## GEOMETRY READING GUIDE - SECTION 1.1

Read pages 3 – 5 in your textbook, making sure that you study the examples. Then respond to the following:

1. Define the following: **conjecture, inductive reasoning, and counterexample**
2. What is the relationship between a conjecture and a counterexample?
3. Why might inductive reasoning not be a reliable way to prove that something is <u>always</u> true?

Don't forget to write down any questions you have from your reading. We'll discuss them together!

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## GEOMETRY READING GUIDE – SECTION 1.2

Read pages 10 – 12 in your textbook, making sure that you study the examples. Then respond to the following:

1. Define/describe the following: **definition, point, line, plane, collinear points, coplanar points, line segment, endpoints, ray, initial point, opposite rays, intersect, intersection**
2. What are the three undefined terms in Geometry? Make sure that you have good descriptions for each of them in your notes.
3. What is the difference between <u>collinear</u> points and <u>coplanar</u> points?
4. Describe the similarities and differences between a line, a line segment and a ray. Include any observations about how each of them is symbolized.
5. Given two points M and N, what is the difference between $\overline{MN}$ and $\overrightarrow{NM}$?
6. Draw a picture in which point C is between points A and B. In order for points to be "between," what must be true of those points (HINT: It's one of the terms you defined in #1)?

Don't forget to write down any questions you have from your reading! We'll discuss them together!

## GEOMETRY READING GUIDE – SECTION 1.3

Read pages 17 – 20 in your textbook, making sure you study the examples. Then respond to the following:

1. Define/describe the following: **postulate, axiom, theorem, congruent segments, between** (yes, we've seen this one before)
2. Copy the **Ruler Postulate** (omit the first paragraph), **Segment Addition Postulate** and the **Distance Formula** into your notes.
3. What is the difference between a postulate and a theorem?
4. Describe how to find the distance between two points on a number line. What notation do we use to denote the **length** of $\overline{PQ}$?
5. Describe how to find the distance between two points in the coordinate plane.
6. What is the special symbol we use to indicate *congruence*? Explain what is wrong with writing $\overline{AB} = \overline{CD}$ or $AB \cong CD$.

Don't forget to write down any questions you have from your reading. We'll discuss them together!

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## GEOMETRY READING GUIDE – SECTION 1.4

Read pages 26 – 28 in your textbook, making sure you study the examples. Then respond to the following:

1. Define/describe the following: **angle, sides, vertex, congruent angles, interior of an angle, exterior of an angle, acute angle, right angle, obtuse angle, straight angle, adjacent angles**
2. Draw $\angle LMN$. Which point must be the vertex? What are sides of the angle? What are two other ways to name the same angle?
3. Look at example 1 on page 26. Explain why none of the angles in the figure should be named $\angle Q$.
4. Compare the notation for congruent angles/equal angle measures to what you learned about congruent segments/equal segment lengths.
5. Copy the **Angle Addition Postulate** into your notes. Compare this postulate to any other postulate you've seen before.
6. Example 4 on page 28 shows two pairs of adjacent angles. In your own words, describe what it means for two angles to be adjacent.

Don't forget to write down any questions you have from your reading. We'll discuss them together!

## GEOMETRY READING GUIDE – SECTION 1.5

Read pages 34 – 37 in your textbook, making sure you study the examples. Then respond to the following:

1. Define/describe the following: **midpoint, bisect, segment bisector, angle bisector**
2. Describe how we mark congruent segments in a diagram. Sketch an example to illustrate this.
3. Copy the **Midpoint Formula** into your notes. What is an easy way for you to remember the midpoint formula?
4. Describe how we mark congruent angles in a diagram. Sketch an example to illustrate this.
5. Read/study the construction activities (**Segment Bisector and Midpoint** on page 34/**Angle Bisector** on page 36). We will be doing these in class. If you have your own compass and straightedge, try these on your own first.

Don't forget to write down any questions you have from your reading. We'll discuss them together!

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## GEOMETRY READING GUIDE – SECTION 1.6

Read pages 44 – 46 in your textbook, making sure you study the examples. Then respond to the following:

1. Define/describe the following: **vertical angles, linear pair, complementary angles, supplementary angles**
2. Write down the two conjectures stated at the bottom of page 44 (they're typed in *italics*). Why do you suppose these conjectures might be true? We will eventually prove these using deductive reasoning (in the next chapter).
3. Make sure you understand how to correctly use the terms **complement** and **supplement**. Example 5 on page 46 illustrates common use of the terms.

Don't forget to write down any questions you have from your reading. We'll discuss them together!

## GEOMETRY READING GUIDE – SECTION 2.1

Read pages 71 – 74 in your textbook, making sure you study the examples. Then respond to the following:

1. Define/describe the following: **conditional statement, hypothesis, conclusion, if-then form, converse, negation, inverse, contrapositive, equivalent statements.**
2. Write your own conditional statement in "if-then" form. Underline and identify your hypothesis and conclusion. Notice from the examples that the "if" and the "then" are NOT part of the hypothesis or conclusion.
3. What does it take to prove that a conditional statement is true? To prove that it's false?
4. How do you form the **converse** of a conditional statement? How do you form the **inverse** of a conditional statement? How do you form the **contrapositive** of a conditional statement?
5. Copy the "Point, Line and Plane Postulates" into your notes. DO NOT WORRY ABOUT USING POSTULATE **NUMBERS**…they are meaningless beyond this textbook.

Don't forget to write down any questions you have from your reading. We'll discuss them together!

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## GEOMETRY READING GUIDE – SECTION 2.2

Read pages 79 – 81 in your textbook, making sure you study the examples. Then respond to the following:

1. Define/describe the following: **perpendicular lines, line perpendicular to a plane, biconditional statement.**
2. What symbol do we use for "is perpendicular to?" In a drawing, how do we show (what markings) that two lines or a line and a plane are perpendicular?
3. What phrase must a biconditional statement contain?
4. What does it take in order for a biconditional statement to be true? Example 3 gives an example of a false biconditional statement. After studying the example, explain what it takes for a biconditional statement to be false.

Don't forget to write down any questions you have from your reading. We'll discuss them together!

## GEOMETRY READING GUIDE – SECTION 2.3

Read pages 87 – 90 in your textbook, making sure that you study the examples. Then respond to the following:

1) Define/describe the following: **deductive reasoning, logical argument**
2) Pages 87 – 88 discuss symbolic notation. All you need to gain from those pages is familiarity with the notation so that you can understand pages 89 – 90.
3) Compare inductive and deductive reasoning.
4) Copy the **Law of Detachment** and the **Law of Syllogism** (also referred to as the **Chain Rule**) into your notes.
5) Notice that in <u>both</u> laws, the conditional statements involved must be <u>true</u>. Why do you suppose this is important (think about what it means for a conditional statement to be <u>false</u>)?

Don't forget to write down any questions you have from your reading! We'll discuss them together!

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## GEOMETRY READING GUIDE – SECTION 2.4

Read pages 96 – 98 in your textbook, making sure that you study the examples. Then respond to the following:

1) Clearly understand the Algebraic Properties of Equality. You do not need to copy them into your notes unless you feel there are some with which you are not familiar. You may not have seen the **reflexive, symmetric and transitive properties** before.

2) On page 98, make sure you understand the properties of equality for segment and angle measures. We will be using these OFTEN!

That's all! Don't forget to write down any questions you have from your reading! We'll discuss them together!

## GEOMETRY READING GUIDE – SECTION 2.5

Read pages 102 – 103 in your textbook, making sure that you study the examples. Then respond to the following:

1) Define/describe the following terms: **theorem, two-column proof, paragraph proof**
2) Copy the **Properties of Segment Congruence Theorems** into your notes (again, don't worry about the Theorem NUMBERS…they're meaningless). How are these similar to the properties of equality for segments that you read about on page 98? How are they different?
3) Study the **two-column proof** in Example 1 on page 102. Then read the **paragraph proof** on the bottom of that page. Both are proofs of the same thing (Symmetric Property of Segment Congruence) shown in two different formats. Pay careful attention to the way the proofs are done in the examples. Notice how the statements follow in a logical sequence and how the reasons are definitions, postulates, theorems and properties of equality.

