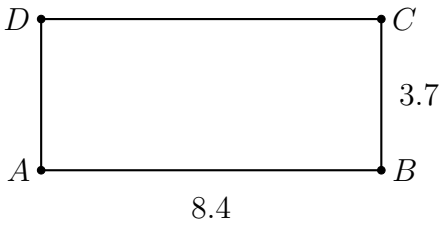
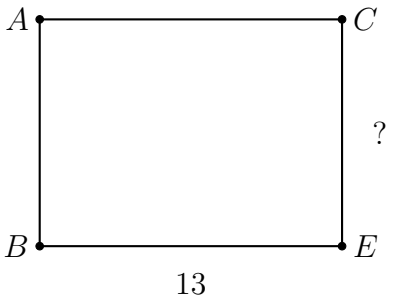
**2.9 Exam: Area, perimeter, line segments**

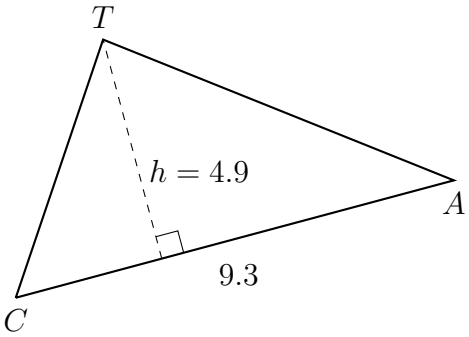
1. Given the rectangle $ABCD$ shown below, with $AB = 8.4$ and $BC = 3.7$. Find the area of the rectangle.



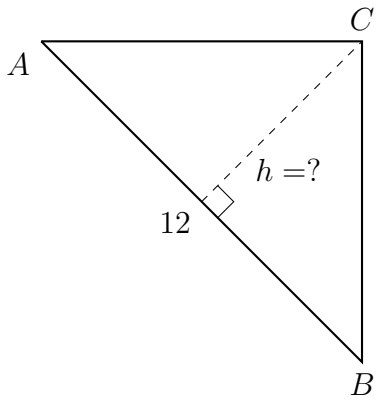

2. The rectangle $BECA$ has an area of 143, with length $BE = 13$. Find the width of the rectangle $EC$. (the drawing is not to scale)



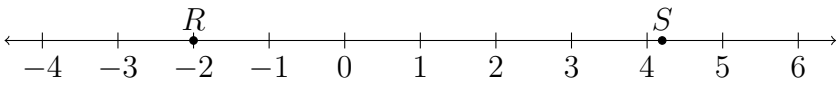

3. Find the area of $\triangle CAT$. The altitude $h$ of the triangle is 4.9 centimeters and the base $CA = 9.3$ cm.



4. One side of the $\triangle ABC$ has a length $AB = 12$. The triangle's area is 30. Find the length of the altitude $h$ of the triangle to vertex $C$ and perpendicular to side $\overline{AB}$.



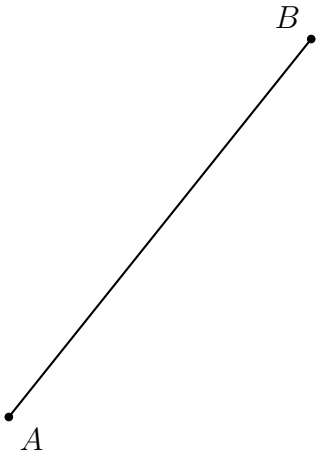

5. Given $\overleftrightarrow{RS}$ as shown on the number line, with $R = -2.0$ and $S = 4.2$.




   (a) What is the exact distance on the number line between the points $R$ and $S$?

   (b) The point $T$ bisects $\overline{RS}$. Find the value of $T$, and mark and label it on the numberline $\overleftrightarrow{RS}$.

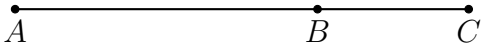
6. Complete the construction of a perpendicular bisector of $\overline{AB}$. Label the midpoint $M$. Show the construction marks, but make no extra lines.




7. Accurately draw a square that is 5 centimeters on each side.

8. Given $\overline{ABC}$, $AB = 6\frac{2}{5}$, and $AC = 9$.

   Find $BC$.



