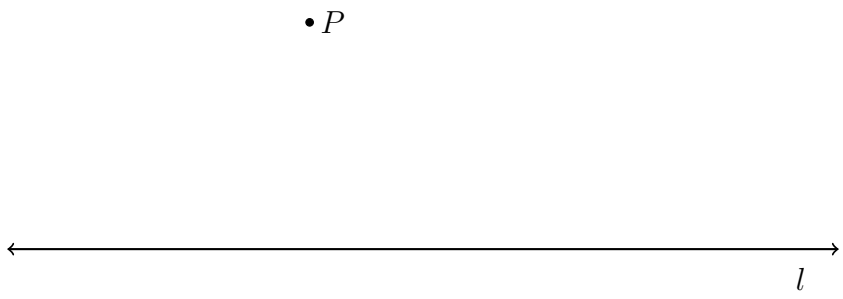
9.4 Homework: Mixed review **CCSS.HSG.SRT.B.5**

1. Complete the construction of an angle bisector including the six steps.
   (a) Given an angle with vertex A.
   (b) Construct circle A with arbitrary radius (i.e. the radius does not matter).
   (c) Label the intersections B and C of the angle's rays and circle A.
   (d) Construct circle B with radius BC.
   (e) Construct circle _____ with radius _____.
   (f) Label D, the intersection of circle B and C.
   (g) Draw ray _____.
   (h) Ray $\overrightarrow{AD}$ bisects $\angle A$.

2. Construction a perpendicular to a line through a given point.
   Spicy: List the steps

   Given the line l and point P.



3. Points that are all located on the same plane are _____.

4. Given the conditional statement, "If a quadrilateral has congruent diagonals, then it is a rectangle."

   (a) Write down the hypothesis.

   (b) Write down the converse of the statement.

   (c) Write down the negation of the conclusion of the statement.

5. Given $A(2, 4)$ and $B(6, 9)$, find the coordinates of the midpoint of $\overline{AB}$, the point M.

6. Given $m\angle A = 65$, $m\angle B = 42$, $m\angle 1 = 50$, $m\angle DEF = 132$, $m\angle FEG = 48$.

   (a) Find a pair of complementary angles. _____ _____

   (b) Find a pair of supplementary angles. _____ _____

7. Find the value of $|\pi - \frac{2}{5}| + \pi$.

8. Given $R(-3, 4)$ and $S(3, 12)$, find the length of $\overline{RS}$.

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

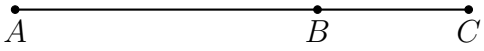
   (a) $\overline{BC} \cong \overline{BC}$ _____ property

   (b) $XY + BC = YZ + BC$ _____ property

   (c) $2(XY + YZ) = 2XY + 2YZ$ _____ property

10. Given $\overline{ABC}$, $AC = 9$, and the point B partitions $\overline{AC}$ in a ratio of 2:1.

    Find AB.

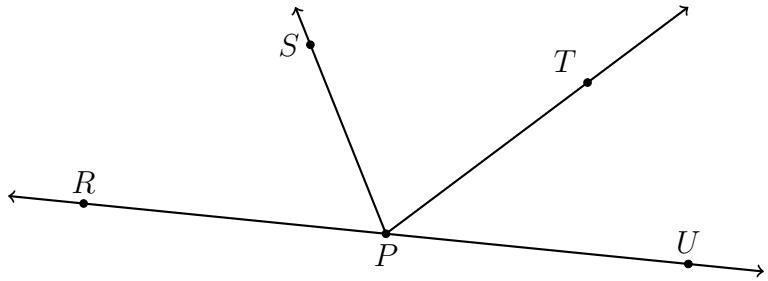


11. Given rectangle $MATH$ with $MA = 12.5$ and $AT = 7.25$.

    (a) Find the perimeter of $MATH$.

    (b) Find the area of $MATH$.

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



(a) True or False: $\overrightarrow{PR}$ and $\overrightarrow{PU}$ are opposite rays.

(b) True or False: $\angle TPU$ is an acute angle.

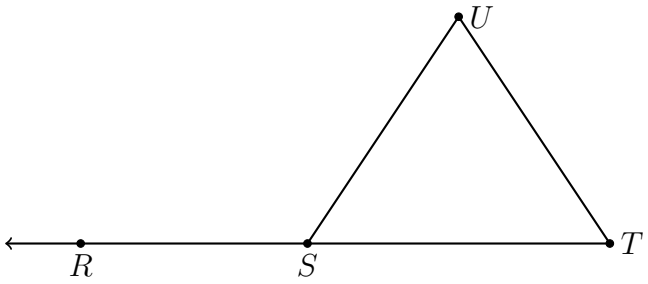
(c) True or False: $\angle RPT$ and $\angle TPU$ are complementary angles.

(d) True or False: $\angle RPT$ and $\angle UPT$ are adjacent.

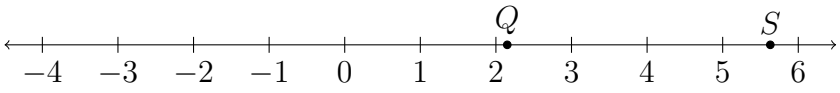
13. Given the circle C with area 64π. Find the circumference of C.

14. Find the length of a line segment with one end point of $(5, 7)$ and a midpoint of $(10, -5)$.

15. Given $m\angle RSU$ is three times $m\angle TSU$. Find $m\angle TSU$.



16. Given $\overleftrightarrow{QS}$ as shown on the number line, with Q having the coordinate 2.15 and S the coordinate 5.63.

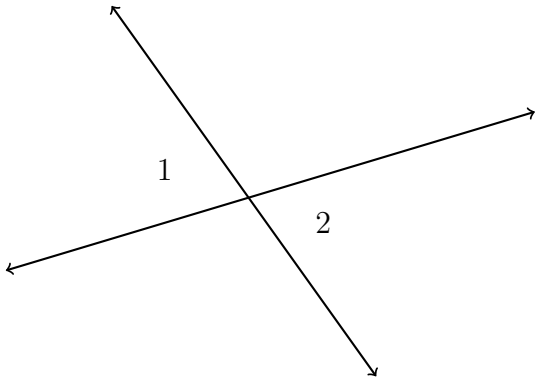


(a) Find the value of the coordinate of the point R, the midpoint of $\overline{QS}$.

(b) The point P is collinear with $\overleftrightarrow{QS}$ such that Q is the midpoint of $\overleftrightarrow{PS}$. Mark P on the line and state the value of its coordinate.

17. Given two vertical angles, $m\angle 1 = \frac{5}{6}(5x - 13)$, $m\angle 2 = \frac{5}{6}(4x + 4)$. Find $m\angle 1$.

(a) First label the drawing.



(b) Write a geometric equation: _____ _____

State the reason

(c) Substitute algebraic values: _____

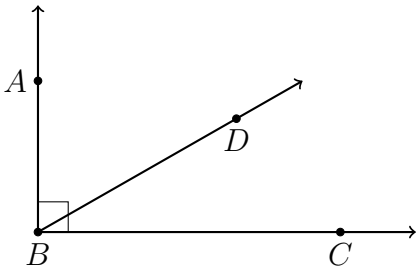
(d) Solve for x

(e) Answer the question:

(f) Check your answer

18. Given $\overrightarrow{BA} \perp \overrightarrow{BC}$, $m\angle ABD = 8x + 1$, and $m\angle DBC = 4x - 7$. Find $m\angle DBC$.

First label the drawing.



(a) Write a geometric equation: _____ _____

(b) Substitute algebraic values: _____

(c) Solve for x

(d) Answer the question:

(e) Check your answer