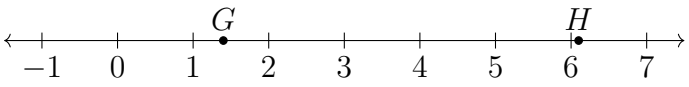
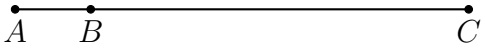
5.7 Final exam: Create equations to solve problems **HSA.CED.A1**

1. Find GH, given $G = 1.4$ and $H = 6.1$.

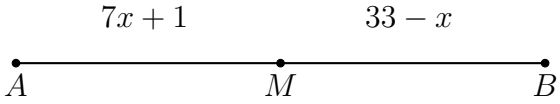


2. Given $\overline{ABC}$, $AB = \frac{2}{3}$, and $AC = 3\frac{1}{3}$.

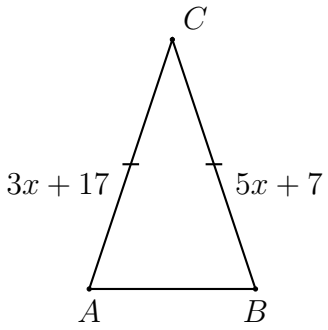
   Find BC.



3. Given M is the midpoint of $\overline{AB}$, $AM = 7x + 1$, $MB = 33 - x$. Find x.

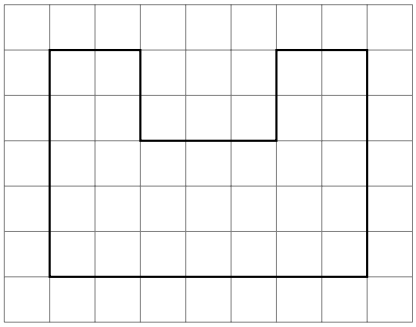


4. Given isosceles $\triangle ABC$ with $\overline{AC} \cong \overline{BC}$. $AC = 5x + 7$ and $BC = 3x + 17$.
   Find AC.

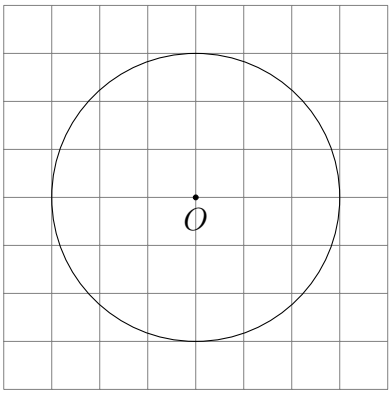


Compute areas and perimeters **HSG.GPE.B.7**

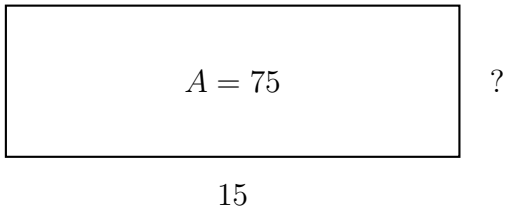
5. Find the area A of the shape shown below in terms of unit squares.



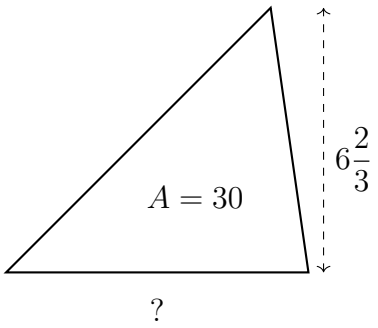
6. Given the circle O with radius $r = 3$. Find the area of the circle in terms of π.



7. Find the width of a rectangle with area $A = 75$ and length $l = 15$.

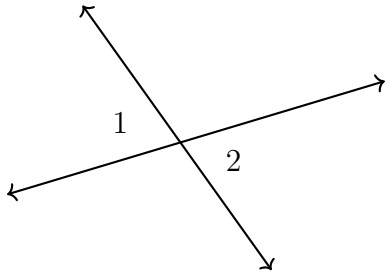


8. Find the length of the base of a triangle with area $A = 30$ and height $h = 6$.

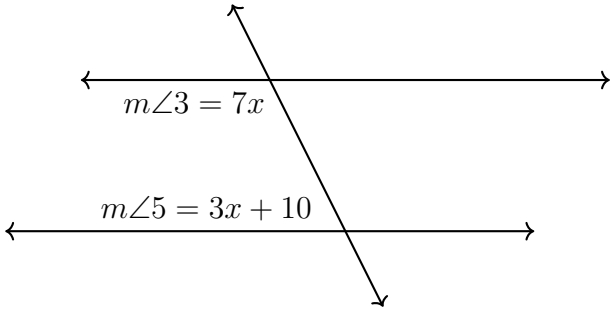


Solve equations in one variable **8.EE.C.7**

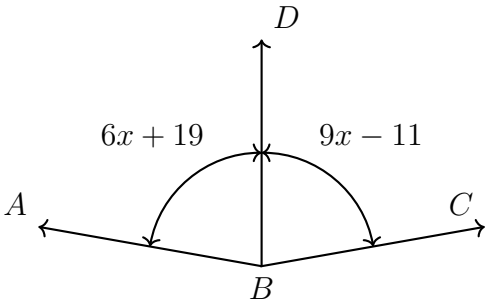
9. Given two vertical angles as shown, $m\angle 1 = 2x - 30$, and $m\angle 2 = x + 20$. Find x.



10. Given two parallel lines and a transversal, with same-side interior angles $m\angle 3 = 7x$ and $m\angle 5 = 3x + 10$. Solve for x.



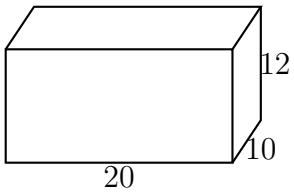
11. The ray $\overrightarrow{BD}$ is the angle bisector of $\angle ABC$. Given that the angle measures are $\text{m}\angle ABD = 6x + 19$ and $\text{m}\angle CBD = 9x - 11$, find x.



Solids, use volume formulas **HSG.GMD.A.3**

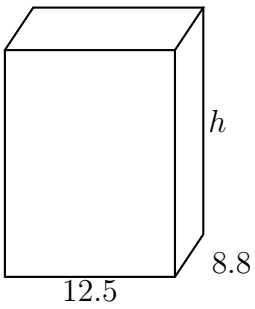
12. Find the volume of a rectangular prism volume of water. Its length is $l = 20$ feet, its height $h = 12$ feet, and depth is $w = 10$ feet. Start with the equation

    $V = l \times w \times h$



13. A sphere has a radius of 5 centimeters. Find the volume of the sphere.

14. The rectangular prism shown has a volume of $V = 1815$ cubic centimeters. Its base measures $l = 12.5$ cm by $w = 8.8$ cm. Find its height in centimeters.



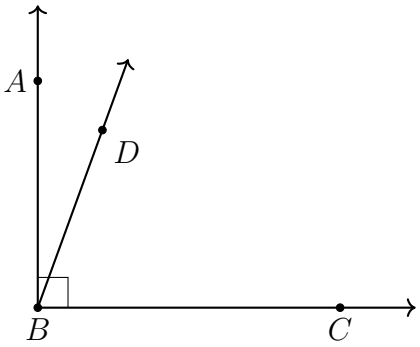
Modeling with geometry: density **HSG.MG.A.2**

15. Find the population density of Staten Island, New York (Richmond County) in people per square mile.

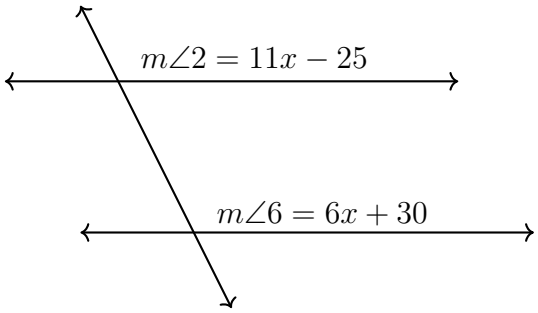
    Population estimate July 1, 2019: 476,143 Land area in square miles: 58.37

Apply the concept of density. Solve and state units. **HSG.MG.A2**

16. Given $\overrightarrow{BA} \perp \overrightarrow{BC}$, $m\angle ABD = 2x - 18$, and $m\angle DBC = 4x$. Find x.



17. Two parallel lines intersect a transversal, shown. Given the corresponding angles $m\angle 2 = 11x - 25$ and $m\angle 6 = 6x + 30$. Find x.



18. The American Eagle *silver* coin is minted by the US Treasury. The one ounce coin has a radius of about $r = 20$ millimeters and thickness $h = 3$ mm. Given that the density of silver is $D = 0.0105$ grams per cubic millimeter, find the coin's volume and weight.

$V = \pi r^2 h$ and $W = VD$