<u>Geometry Week 17 Assignment:</u>

Day 1: pp. 325-226 #1-22
Day 2: pp. 336-337 #1-19
Day 3: pp. 339-340 #1-19
Day 4: p. 337 #21-25, p. 340 #21-25
Day 5: Mindbender #3

*You can use a calculator for the calculations, but do not use the calculator to approximate radicals or π unless instructed to do so.

<u>Notes on Assignment:</u>

<u>Pages 325-326</u>:

Work to show:

#1-14: Show the numbers in the Pythagorean theorem and then work it out.
#15-22: Show the formula needed and then work it out.

#1-10: For a right triangle with legs a and b, and hypotenuse c, the Pythagorean Theorem states that $a^2 + b^2 = c^2$. Put in the values that you are given and solve for the unknown. If your answer is a radical, simplify it if possible, and leave it in radical form. Do not use a calculator and change it to a decimal approximation.

#11-14: If it is a right triangle, it will work in the Pythagorean Theorem.

#15: In a right triangle, one of the legs can be considered the base, and the other leg would then be the height.

#19: You can either draw in the height and use the Pythagorean Theorem to find its length, or you can use the formula given in Theorem 8.8 for the area of an equilateral triangle. ($A = s^2 \frac{\sqrt{3}}{4}$)

#20: If it is an isosceles right triangle, then the 2 legs must be the same. Use a for both of the legs and see what happens in the Pythagorean Theorem.

#21: This is just like the one we did in class. Draw a picture and then draw in the height, giving you a right triangle that you can solve. Then use the area formula for a trapezoid.

#22: You are going to want to use the formula that says the area of a rhombus is ½ of the product of the diagonals. You are given one diagonal but will have to find the other. Draw the picture. Remember that the diagonals are perpendicular and they bisect each other to give you 4 right triangles. Use the Pythagorean Theorem to find the information needed for the formula.

Pages 336-337:

Work to show:

#1-2: Show work as needed.
#3-8: Write the formula, fill it in, work it out. More work is needed for some problems.
#9-13: Show the calculation for each empty box. Do not just list answers.
#14-16: Proofs with derivations, not 2 columns.
#17-19: Answer as directed.
#21-25: Answers only.

#2: A circle (complete rotation) is 360°.

#9-13: It would be helpful to draw these figures as you go.

#10: Remember that in a regular hexagon, when you draw your central angles, you get equilateral triangles. Draw in the apothem and use the Pythagorean Theorem to find its length. When you find the apothem, you can use a calculator and round it to the nearest whole number. Use A = ½ ap to find the area.

#11: Draw in the apothem and resulting right triangle. The radius of the figure is the hypotenuse of this triangle. The bottom leg is ½ of the length of the side (i.e. ½ s). Use the Pythagorean Theorem to find the value of s and then use the area formula. Use your calculator and round all answers to the nearest tenth.

#12: You get the same kind of equation as in #11, but this time it is the radius that is your unknown.

#13: Draw in the apothem and resulting right triangle. Use Theorem 8.12 to find the length of the apothem. Then solve for the radius (which is the hypotenuse of your triangle).

#14: This is not a statement/reason proof. Write down the formula A = ½ ap. For a square with side s, you should be able to find the perimeter and apothem. Put these into the area formula above, and simplify to show that you end up with the area formula for a square.

#15: Start with the 2 area formulas A = ½ bh and A = ½ ap. Because A = A, we can write ½ bh = ½ ap. Since you are considering an equilateral triangle of side s, substitute appropriately for b and p. Show that this simplifies to a = h/3.

#16: Start with the formula from Theorem 8.11 which says $a = \frac{1}{3}h$. The hint gives us

$h = \frac{\sqrt{3}}{2}s$ as the height of an equilateral triangle. Substitute that in for h in the first equation and show how you get $a = \frac{\sqrt{3}}{6}s$.

#18: This is a 2-column proof. You will use SSS to prove the triangles congruent. Remember that the portion shown in the picture is part of a regular polygon.

#19: Use the fact that a regular hexagon gives you 6 equilateral triangles, so you can take 6 times the area of one of the triangles. You have a formula for the area of an equilateral triangle, so use that and simplify.

Pages 339-340:

Work to show:

#1-10: Show the calculation for each empty box. Do not just list answers.
#11-19: Show all calculations.
#21-25: Definitions

#1-10: Leave the circumference and area in terms of π. Do not use 3.14 and approximate an answer. Remember that the formula for Circumference is $C = 2\pi r$ and the formula for area is $A = \pi r^2$. Fill in what you are given and use algebra to solve for the unknown.

#16: Split this into 2 rectangles and a semicircle. You should be able to tell the diameter of the semicircle based on the given information.

#18: You will need to draw in the apothem of the pentagon and find its value using the right triangle formed with the radius. Then use the formulas.

#19: Find the area of the shaded ring using the values given. Write it as a formula.

Mindbender #3:

You may want to make an extra copy of the grid in case you really mess it up and need to start over. (o: