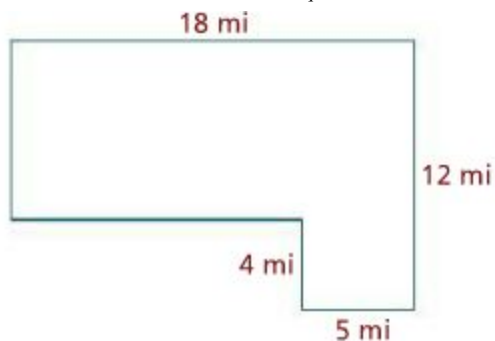


SM3 WS 8.A-Unit Conversion and Density

1. Convert $200 \frac{g}{cm^3}$ to $\frac{kg}{m^3}$

200 g			kg
cm^3			m^3

2. The boundaries of the City of Atlantis are shown below. The population of the city is 24,532 people in an area of _____ square miles(Find using picture below). Find the population density of the city in $\frac{people}{square\ mile}$.



3. The United States has an area of 3.8 million square miles. As of 2014, the population of the United States is approximately 318.4 million. Find the population density of the United States.

4. Texas has a population density of 100.38 people per square mile. If the population of Texas is 26.96 million, what is the area of Texas in square miles (round to 2 decimals).

5. The table shows the mass and volume of different metals. Find the density of each.

Density

Substance	Mass (grams)	Volume (cm^3)
Aluminum	135	50
Cesium	308.8	160
Gold	482.5	25
Lead	339	30

6. Using your answer above for the density of lead, change it to the units $\frac{kg}{m^3}$.

g				kg
cm ³				m ³

7. Buoyancy is the upward force that a fluid applies to an object less dense than itself. This means an object will float if the density of the object is less than the density of the fluid it displaces. Water has a density of $1 \frac{g}{cm^3}$.

- A beach ball has a volume of 1800 cm^3 and a mass of 630 grams. What is the density of the beach ball?
- Will the beach ball float? Explain using at least 2 complete sentences.
- What is the density of the beach ball in $\frac{g}{m^3}$?

8. Convert 75 mph to feet per second.

75 miles	1 hour	1 minutes	feet	feet
1 hour	minutes	seconds	1 mile	1 second

9. Convert 27.4 inches to meters.

37.4 inches	centimeters		meters
	1 inch		

10. Convert 180 km to feet.

a.

180 km			feet

11. Convert 953 feet per second to miles per hour.

953 feet				miles
1 second				hour

12. Convert 17 miles per second to kilometers per hour.

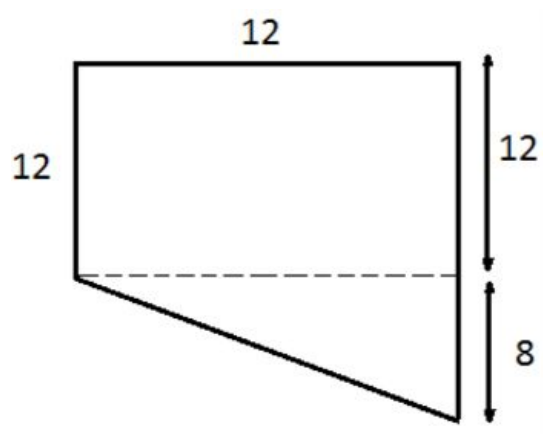
Review!!

13. A government facility at Alamogordo, New Mexico has 105 grams of Plutonium-241, which has a half life of 14.4 years.

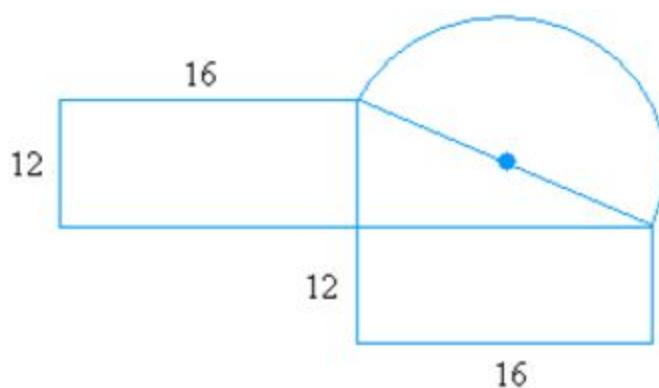
- How much Plutonium-241 is left after 125 years?
- How many years will it take until there is only 25 grams of Plutonium-241?

15. Solve the following equation: $\log_4 8x + 7 = M$	16. Solve the following equation: $e^{3x} - 8 = -3$
17. Expand the following expression: $\log_4 \frac{3x^2}{y}$	18. The specific heat of liquid water is $4.184 \frac{\text{J}}{\text{g} \cdot ^\circ\text{C}}$. This means the energy required to raise 1 gram of liquid water 1 degree Celius is 4.184 J. How many Joules are required to raise 10 g of water 9 degrees Celsius?

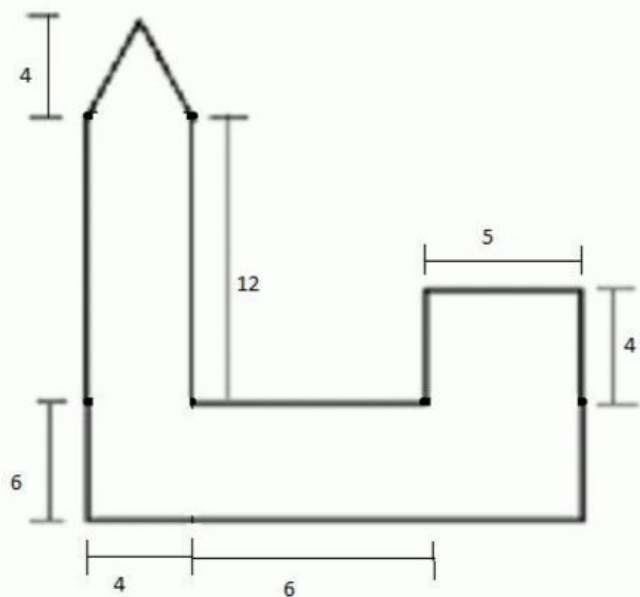
19. Find the area of the following:



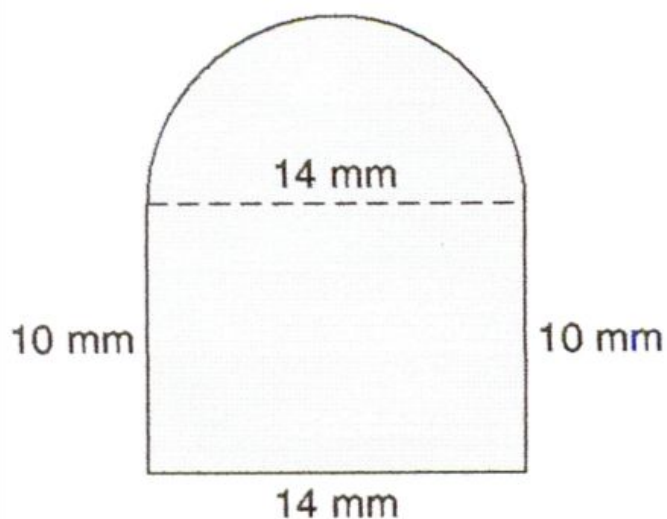
20. Find the area:



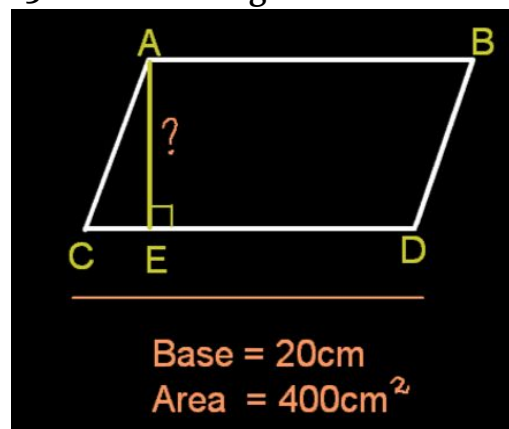
21. Find the area:



22. Find the area



23. Find the height:



24. Find the height:

