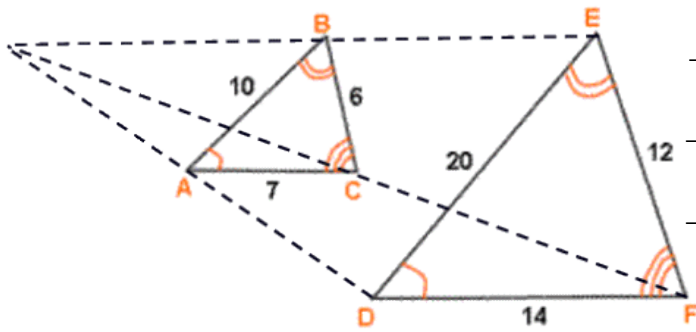


1. Is triangle ABC similar to triangle DEC? Explain your reasoning using both your knowledge of sides and angles. Show your work.



2. For each statement, decide whether you agree or disagree with it and explain your reasoning.

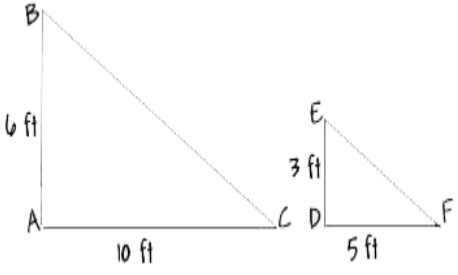
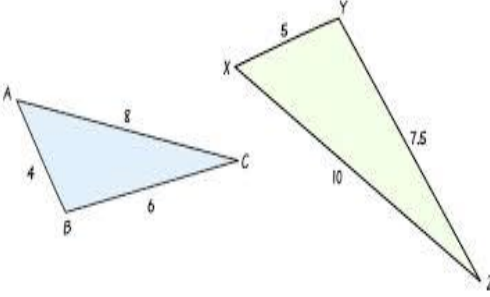
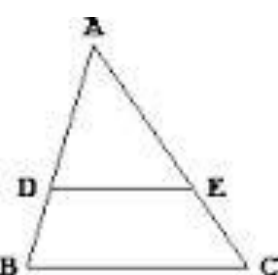
Statement	True	False	Explain your reasoning
All rectangles are similar.			
All triangles are similar.			
When I enlarge a geometric figure by a ratio of 2, both the sides and angles double in size.			
All Circles are similar			
All Squares are similar			

3. A girl is 4ft 6in tall and casts a shadow that is 8 ft. 6 in. long. The end of her shadow coincides with the end of the shadow cast by a building 140 ft from the girl. Find the height of the building. Explain or show how you found your answer. DRAW A PICTURE. Round your answer to the nearest tenth of a foot.

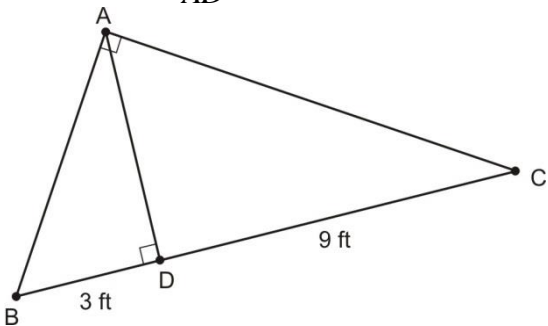
4. A family picture is 4”(width) by 6”(length). You want to enlarge the picture so that the new length is 14”. What will the new width be of the enlarged photo? Draw a picture. Show your work. Round your answer to the nearest tenth of an inch.

5. A flagpole casts a 10 foot shadow. At the same time a 15 ft tree casts a 28 foot shadow. How tall is the pole? Draw a picture. Show your work. Round your answer to the nearest tenth of a foot.

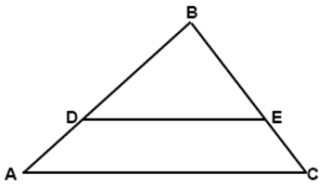
6. Which of the following diagrams contains similar triangles? How do you know they are similar?

	Similar	Not Similar	Explain your reasoning (make sure you state a theorem/postulate and support sides with ratios)
<p>Is triangle BAC ~ triangle EDF? Do Not assume angles are congruent unless marked.</p> 			
<p>Is triangle ABC ~ triangle XYZ?</p> 			
<p>$\overline{DE} \parallel \overline{BC}$ Is triangle ABC ~ triangle ADE</p> 			

7. Solve for \overline{AD}



8. Complete the following proof given the picture below.



Given: $DE \parallel AC$
 Prove: $\triangle BAC \sim \triangle BDE$

Statements	Justifications
1.	1.
2. $\angle B \cong \angle B$	2.
3.	3. Corresponding Angles are Congruent
4.	4.

9. A cabinet has a diagonal length of 34.5 inches and a width of 26 inches. You only have room for a 20 inch tall cabinet. Will this cabinet fit? How do you know?

Picture	Work	Answer

10. A flag pole is 32 feet tall. You are standing 15 feet away from the flag pole. What is your angle of elevation to see the top of the flag pole?

Picture	Work	Answer

11. Jayla is in the environmental club at school. As part of a community outreach program, they are planting trees around their neighborhood. The trees will need a support rope attached until the roots begin to grow to stand on their own. If the trees are 6 feet tall and the rope has to make an angle of 35° with the ground, how much support rope will they need? (Hint: You need 2 support ropes, one for each side!)

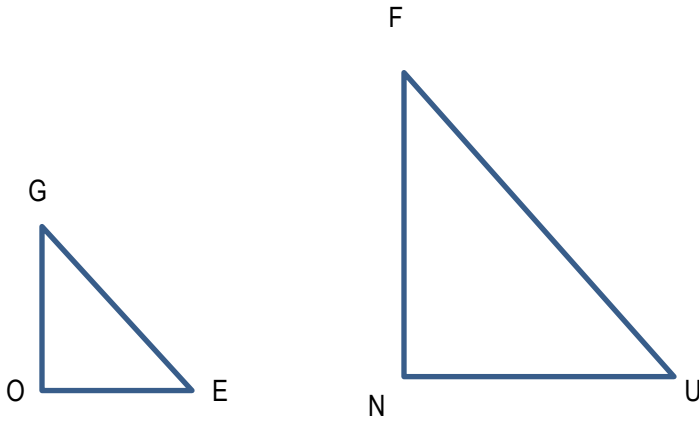
Picture	Work	Answer

12. Sumai is standing on top of a cliff looking down at a boat. Her angle of depression to see the boat is 42° . If the boat is 12 km away from the base of the cliff, how tall is the cliff?

Picture	Work	Answer

13. $\triangle ABC$ has a right angle at vertex C. If the $\sin A = \frac{x}{y}$, what is the $\cos B$? Explain your reasoning. Draw a picture.

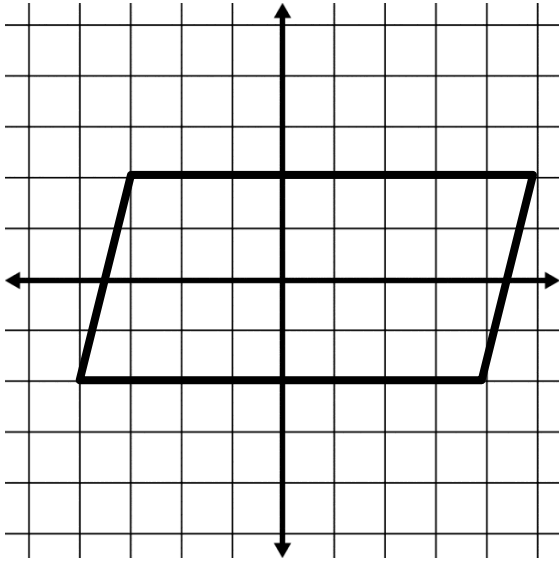
14. $\triangle GEO \sim \triangle FUN$. The $\sin G = \frac{7}{25}$. Angle O and angle N are right angles. Determine which of the ratios below are the same and explain your reasoning. Hint: Find the missing side!



Ratio	Same? Y or N	Explanation
Sin G & Cos E		
Tan E & Tan G		
Sin U & Sin G		
Sin U & Cos F		
Cos G & Tan U		
Cos G & Cos F		
Sin G & Cos U		
Tan F & Tan G		

For questions 15-19, label the vertices as given and then fill in the questions to the right.

15. Parallelogram STEM



Complete the following statements with sides or angles from the parallelogram stating the theorem or definition that allows you to make your statement.

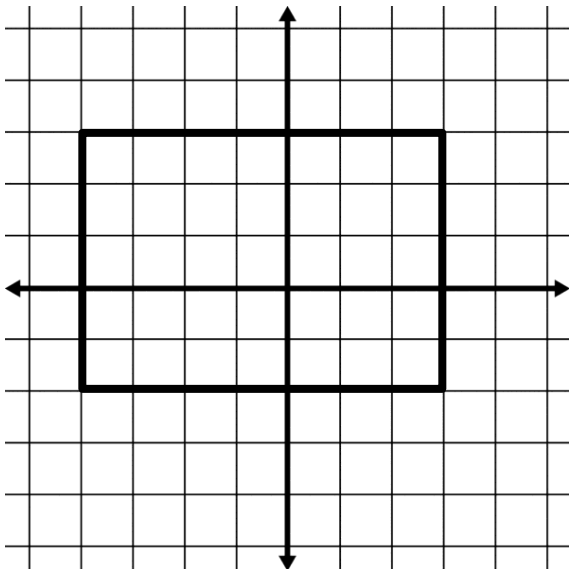
- $\underline{\hspace{1cm}} \parallel \underline{\hspace{1cm}}$
- Why: $\underline{\hspace{4cm}}$

- $\underline{\hspace{1cm}} \cong \underline{\hspace{1cm}}$
- Why: $\underline{\hspace{4cm}}$

- $\underline{\hspace{1cm}}$ and $\underline{\hspace{1cm}}$ are supplementary
- Why: $\underline{\hspace{4cm}}$

- $\angle \underline{\hspace{1cm}} \cong \angle \underline{\hspace{1cm}}$
- Why: $\underline{\hspace{4cm}}$

16. Rectangle CART



Complete the following statements with sides or angles from the rectangle stating the theorem or definition that allows you to make your statement.

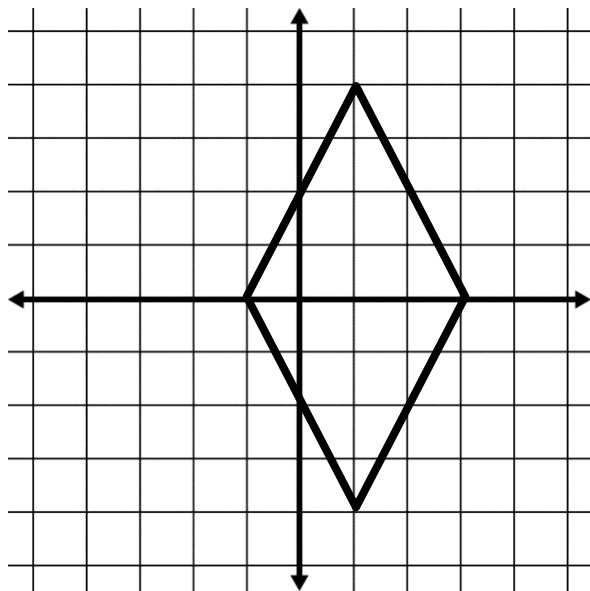
- $\underline{\hspace{1cm}} \perp \underline{\hspace{1cm}}$
- Why: $\underline{\hspace{4cm}}$

- $\underline{\hspace{1cm}} \cong \underline{\hspace{1cm}}$
- Why: $\underline{\hspace{4cm}}$

- $\underline{\hspace{1cm}} \parallel \underline{\hspace{1cm}}$
- Why: $\underline{\hspace{4cm}}$

- $\angle \underline{\hspace{1cm}} \cong \angle \underline{\hspace{1cm}}$
- Why: $\underline{\hspace{4cm}}$

17. Rhombus THEN



Complete the following statements with sides or angles from the rhombus stating the theorem or definition that allows you to make your statement.

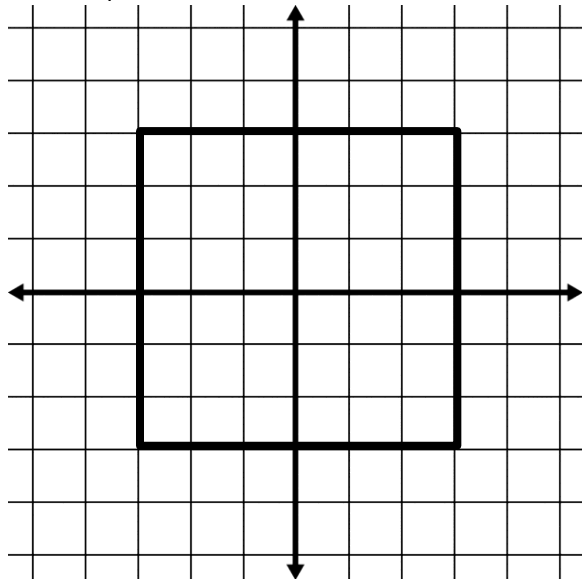
- _____ + _____ = _____°
- Why: _____

- \angle _____ \parallel _____
- Why: _____

- _____ \perp _____
- Why: _____

- _____ \parallel _____
- Why: _____

18. Square ICEY



Complete the following statements with sides or angles from the square stating the theorem or definition that allows you to make your statement.

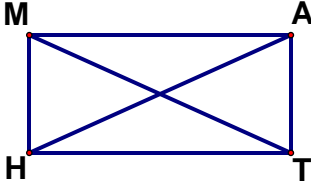
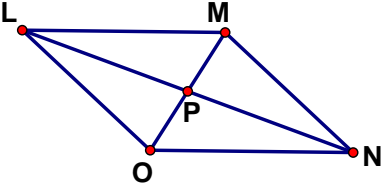
- _____ \parallel _____
- Why: _____

- _____ \perp _____
- Why: _____

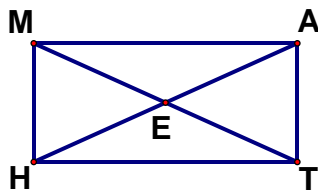
- _____ \parallel _____
- Why: _____

- \angle _____ \parallel _____
- Why: _____

19. In the table below, solve for x.

Picture	Show your work-State why you can write your statement	Final Answer
<p>Rectangle MATH has $m\angle MAH=2x-4$ & $m\angle TAH= 5x-4$</p> 		<p>Find $m\angle MAH$</p> <p>Find $m\angle TAH$</p>
<p>Parallelogram LMNO has $MP= 6x-12$ & $PO=3x+12$</p> 		<p>Find MP</p> <p>Find PO</p>

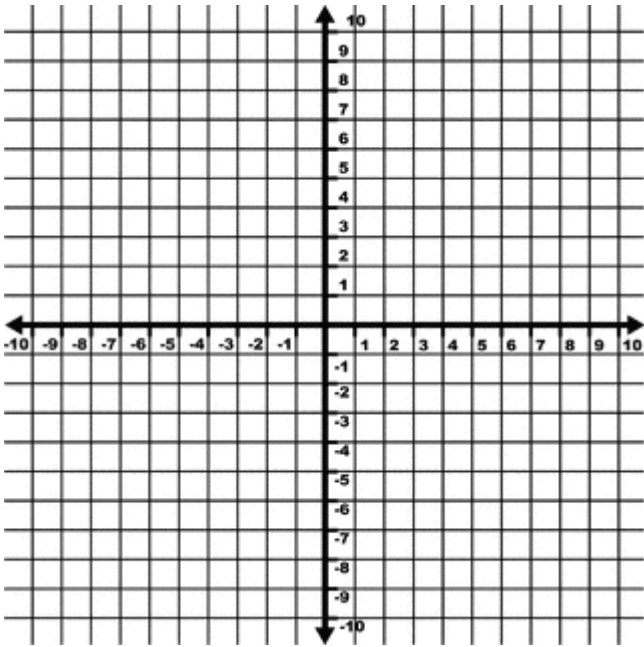
20. Fill in the proof below.



Given: Rectangle MATH
 Prove: \overline{MT} bisects \overline{AH}

Statements	Justifications (Reasons)
$\overline{MH} \parallel \overline{AT}$	
$\angle HMT \cong \angle \underline{\hspace{2cm}}$ $\angle MHA \cong \underline{\hspace{2cm}}$	Alternate interior angles theorem
$\overline{MH} \cong \underline{\hspace{2cm}}$	
$\triangle MEH \cong \triangle \underline{\hspace{2cm}}$	
$\overline{ME} \cong \underline{\hspace{2cm}}$ $\overline{AE} \cong \underline{\hspace{2cm}}$	Definition of Congruent Triangles Corresponding Parts of Congruent Triangles are Congruent (CPCTC).
	Definition of Segment Bisector

21. Three vertices of a parallelogram are L(-1, 3), R(2, -1), and D(5, 4).



a. Find an ordered pair and graph it (name it E) that could be the coordinate of the fourth vertex. Connect the points to draw your parallelogram.

E (_____, _____)

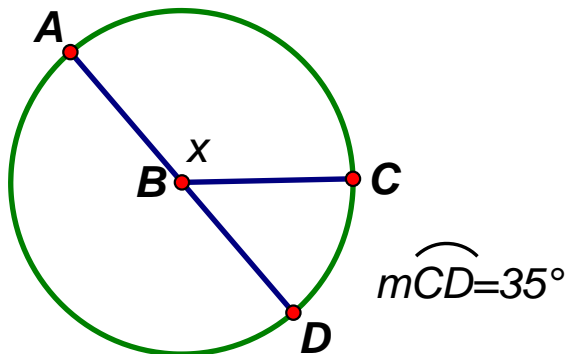
Verify that it is a parallelogram (hint – opposite sides parallel means)

b. Find a second ordered pair that could be the coordinate of the fourth vertex and graph it, name it H. Connect your points in a different color to draw your parallelogram. H (_____, _____)

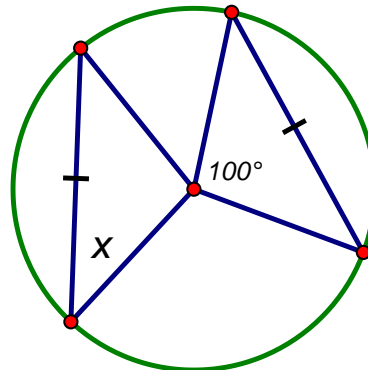
Verify that it is a parallelogram:

Find the value of x in the circles shown below.

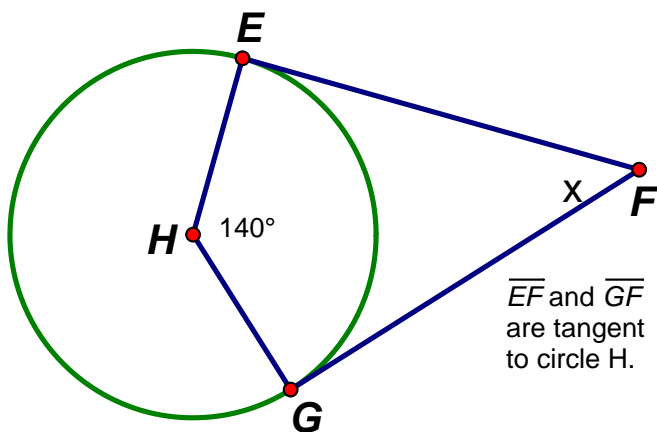
22.



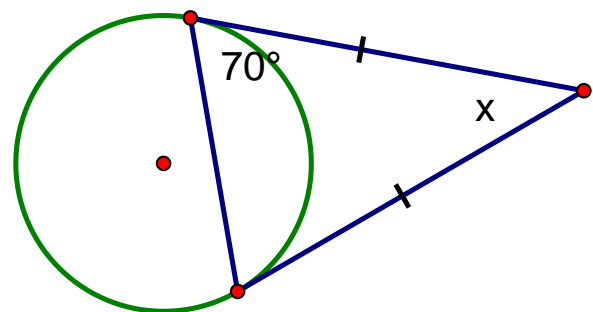
23.



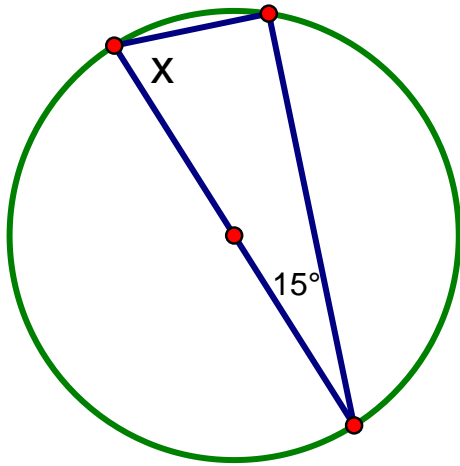
24.



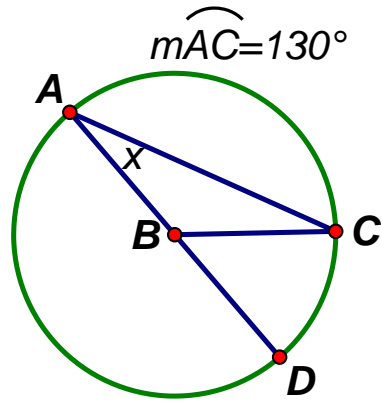
25.



26.



27.



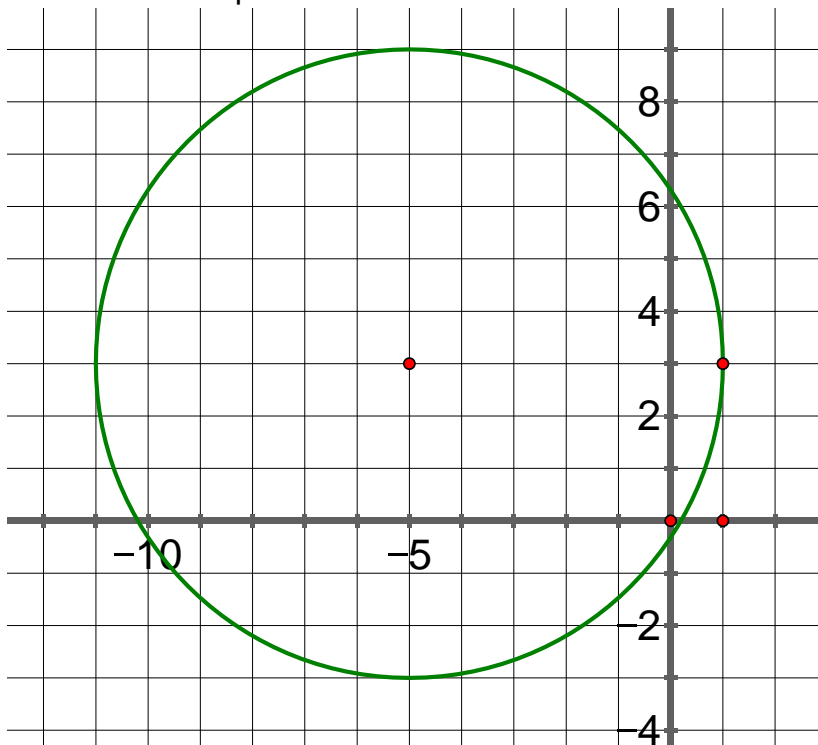
Use the picture in question 27.

- 28. Name a radius _____
- 29. Name a chord _____
- 30. Name a diameter _____
- 31. Name an arc _____

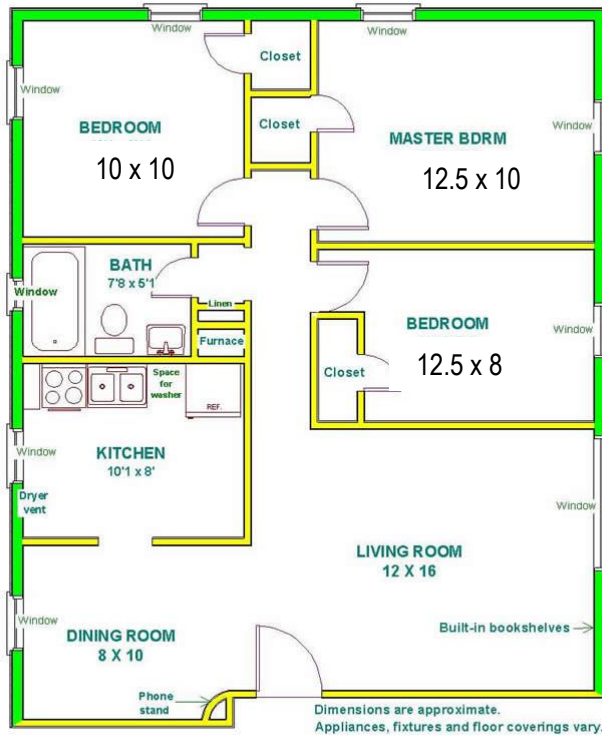
32. Find the area of a sector with a central angle of 70° and radius of 10 feet. Use the formula

$$A = \frac{\theta}{360} \pi r^2$$

33. Write the equation of the circle shown below.



The Elysian Three-bedrooms: 949 sq. ft.



A better plan will be hard to find: windows all around for an abundance of natural light, and mostly no shared walls for optimal privacy.

34. Find the total square feet for the 3 bedrooms (Master and the other two).

35. Suppose that carpeting costs \$12/square **YARD** and padding is \$4/square **YARD**. What would be the total cost to carpet the 3 bedrooms, including padding?



36. The above building is being painted bright green. Paint costs \$18/ gallon and each gallon covers 300 square feet.

a) Find the square feet you need to paint (only vertical surfaces, not the roof)

b) Find the number of gallons of paint needed.

c) Find the cost to paint the barn, just for the paint.