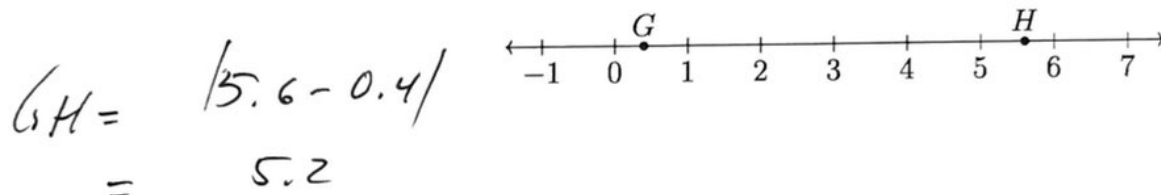


5.7 Final exam: Create equations to solve problems

HSA.CED.A1

1. Find GH , given $G = 0.4$ and $H = 5.6$.

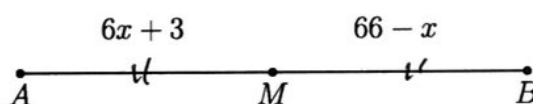


2. Given \overline{ABC} , $AB = 2\frac{1}{2}$, and $BC = 5\frac{3}{4}$. Find AC .

$AC = 2\frac{1}{2} + 5\frac{3}{4} = 8\frac{1}{4}$



3. Given M is the midpoint of \overline{AB} , $AM = 6x + 3$, $MB = 66 - x$. Find x .



$6x + 3 = 66 - x$

$7x = 63$

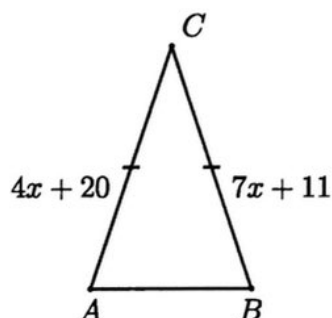
$x = 9$

$AM = 6(9) + 3 = 57$

$MB = 66 - 9 = 57$

$57 = 57 \checkmark$

4. Given isosceles $\triangle ABC$ with $\overline{AC} \cong \overline{BC}$. $AC = 4x + 20$ and $BC = 7x + 11$. Find AC .



$4x + 20 = 7x + 11$

$9 = 3x$

$x = 3$

$AC = 4(3) + 20 = 32$

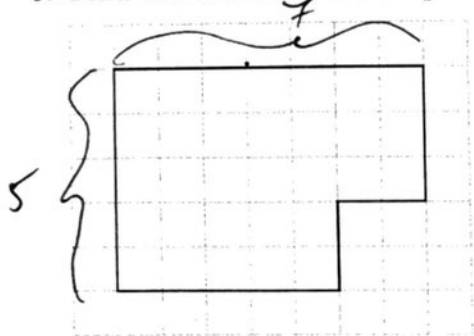
$BC = 7(3) + 11 = 32$

$32 = 32 \checkmark$

Compute areas and perimeters

HSG.GPE.B.7

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



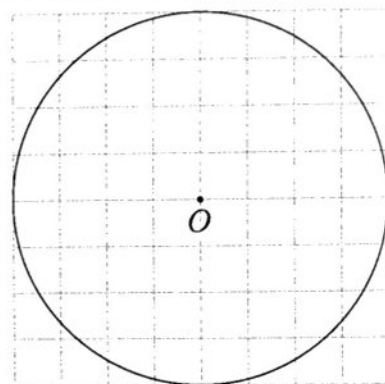
$$A = 5 \cdot 7 - 2 \cdot 2$$

$$= 31$$

6. Given the circle O with radius $r = 4$. Find the area of the circle in terms of π .

$$A = \pi 4^2$$

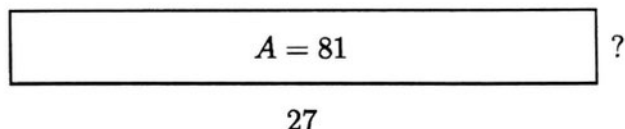
$$= 16\pi$$



7. Find the width of a rectangle with area $A = 81$ and length $l = 27$.

$$A = 27 \cdot x = 81$$

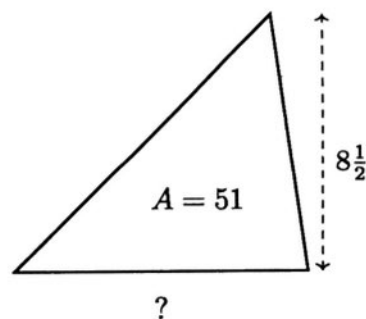
$$x = 3$$



8. Find the length of the base of a triangle with area $A = 51$ and height $h = 8\frac{1}{2}$.

$$A = \frac{1}{2} (8\frac{1}{2}) x = 51$$

$$x = 12$$



Name:

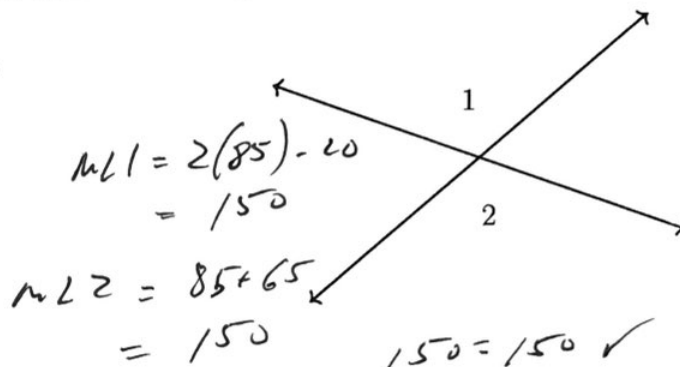
Solve equations in one variable (show the check)

8.EE.C.7

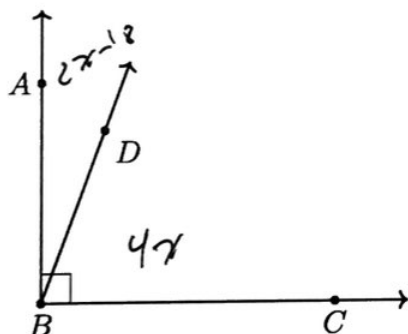
9. Given two vertical angles as shown, $m\angle 1 = 2x - 20$, and $m\angle 2 = x + 65$. Find x .

$$2x - 20 = x + 65$$

$$x = 85$$



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



$$(2x - 18) + 4x = 90$$

$$6x = 108$$

$$x = 18$$

$$m\angle ABD = 2(18) - 18 = 18$$

$$m\angle DBC = 4(18) = 72$$

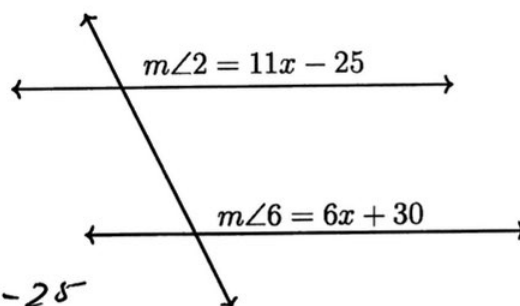
$$72 + 18 = 90 \checkmark$$

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

$$11x - 25 = 6x + 30$$

$$5x = 55$$

$$x = 11$$



$$m\angle 2 = 11(11) - 25 = 96$$

$$m\angle 6 = 6(11) + 30 = 96$$

$$96 = 96 \checkmark$$

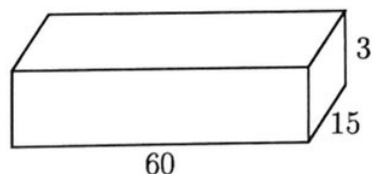
Solids, use volume formulas

HSG.GMD.A.3

12. Find the volume of a pool in the shape of a rectangular prism with length $l = 60$ feet, width $w = 15$ feet, and depth $d = 3$ feet.

$$V = 60 \times 15 \times 3$$

$$= 2700 \text{ cubic feet}$$



13. Find the volume of the sphere with a radius of 3 centimeters to the nearest whole cubic centimeter.

$$V = \frac{4}{3} \pi (3^3)$$

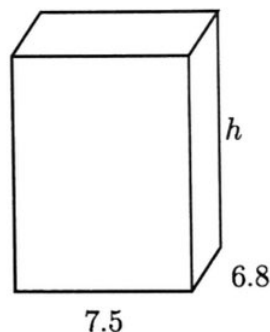
$$= 36\pi = 113.0973 \dots$$

$$\approx 113 \text{ cm}^3$$

14. The rectangular prism shown has a volume of $V = 1122$ cubic centimeters. Its base measures $l = 7.5$ cm by $w = 6.8$ cm. Find its height in centimeters.

$$V = 7.5 \times 6.8 \times h = 1122$$

$$h = \frac{1122}{7.5 \times 6.8} = 22 \text{ cm}$$



Modeling with geometry: density

HSG.MG.A.2

15. Find the population density of New York City in people per square mile rounded to the nearest thousand.

Population at 2020 census: 8,800,000

Land area: 300 square miles

$$D = \frac{8,800,000}{300}$$

$$= 29,333.\bar{3}$$

$$\approx 29,000 \text{ People / sq. mi.}$$