Quarter 3 Benchmark Review

1.)

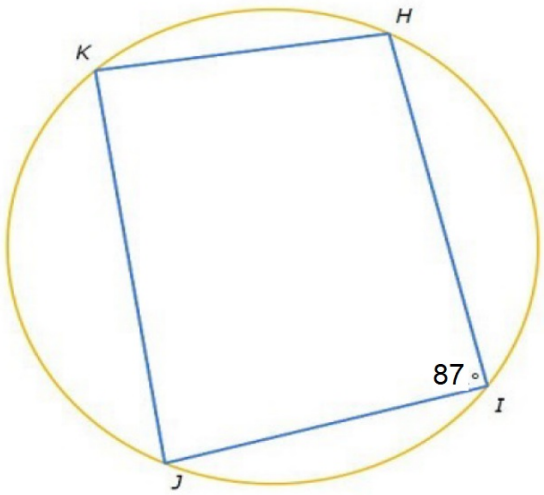
On the coordinate grid of a map. Javari's house is located at (8, 4). Mayson's house is at (-4, -4). Kyle's house is located at the midpoint between Javari and Mayson's houses.
What is the location of Kyle's house?
What is the distance from Mayson's house to Kyle's house?

2.) A cylindrical water tank has a diameter of 3 meters and a height of 10 meters. What is the maximum volume of water the tank can hold? (to nearest whole number)

3.) Which of the following are other names for a rectangle?

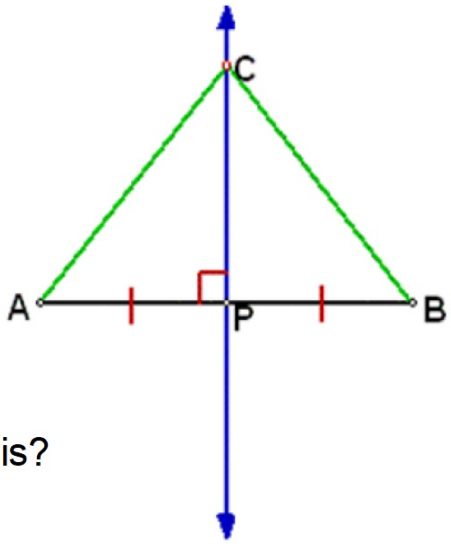
A) parallelogram
B) polygon
C) quadrilateral
D) trapezoid

4.)



In the diagram, m∠I = 87 °. What is m∠K?

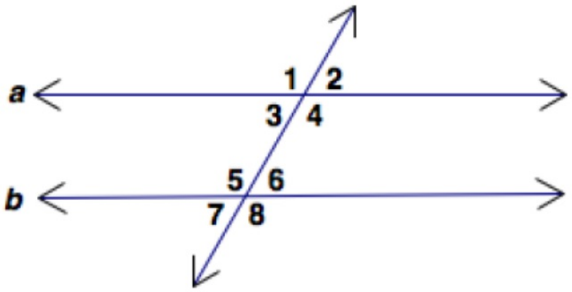
5.)



What theorem is this?

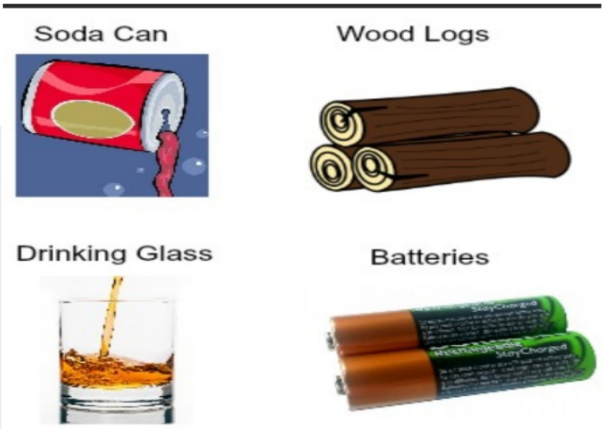
What can be determined from the diagram?

6.)

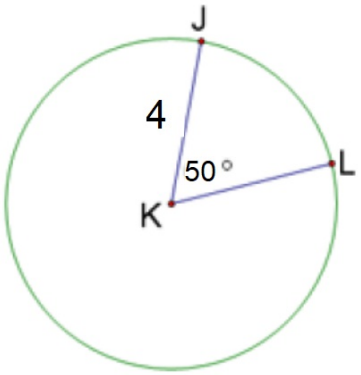


Given that lines a and b are parallel and that m∠8 = 102 °, find m∠3.

7.) What geometric figure do these images represent?



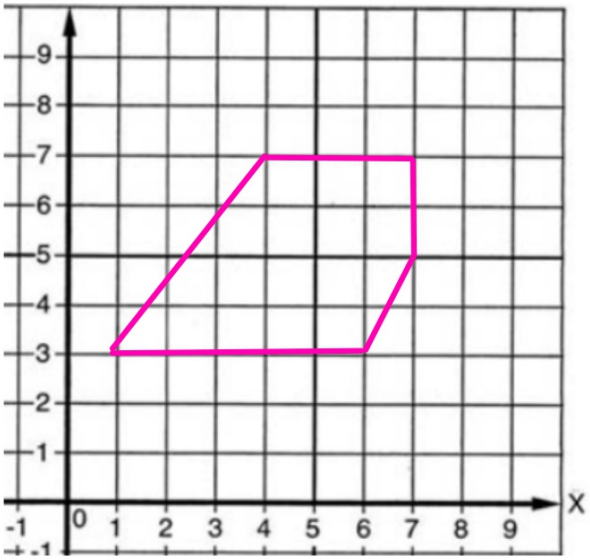
8.)



Determine the length of arc JL.

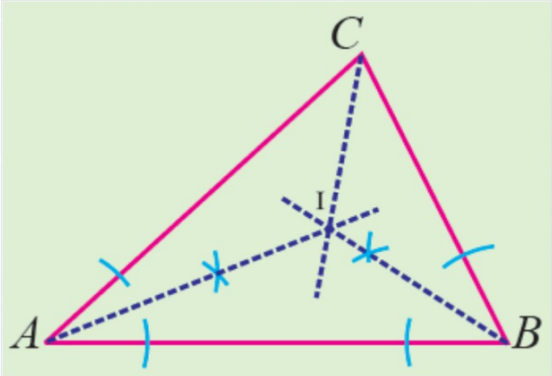
Leave the answer in terms of π

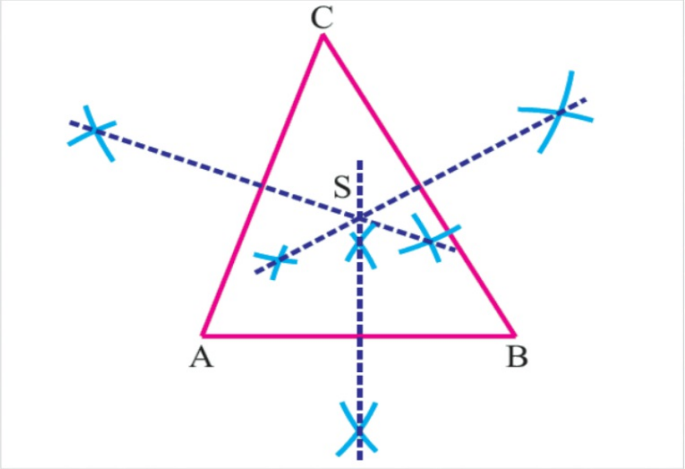
9.)

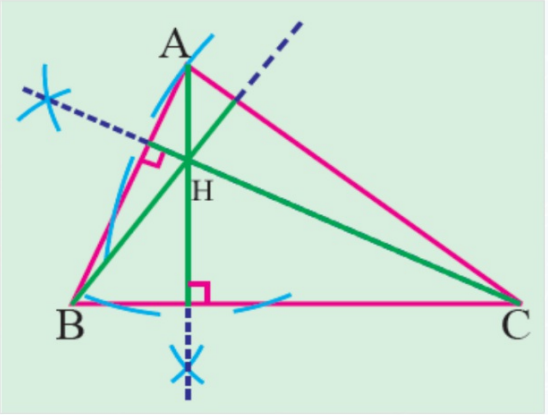


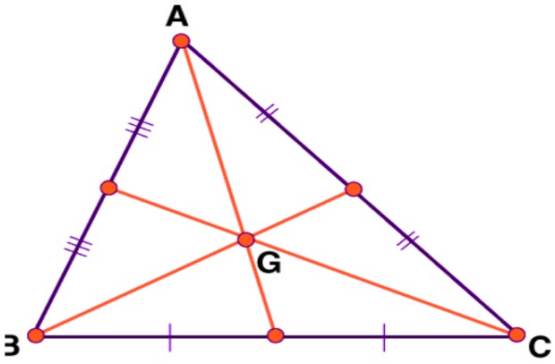
A plot of land has the shape shown. If the owner wants to fence in the land, how much fencing do they need to buy (round to three decimal places if necessary)?

10.) Which points of concurrency are constructed below?

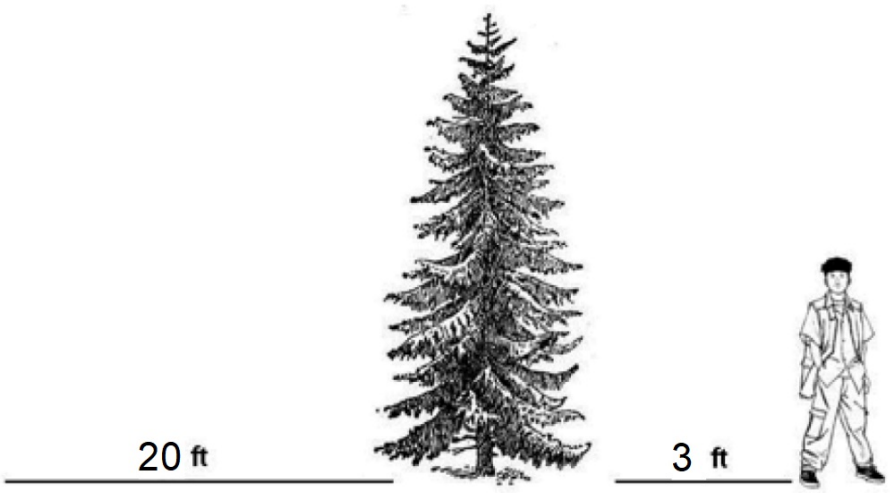








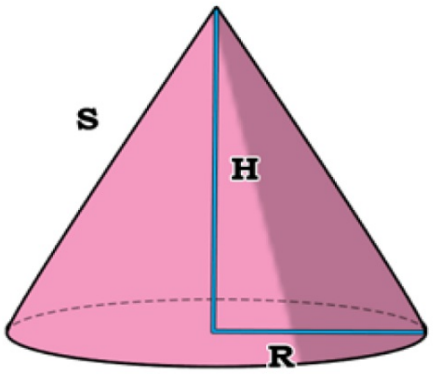
11.)



A tree casts a shadow that is about 20 ft long. Javier, who is about 6 ft tall, is standing near the tree. Javier's shadow is about 3 ft long. What is the estimated height, t, of the tree?

12.) A solid cylindrical steel rod has a base area of 120 cm^2 and a length of 30 cm. What is the volume of the steel rod?

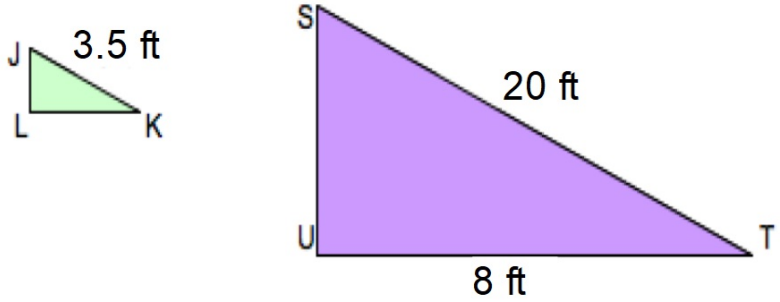
13.)



What is the volume of the cone in the picture if S = 13 and R = 5 ($V = \frac{\pi R^2 H}{3}$)

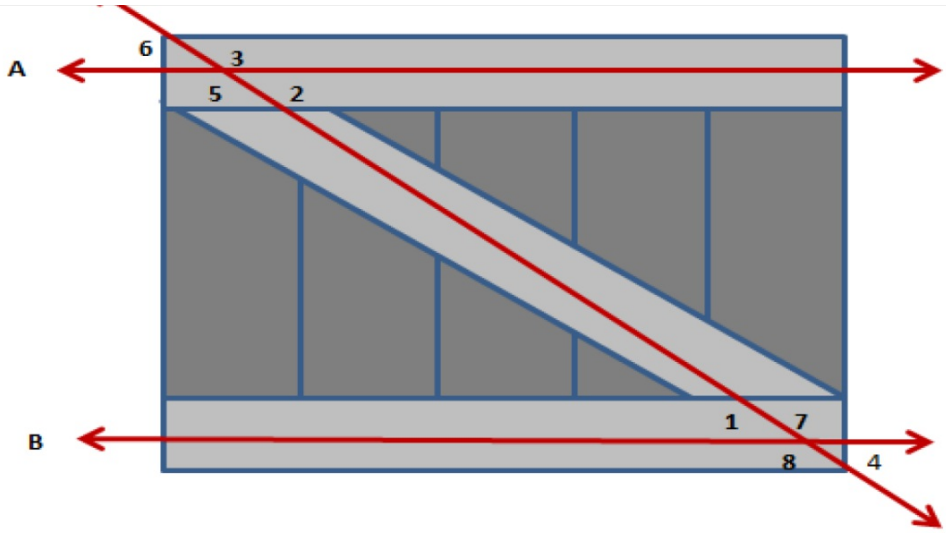
Leave your answer in terms of π

14.)



Triangle JKL is similar to triangle STU. What is the length of side LK?

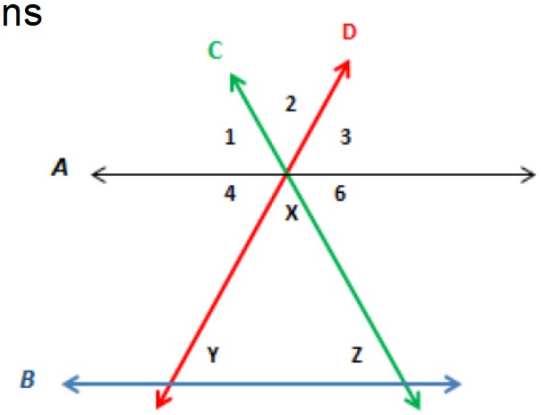
15.)



What is the relationship between <7 and <2?
What about <8 and <3?
And <5 and <7?
And <2 and <4?

If <6 is 30 degrees, find all the rest of the angle measures.

16.) Complete the Reasons for the proof below.



Given: *Lines* A and B are parallel and Lines C and D are transversals.

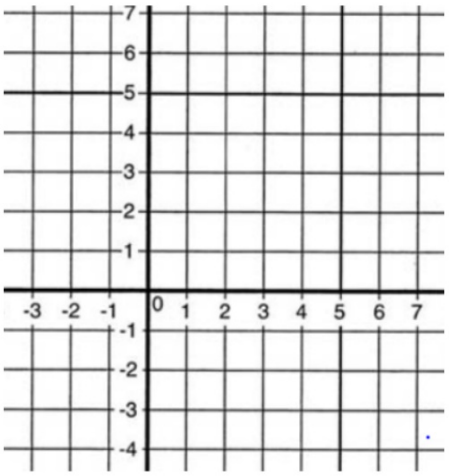
Prove: $\angle X + \angle Y + \angle Z = 180^\circ$

Statement	Reason
1. Lines A and B are parallel; Lines C and D are transversals.	1. ?
2. $\angle Y \cong \angle 4$	2. ?
3. $\angle Z \cong \angle 6$	3. ?
4. $\angle X + \angle 4 + \angle 6 = 180^\circ$	4. ?
5. $\angle X + \angle Y + \angle Z = 180^\circ$	5. ?

17.) The state of Florida has about 406 people per square mile.
The area of Georgia is 65,755 square miles.
What is the population of the entire state?

18.) A ramp was constructed to load a truck. If the ramp is 20 feet long and the horizontal distance from the bottom of the ramp to the truck is 16 feet, what is the height from the ground to the top of the ramp ?

19.) The midpoint of segment AB is (2,1). The coordinates of point A are (-1, -4). Find the coordinates of point of B.

