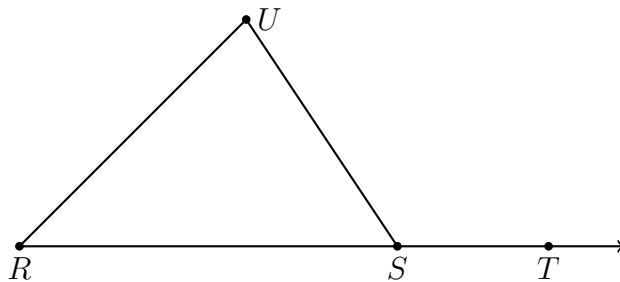
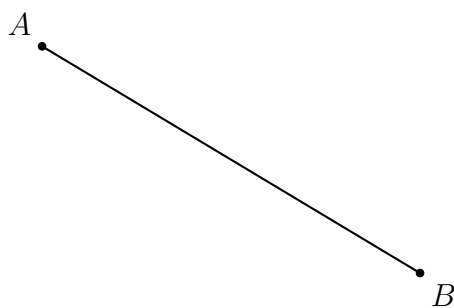


Exam: Introduction to logic and proof, angle pairs

1. Points that are all located on the same line are _____.
2. Given $C(1, -2)$ and $D(7, 9)$, find the coordinates of the midpoint of \overline{CD} , the point M .
3. Given the conditional statement, “If two triangles’ corresponding sides are congruent, then their corresponding angles are congruent.”
 - (a) Write down the conclusion of the statement.
 - (b) Write down the negation of the hypothesis.
 - (c) Write down the converse of the statement.
4. Given $m\angle R = 50$, $m\angle S = 65$, and $m\angle UST = 115$. Find $m\angle RSU$.



5. Construct an equilateral triangle with one side the given line segment \overline{AB} .



6. Given the square $BECA$ with $BE = 2.50$.

(a) Find the area of $BECA$.

(b) Find the perimeter of $BECA$.

7. Given $m\angle A = 75$, $m\angle B = 45$, $m\angle C = 165$, $m\angle DEF = 55$, $m\angle FEG = 15$.

(a) Find a pair of complementary angles. _____

(b) Find a pair of supplementary angles. _____

8. Find the value of $|\sqrt{11} - \frac{3}{2}| - \sqrt{11}$.

9. Given $P(-2, 4)$ and $Q(1, 0)$, find the length of \overline{PQ} .

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

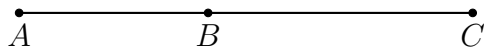
(a) $2(DE + FG) = 2DE + 2FG$ _____ property

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

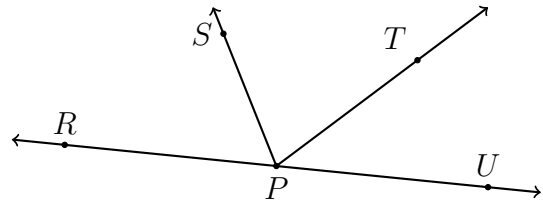
(c) $DE + EF = FG + EF$ _____ property

11. Given \overline{ABC} , $AC = 15$, and the point B partitions \overline{AC} in a ratio of 2:3.

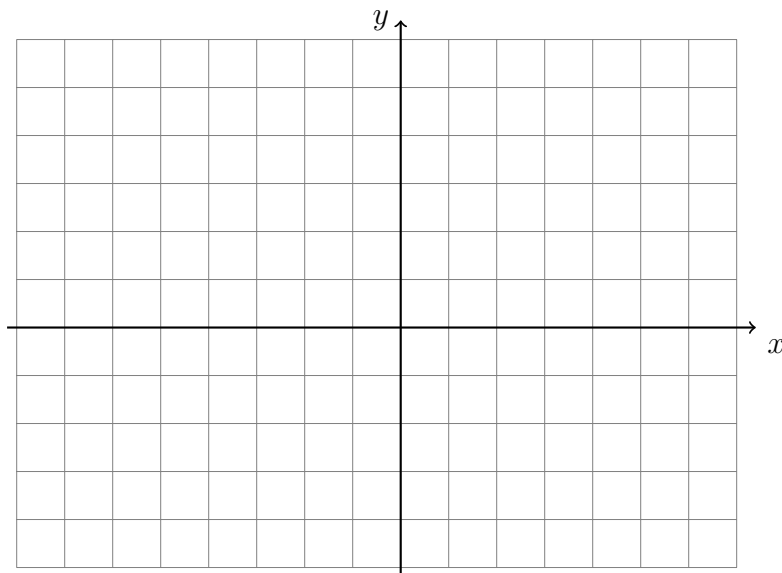
Find AB .



