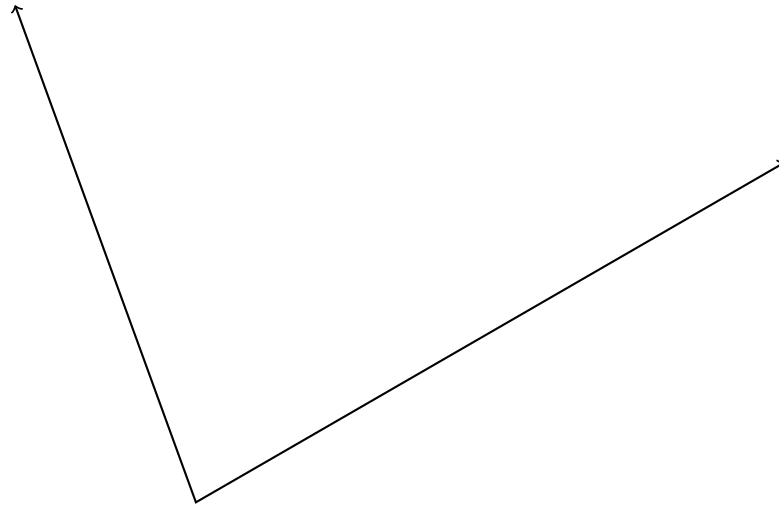


17 October 2019

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3.8 Exam: Area, volume, perimeter; line segments and angles

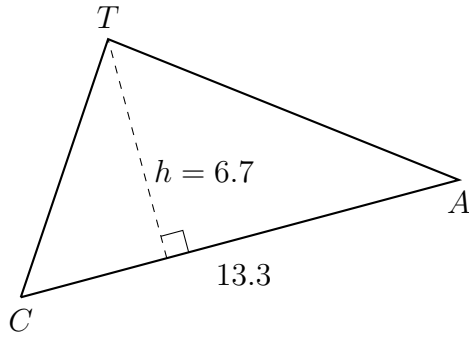
1. Complete the construction of the bisector of the given angle.



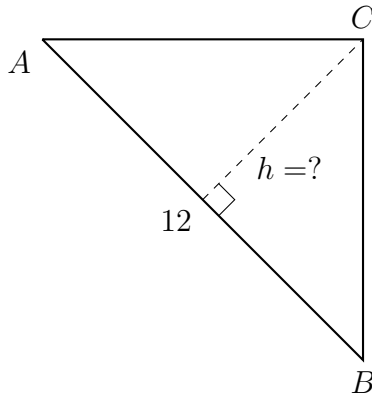
2. A cardboard mailing carton is $12\frac{1}{2}$ inches long, 9 inches wide, and $1\frac{1}{2}$ inches tall. Find the volume of the box. Show the calculation.



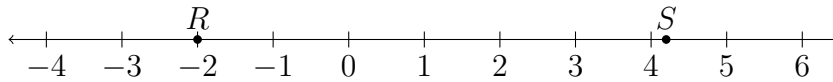
3. Find the area of $\triangle CAT$. The altitude h of the triangle is 6.7 centimeters and the base $CA = 13.3$ cm.



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} .



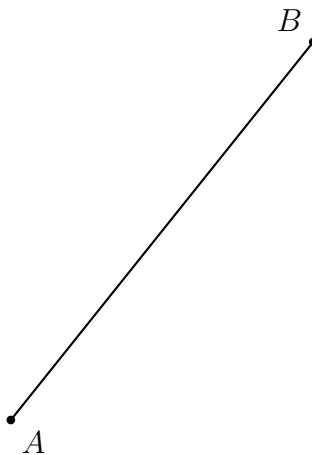
5. Given \overleftrightarrow{RS} as shown on the number line, with $R = -2.0$ and $S = 4.2$.



- (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} shown above.

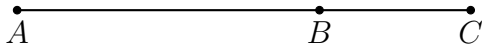
6. Complete the construction of a perpendicular bisector of \overline{AB} . Label the midpoint M . Show all construction marks, but make no extra lines.



