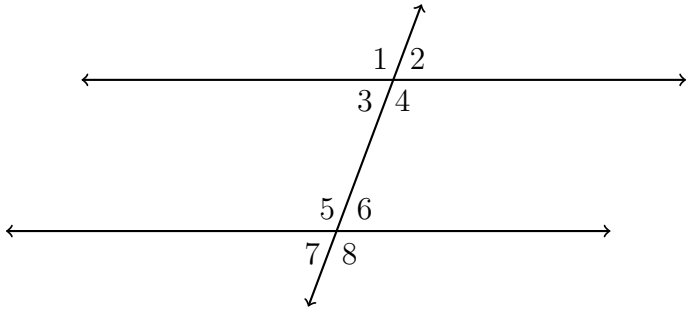
Unit 3: Analytic Geometry Name: .
21 November 2018

Review problem set

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."



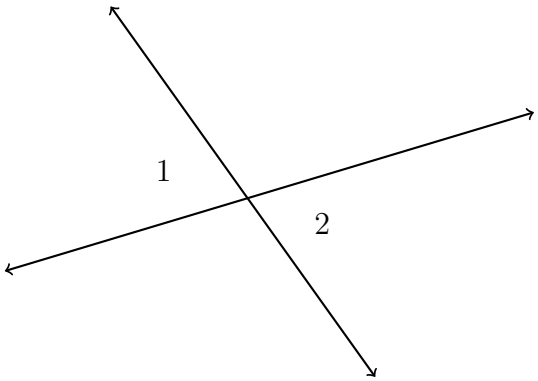
   (a) State the angle corresponding with $\angle 2$.

   (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.

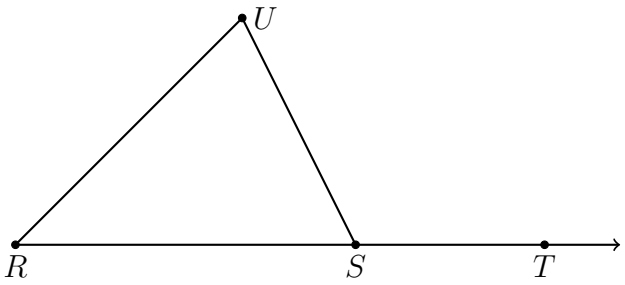
(a) $\sin 35° =$

(b) $\tan 70° =$

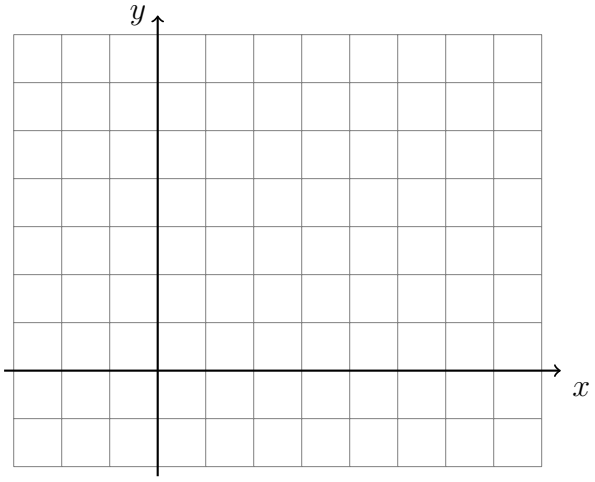
(c) $\sin 78° =$

(d) $\cos 12° =$

4. Given $m\angle R = 48$ and $m\angle UST = 110$. Find $m\angle U$.



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



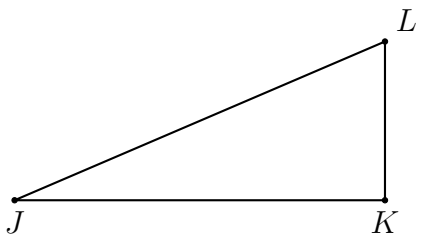
6. In a proof, each of the following statements are written. Write down the reason that would justify each step.

   (a) $\overline{PQ} \cong \overline{PQ}$ _____ property

   (b) $PQ + RS = QR + RS$ _____ property

   (c) $2(PQ + QR) = 2PQ + 2QR$ _____ property

7. Given right $\triangle JKL$ with $\overline{JK} \perp \overline{KL}$, $JL = 8$, $m\angle J = 30°$.



   (a) Find the length JK

   (b) Find the length KL

8. Given a circle O with radius 6.

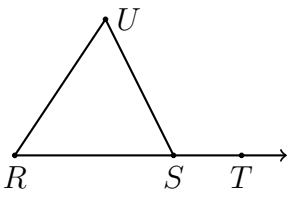
   (a) Find the circumference of O.

   (b) Find the area of O.

Circle the appropriate equation and state the justification

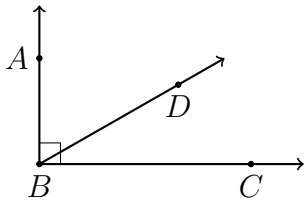
Use the postulates and theorems you have learned. You may abbreviate them as follows: "def. of bisector," "$\perp$ rays meet at 90°," "complementary $\angle$s add to 90," "linear pairs add to 180," "vertical $\angle$s are $\cong$," "corresponding $\angle$s of parallel lines are $\cong$."

9. Given $m\angle R = m\angle U = 65$, and $m\angle UST = 130$. Find $m\angle RSU$.



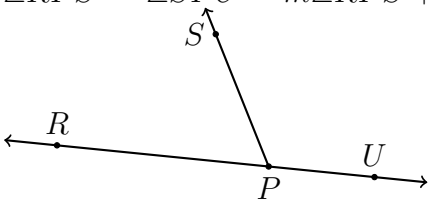
$\angle UST \cong \angle RSU$ $\quad m\angle UST + m\angle RSU = 180$ _____

10. Given $\overrightarrow{BA} \perp \overrightarrow{BC}$, $m\angle ABD = 2x - 5$, and $m\angle DBC = x - 10$.



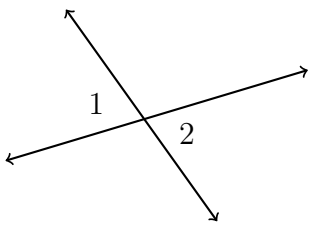
$\angle ABD \cong \angle DBC$ $\quad m\angle ABD + m\angle DBC = 90$ _____

11. $\angle RPS \cong \angle SPU$ $\quad m\angle RPS + m\angle SPU = 180°$ _____



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

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

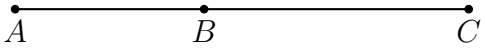


13. Given $m\angle 1 = 4x + 6$, $m\angle 2 = 6x - 32$. Find $m\angle 1$.

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

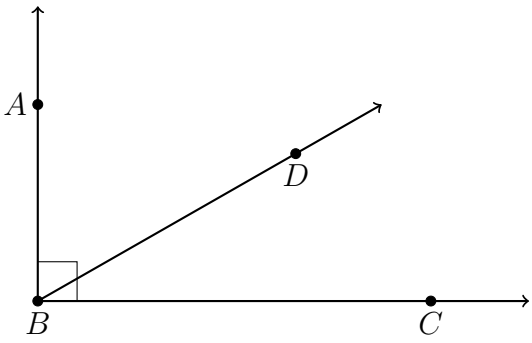
14. Given $\overline{ABC}$, $AC = 18$, and the point B partitions $\overline{AC}$ in a ratio of 2:7.

    Find AB.



15. Given $\overrightarrow{BA} \perp \overrightarrow{BC}$, $m\angle ABD = 4x$, and $m\angle DBC = 2x - 12$. Find $m\angle DBC$.

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

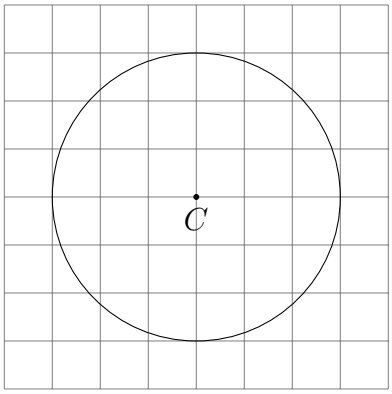


16. Given $P(3, 4)$ and $Q(7, 1)$, find the length of $\overline{PQ}$.

17. Given the circle C with circumference 4π.

    (a) Write down the formula for the circumference of a circle and solve for the radius yielding a circumference of 6π.

    (b) Find the area of the circle.



18. 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.