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

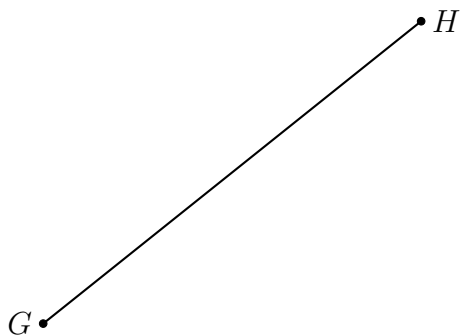


- (a) True or False: $\angle SPU$ is an obtuse angle.
- (b) True or False: \overrightarrow{PR} and \overrightarrow{PU} are opposite rays.
- (c) True or False: $\angle RPT$ and $\angle SPU$ are a linear pair.
- (d) True or False: $\angle SPT$ and $\angle TPU$ are adjacent.
13. Given $B(-7, 4)$, $U(5, -1)$, and $Z(-7, -1)$.
- (a) Plot and label the points on the graph, drawing \overline{BU}
- (b) Draw the legs of the right triangle, \overline{BZ} and \overline{ZU} , marking their lengths.
- (c) Write down the distance formula for BU , substituting coordinate values.
- (d) Find the value of BU .

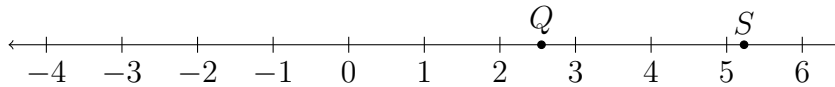


14. Given the circle C with circumference 10π . Find the area of C .

15. Construction a perpendicular bisector of the given line segment, \overline{GH} .



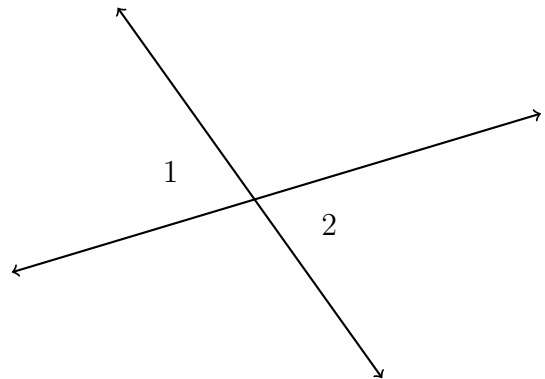
16. Given \overleftrightarrow{QS} as shown on the number line, with Q having the coordinate 2.55 and S the coordinate 5.23.



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

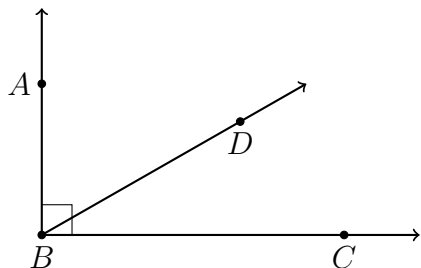
- (b) The point P is collinear with \overleftrightarrow{QS} such that Q is the midpoint of \overleftrightarrow{PS} . Mark P on the line and state the value of its coordinate.

17. Given two vertical angles, $m\angle 1 = 4x + 6$, $m\angle 2 = 6x - 32$. Find $m\angle 1$. For full credit find the $m\angle 2$ as a check.

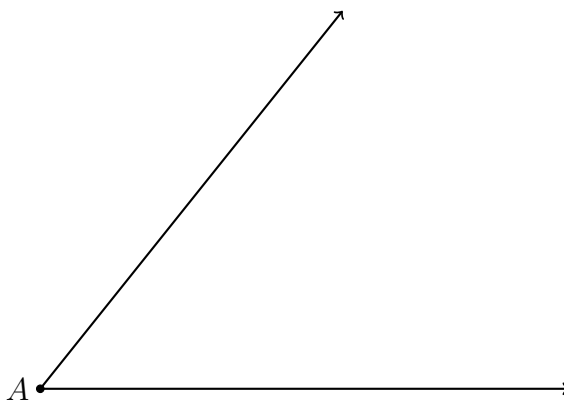


18. Given $\overrightarrow{BA} \perp \overrightarrow{BC}$, $m\angle ABD = 2x - 5$, and $m\angle DBC = x - 10$. Find $m\angle DBC$.

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



19. Construct an angle bisector of the given angle.



20. Spicy: Construct the angle bisectors of the angles of the triangle and their intersection, the incenter.