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

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

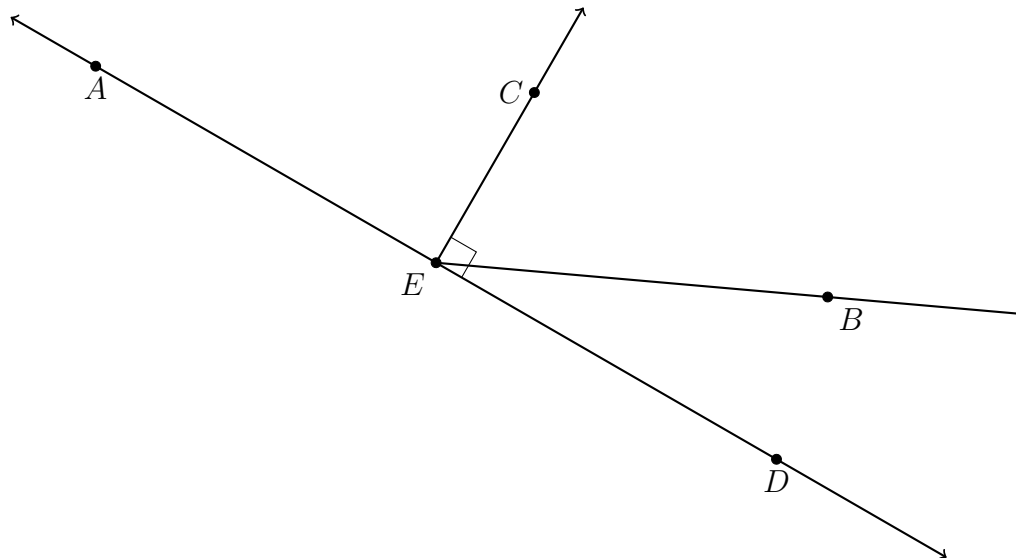
Find BC .



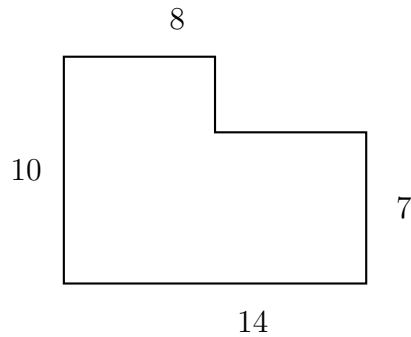
The postulate used in this problem is the _____.

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: _____



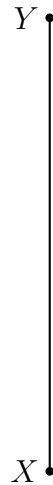
10. Find the perimeter P of the shape shown below, given the side lengths marked (not drawn to scale). All angles are 90° . Completely mark the diagram with the two missing lengths and show an equation for P as a sum of each side's length.



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 $\angle B$. Check your solution.

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13. Complete the construction of an equilateral triangle with one side as \overline{XY} . Show all 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 _____

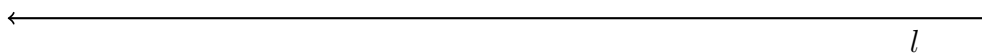
Factor and solve for x .

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

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

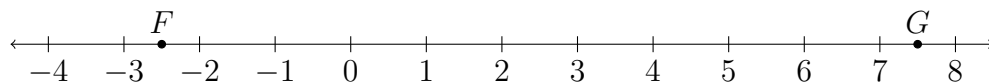
Early finishers, spicy

21. Complete the construction of a line perpendicular to line l through the point P . Show all construction marks, but make no extra lines.

 $P \bullet$ 

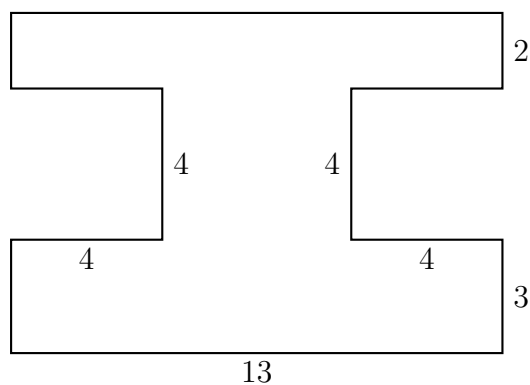
22. The perimeter of a square is 52 cm. Find the area of the square.

23. Given \overleftrightarrow{FG} as shown on the number line, with $F = -2.5$ and $G = 7.5$.



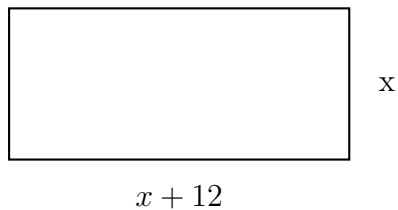
The point H is $\frac{3}{4}$ of the way from F to G . Find the value of H , and mark and label it on the numberline \overleftrightarrow{FG} .

24. The shape shown below is composed of straight lines and right angles, with some lengths as marked. Find the area of the figure. Show your work.



25. The length of the given rectangle is 12 more than the width. Its area is 64. Find the length and width of the rectangle using an algebraic method.

(the drawing is not to scale)



26. The circle with center B is shown below with diameter \overline{AC} and radius \overline{BD} . Given $BC = 7x - 3$ and $BD = 5x + 9$. Find the diameter of the circle.