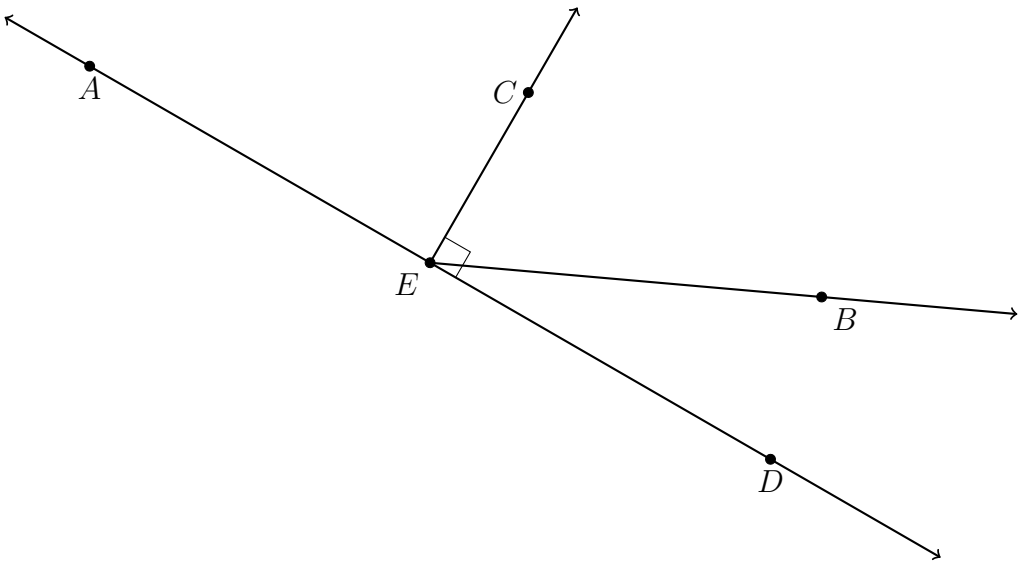

   The postulate used in this problem is the _____.

9. Given the diagram shown below.

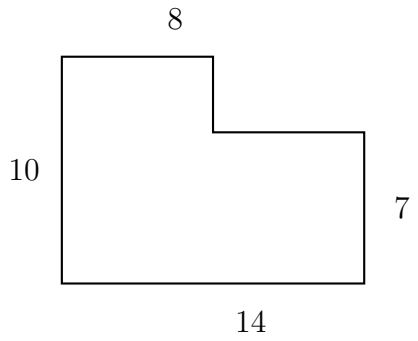
   (a) Measure the angle $AEB$. $m\angle AEB =$ _____

   (b) Name an angle that is complementary to $\angle DEB$: _____

   (c) Name a pair of opposite rays: _____



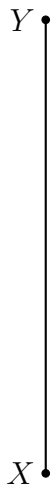
10. Find the perimeter $P$ of the shape shown below, given the side lengths marked (not drawn to scale). All angles are $90°$. Completely mark the diagram with the two missing lengths and show an equation for $P$ as a sum of each side's length.




11. Find the perimeter of a square with side length 7.25.

12. Given two complementary angles, $m\angle A = 5x + 14$ and $m\angle B = 3x - 12$. Find the measure of $\angle B$.

13. Complete the construction of an equilateral triangle with one side as $\overline{XY}$. Show the construction marks, but make no extra lines.




(a) Identify two circles in the construction. For each, name the center of the circle and the radius.

(b) Assuming that the third vertex of the triangle is point $Z$, explain why the distance from $X$ to $Z$ is the same as the distance from $X$ to $Y$.

**Complete all steps for full credit: the drawing to the top right, an equation and solution for $x$ on the left, followed by the answer to the question. Write the check to the bottom right.**

14. Given the collinear points $P$, $Q$, and $R$, with $PQ = 3x + 4$, $QR = 2x + 2$, and $PR = 4x + 10$. Find $PR$.

15. Angles $M$ and $N$ are supplementary. $m\angle M = x + 29$ and $m\angle N = 3x - 9$. Find $m\angle N$.

16. Given that $E$ bisects $\overline{DF}$. $DE = 12x - 5$, $EF = 9x + 4$. Find $EF$.

*Write the term that best completes each statement.*

17. Two or more line segments of equal measure are _____

18. Points that are located on the same line are _____

*Factor and solve for $x$.*

19. $x^2 + 8x + 7 = 0$

20. $x^2 + 7x = 18$