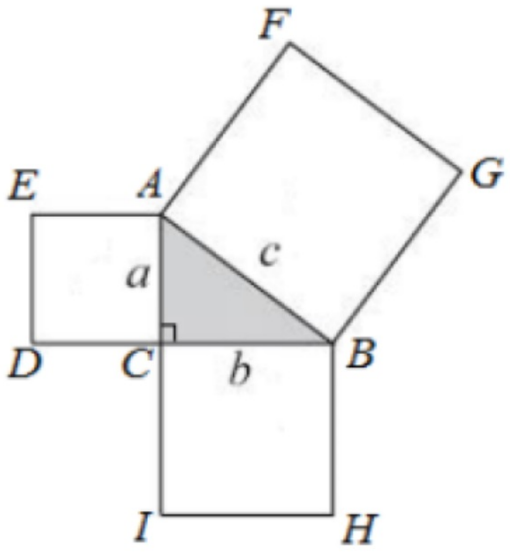


20.) Fans at a concert were packed shoulder to shoulder in a rectangular shaped arena. The area of the arena was 12,600 m^2. If each person on average took up a circular space with a diameter of 0.7 m, what is the best estimate for the number of people at the concert?

21.) The radius of a circle is 8. Using π, write an equation that expresses the ratio of the circumference of the circle to the circle's diameter? Solve for π.

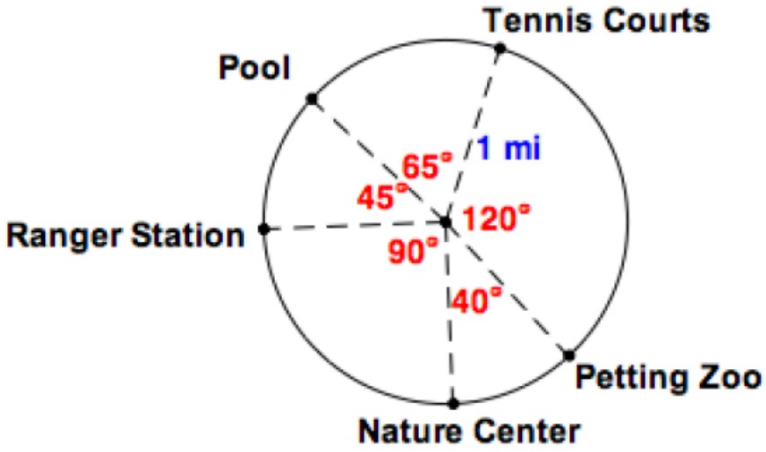
22.) A cylindrical diesel fuel holding tank has a radius of 9 feet and a length of 15 feet. What is the maximum volume of fuel the tank can hold? (to nearest whole number)

23.)



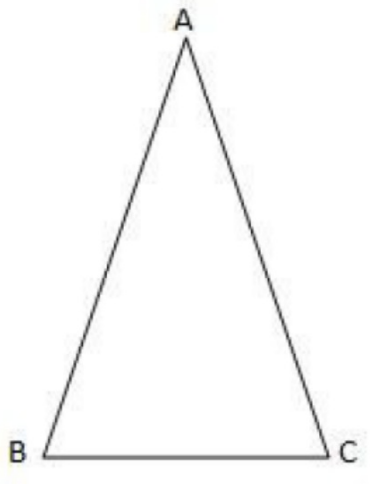
List the angles from greatest to least of the right triangle.
*Use three letters for angles (ex. <ACB is <C

24.)



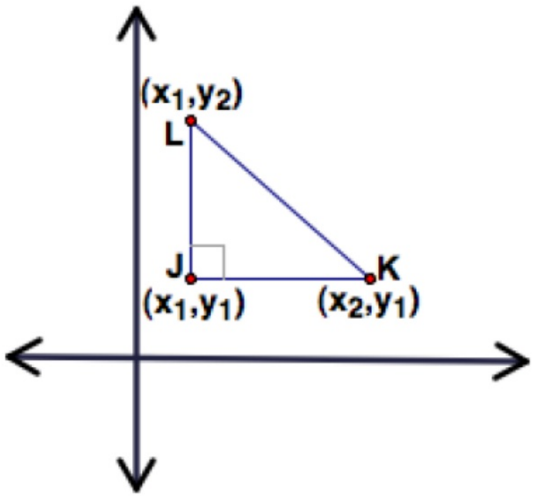
If you decide to walk from the Tennis Courts to the Ranger Station along the circular path, how many miles would you walk?

25.)



ΔABC is an isosceles triangle in which angles B and C are the base angles, and angle A is the vertex angle.
If $m\angle B = (3x + 10)°$ and $m\angle C = (4x - 8)°$,
find the measure of angle A.

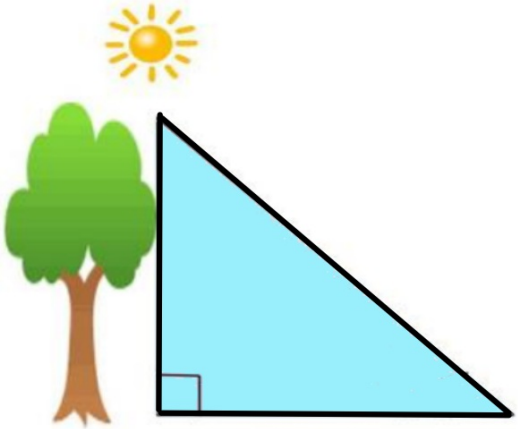
26.)



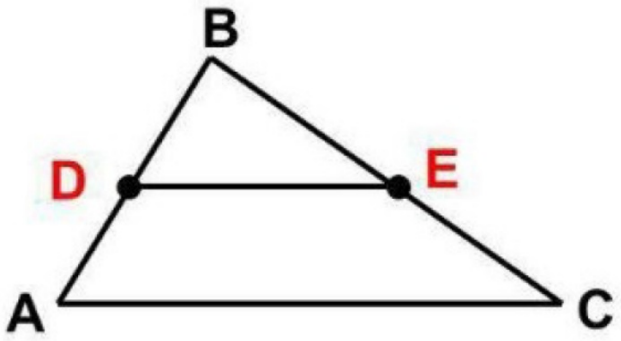
Use the diagram to determine the length of $\overline{LK}$.

27.) What is the name of a triangle that is a regular polygon? What about a regular quadrilateral?

28.) A tree casts a shadow 76 ft. long. The angle of elevation of the sun is 49 degrees. Find the height of the tree and the area of the right triangle formed by the angle of the tree and the shadow.

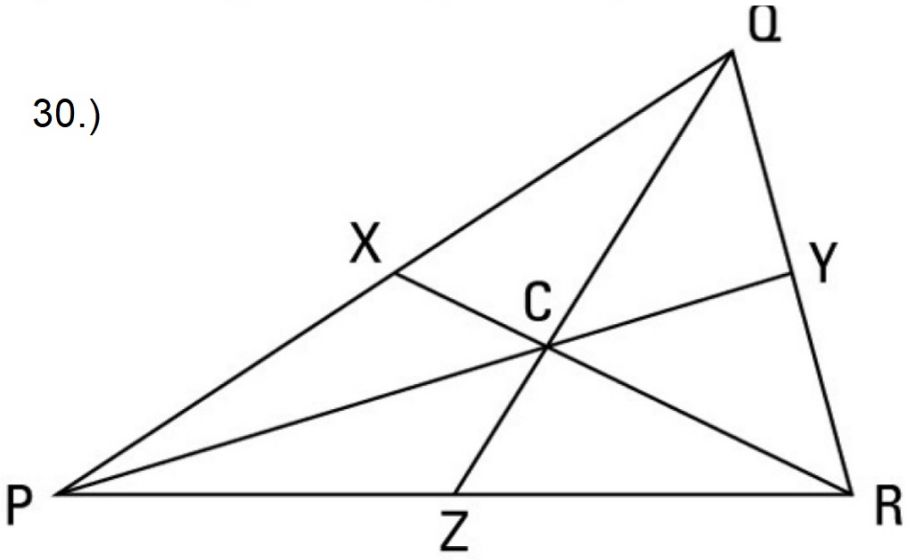


29.)



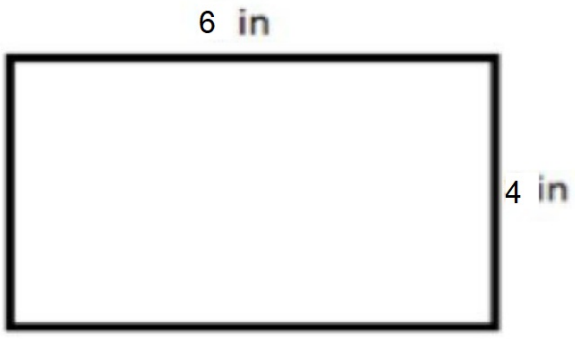
If the length of $\overline{AC}$ equals 84 what is the length of the midsegment $\overline{DE}$?

30.)



In ΔPQR, point C is the centroid. If XR = 24 then RC = and XC=

31.)



Kai has a frame that is 6 in x 4 in. What is the maximum area the picture can have to fit in the frame?