Don't forget to write down any questions you have from your reading! We'll discuss them together!

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## GEOMETRY READING GUIDE – SECTION 2.6

Read pages 109 – 112 in your textbook, making sure that you study the examples. Then respond to the following:

1) Copy the **Properties of Angle Congruence** theorem into your notes. How does this compare to the Properties of Segment Congruence you read about in Section 2.5?
2) Read the **Right Angle Congruence** Theorem. This theorem will be useful, but it's also very obvious. Write it down if you choose, and (more importantly) remember it—it can come in handy!
3) Read the **Congruent Supplements Theorem** and **Congruent Complements Theorem**. These theorems can be useful, but the same results can be gained using the Substitution and Subtraction Properties of Equality. Write them into your notes if you choose.
4) The **Linear Pair Postulate** and the **Vertical Angles Theorem** are familiar conjectures to you (I hope!). Copy both conjectures into your notes. Pay close attention to the specific wording (the hypothesis and conclusion) of each conjecture.

Don't forget to write down any questions you have from your reading! We'll discuss them together!

## GEOMETRY READING GUIDE – SECTION 3.1

Read pages 129 – 131 in your textbook, making sure that you study the examples. Then respond to the following:

1. Define/describe the following terms (for several of these, you must draw a picture to go along with your definition/description): **parallel lines, skew lines, parallel planes, transversal, corresponding angles, alternate interior angles, alternate exterior angles, consecutive interior angles (same side interior angles)**
2. What symbol is used to mean "is parallel to?" How do you mark a figure to show that two lines are parallel?
3. Copy the **Parallel Postulate** and **Perpendicular Postulate** into your notes.
4. When two lines are cut by a transversal, how many pairs of **corresponding angles** are formed? How many pairs of **alternate interior angles** are formed? How many pairs of **alternate exterior angles** are formed? How many pairs of **consecutive interior angles** are formed?

Don't forget to write down any questions you have from your reading! We'll discuss them together!

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## GEOMETRY READING GUIDE – SECTION 3.3

Read pages 143 – 145 in your textbook, making sure that you study the examples. Then respond to the following:

1. Wait! What happened to Section 3.2? Section 3.2 contains three useful-but-unnecessary theorems about perpendicular lines. It also introduces **flow proof**. I encourage you to expose yourself to this material (glance through it/familiarize yourself with it), but you will not be tested on it.
2. The **postulate** and **four theorems** on page 143 are EXTREMELY IMPORTANT throughout this course. Copy them into your notes. These are conjectures where using their names in a proof is NOT enough. You will be expected to write these out COMPLETELY.

Don't forget to write down any questions you have from your reading! We'll discuss them together!

## GEOMETRY READING GUIDE – SECTION 3.4

Read pages 150 – 152 in your textbook, making sure that you study the examples. Then respond to the following:

1. Copy the **four conjectures** on page 150 into your notes. How are these related to the four conjectures from Section 3.3 (compare and contrast)?

That's all! Don't forget to write down any questions you have from your reading! We'll discuss them together!

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## GEOMETRY READING GUIDE – SECTION 3.5

Read pages 157 – 158 in your textbook, making sure that you study the examples. Then respond to the following:

1. Copy the **two conjectures** on page 157 into your notes. These are two more conjectures that are useful but not necessary. Example 1 is the proof of the first conjecture. Read through it a couple of times and think about how would you prove the second conjecture.
2. The conjectures from this section and the conjectures from Section 3.4 combine to give us several ways to prove that two lines are parallel. Keep this in mind!

That's all! Don't forget to write down any questions you have from your reading! We'll discuss them together!

**GEOMETRY READING GUIDE – SECTION 3.6 & 3.7**

Read pages 165 – 174 in your textbook, making sure that you study the examples. Then respond to the following:

1. Copy the conjectures regarding the **slopes of parallel lines** and the **slopes of perpendicular lines**. You should remember these from Algebra 1. These conjectures will play a very important role as we continue with coordinate proof.
2. Review the examples to refresh your memory on how to write the equation of a line in slope-intercept form. The book also has review instructions on page 795. You can also use **point-slope form** if you know/remember it: $y - y_1 = m(x - x_1)$ where m is the slope and $(x_1, y_1)$ is a point on the line.

That's all! Don't forget to write down any questions you have from your reading! We'll discuss them together!

# Geometry Reading Guide Ch 4 & 5

## 4.1 Triangles and Angles

Read pages 194 – 197 in your textbook, making sure that you study the examples. Then respond to the following:

1. Define/describe the following: **triangle, equilateral triangle, isosceles triangle, scalene triangle, acute triangle, equiangular triangle, right triangle, obtuse triangle, vertex (vertices), adjacent sides, leg (of a right triangle), hypotenuse (of a right triangle), leg (of an isosceles triangle), base (of an isosceles triangle), interior angle of a triangle, exterior angle of a triangle**
2. How do you classify triangles based on their sides?
3. How do you classify triangles based on their angles?
4. Copy the **Triangle Sum Theorem** into your notes.
5. Read the proof of the Triangle Sum Theorem at the bottom of p. 196. Read CAREFULLY for understanding. Be prepared to discuss it in class.
6. Copy the **Exterior Angle Theorem** into your notes.
7. Copy the **Corollary to the Triangle Sum Theorem** into your notes.

Don't forget to write down any questions you have from your reading! We'll discuss them together!

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## 4.2 Congruence and Triangles

Read pages 202 – 205 in your textbook, making sure that you study the examples. Then respond to the following:

1. What does it mean when two geometric figures are congruent? Specific to this section, what does it mean for two *triangles* to be congruent?
2. What symbol do we use to name a triangle?
3. In your own words, what does the **Third Angles Theorem** say? Why do you suppose this theorem is true?
4. Read through the Theorems at the top of p. 205. Note that these are the **Reflexive Property, Symmetric Property** and **Transitive Property** for congruent triangles.

Don't forget to write down any questions you have from your reading! We'll discuss them together!

## 4.3 Proving Triangles are Congruent: SSS and SAS

Read pages 212 – 215 in your textbook, making sure that you study the examples. Then respond to the following:

1. Copy the **two postulates** from this section into your notes. Include all figures and notation.

2. In your own words, describe what it means to be an "included angle". (Look at the "Student Help" box in the margin of p. 213.)

3. In the previous section (4.2) we needed 6 "pieces of information" to show that two triangles were congruent (3 pairs of sides congruent and 3 pairs angles congruent). How many "pieces of information" do we need *now* to prove that two triangles are congruent?

4. Read through the proofs given in Examples 1 – 4 carefully. **To learn how to *do* proofs, you must be able to *read through* examples of proofs with understanding.**

Don't forget to write down any questions you have from your reading! We'll discuss them together!

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## 4.4 Proving Triangles are Congruent: ASA and AAS

Read pages 220 - 222 in your textbook, making sure that you study the examples. Then respond to the following:

**1.** Copy the postulate and theorem from this section into your notes. Included all figures and notation.

**2.** Copy the "Student Help" Study Tip in the box in the margin on p. 221 into your notes.

**3.** Read through Examples 1 and 2 *carefully*. Remember, in order to learn how to *do* proofs, you must practice *reading through* proofs with understanding.

Don't forget to write down any questions you have from your reading! We'll discuss them together!

## 4.5 Using Congruent Triangles

Read pages 229 – 231 in your textbook, making sure that you study the examples. Then respond to the following:

1. If we know that two triangles are congruent, then what does that tell us about all the corresponding pairs of parts?

2. Read Examples 1, 2, and 3 VERY CAREFULLY. There are many "tricks" that are used in the examples that we will use as well.

Don't forget to write down any questions you have from your reading! We'll discuss them together!

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## 4.6 Isosceles, Equilateral, and Right Triangles

Read pages 236 – 238 in your textbook, making sure that you study the examples. Then respond to the following:

1. Define/describe the following terms: **base angles (in an isosceles triangle), vertex angle (in an isosceles triangle)**

2. In your own words, what does the **Base Angles Theorem** say?

3. In your own words, what does the **Converse of the Base Angles Theorem** say?

4. Explain when one would use the Base Angles Theorem and when one would use the Converse of the Base Angles Theorem. They *are* different, right?

5. Combine the two corollaries on page 237 to form a biconditional statement.

6. In your own words, what does the **Hypotenuse-Leg (HL) Congruence Theorem** say? The HL Congruence Theorem is a significant addition to our list of congruence conjectures (SSS, SAS, ASA and AAS).

7. With what types of triangles must we be working in order to use the HL Theorem?

## 5.4 Midsegment Theorem

Read pages 287 – 289 in your textbook, making sure that you study the examples. Then respond to the following:

1. Define/describe the following terms: **midsegment of a triangle**

2. Copy the **Midsegment Theorem** into your notes, including figures and notation. Can you summarize this in your own words?

3. Read through Example 1 carefully. This is a different type of proof called a "Coordinate Proof". We will be doing more of these later on!

Don't forget to write down any questions you have from your reading! We'll discuss them together!

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## 5.5 & 5.6 Triangle Inequalities

Read pages 295 – 297 and 302 – 304 in your textbook, making sure that you study the examples. Then respond to the following:

1. Copy all the theorems from both sections into your notes including figures and notation. Read through them carefully!

2. Section 5.6 introduces you to another form of proof called **indirect proof**. Describe how an indirect proof works.

Don't forget to write down any questions you have from your reading! We'll discuss them together!

# Geometry Reading Guide
# Chapter 6 : Quadrilaterals

### 6.1 & 6.2: Polygons & Properties of Parallelograms

Read pages 320 – 324 and 330 - 333 in your textbook, making sure that you study the examples. Then respond to the following:

1. Define/describe the following terms: **polygon, side (of a polygon), vertex (of a polygon), convex polygon, concave (nonconvex) polygon, equilateral polygon, equiangular polygon, regular polygon, diagonal of a polygon**

2. Draw an example of a figure that is NOT a polygon and explain why it is NOT a polygon.

3. LEARN the specific names for the various polygons (the tables on the bottom of page 322). You will be expected to know these!

4. In your own words, describe how you can tell if a polygon is convex or concave.

5. Answer the following question: Is it possible for a triangle to be equilateral but not regular? Explain your answer.

6. Copy the **Interior Angles of a Quadrilateral Theorem** into your notes, including figures and notation.

From p. 330 – 333 in your textbook:

7. Define/describe the following term: **parallelogram**

8. Copy the four Theorems about Parallelograms, including figures and notation.

Don't forget to write down any questions you have from your reading! We'll discuss them together!

### 6.3: Proving Quadrilaterals are Parallelograms

Read pages 338 – 341 in your textbook, making sure that you study the examples. Then respond to the following:

1. There are **six** ways to prove that a quadrilateral is a parallelogram. Summarize the six ways.

2. Which **one** of the six ways is really just using the **definition of a parallelogram**?

2. Make sure you pay close attention to **Example 4** on page 341. Read through it carefully!

Don't forget to write down any questions you have from your reading! We'll discuss them together!

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### 6.4: Rhombuses, Rectangles and Squares

Read pages 347 – 350 in your textbook, making sure that you study the examples. Then respond to the following:

1. Define/describe the following terms: **rhombus, rectangle, square**

2. Remember that a rhombus, a rectangle and a square are all *parallelograms*. Because they are parallelograms, what properties must they have? (see section 6.2)

3. Copy the three Theorems on page 349, including figures and notation.

Don't forget to write down any questions you have from your reading! We'll discuss them together!

## 6.5: Trapezoids and Kites

Read pages 356 – 358 in your textbook, making sure that you study the examples. Then respond to the following:

1) Define/describe the following terms: **trapezoid, base (of a trapezoid), base angle (of a trapezoid), leg (of a trapezoid), isosceles trapezoid, midsegment (of a trapezoid), kite**

2) What makes a trapezoid unique/different from a parallelogram?

3) Compare and contrast an isosceles trapezoid and an isosceles triangle.

4) Read Example 2 carefully. Explain how this coordinate proof prove that the figure is a trapezoid?

5) What makes a kite unique/different from a parallelogram?

6) Summarize in your own words the two properties of kites.

Don't forget to write down any questions you have from your reading! We'll discuss them together!

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## 6.6: Special Quadrilaterals

This section (p. 364 – 366) summarizes all the quadrilaterals we've been looking at.

1) Copy the "family tree" for quadrilaterals at the top of p. 264. Why is the *square* at the bottom of the "family tree"?

2) Read Example 1 carefully. Be sure you understand all the vocabulary.

3) Read Example 3. How does this example prove the figure is a rhombus?

## 6.7: Areas of Triangles and Quadrilaterals

Read pages 371 – 375 in your textbook, making sure that you study the examples. Then respond to the following:

1) The exploration activity on **page 371** is a very effective way to understand the formulas for the area of a parallelogram, triangle and trapezoid. At <u>least</u> read through this activity. If you feel so inclined, actually <u>do</u> the activity!

2) Copy into your notes the **area formulas** for the following figures: **square, rectangle, parallelogram, triangle, trapezoid, kite, and rhombus.** For each, make sure you include a figure and a description of what each variable stands for.

3) A rhombus, by definition, is also a parallelogram. Which two area formulas, therefore, apply to finding the area of a rhombus? When would you consider using each formula? (Look at Example 5)

4) Read through the Examples very carefully!

Don't forget to write down any questions you have from your reading! We'll discuss them together!

## GEOMETRY READING GUIDE – SECTION 7.1, 7.2 and 7.3

Read pages 396, 404 – 405 and 412 – 414 in your textbook, making sure that you study the examples. Then respond to the following:

1) Define/describe the following terms: **image, preimage, transformation, reflection, line of reflection, rotation, center of rotation, angle of rotation**
2) Make sure you understand what "prime" notation means.
3) At the top of page 404, there are two properties listed regarding a reflection in a line. Make sure you understand what these are saying.
4) At the bottom of page 404, there are two properties regarding reflections in the axes. Make sure you understand what these are saying.
5) Study example 2 on page 414. We will be focusing on rotations about the origin.

Don't forget to write down any questions you have from your reading! We'll discuss them together!

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## GEOMETRY READING GUIDE – SECTION 7.4

Read pages 421 – 424 in your textbook, making sure that you study the examples. Then respond to the following:

1) Define/describe the following terms: **translation, vector, initial point, terminal point, component form**
2) The top of Page 421 gives two properties of translations. Copy them and make sure you understand what it is saying.
3) In the middle of page 422, you are introduced to coordinate notation. Make sure you understand what it is saying.
4) A **vector** is a new figure to us; however, it has properties similar to figures we have seen before. Compare/contrast a vector and a line segment. Compare/contrast a vector and a ray.
5) How is **component form** of a vector similar to coordinate notation? What makes them different?

Don't forget to write down any questions you have from your reading! We'll discuss them together!

## GEOMETRY READING GUIDE – SECTION 8.3

Read pages 473 – 475 in your textbook, making sure that you study the examples. Then respond to the following:

1) Define/describe the following terms: **similar polygons, scale factor**
2) We've already discussed what it meant for figures to be congruent. Compare/contrast congruent figures and similar figures. Also take note of the symbol for "is similar to."
3) Describe how to verify that two figures are similar. This will be based on conclusions you draw from Examples 1 and 2.
4) What is a statement of proportionality?
5) How do you find the **scale factor** of two similar figures?
6) Copy Theorem 8.1 into your notes (there is no name for this theorem). Summarize the theorem in your own words. You will not have to use this theorem in a proof, so don't worry about specific wording, but it is important for you to understand what it is saying.

Don't forget to write down any questions you have from your reading! We'll discuss them together!

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## GEOMETRY READING GUIDE – SECTION 8.4

Read pages 480 – 482 in your textbook, making sure that you study the examples. Then respond to the following:

1) Compare/contrast **similar triangles** to **congruent triangles**. In other words, what do they have in common? What is different?
2) Copy the **Angle-Angle (AA) Similarity Postulate** into your notes. Summarize this postulate in your own words. Study the examples to see how the AA Similarity Postulate can be used to prove that two triangles are similar.
3) The middle of page 482 contains an important statement regarding the ratio of "any two corresponding lengths" of similar polygons. Copy this statement into your notes. Summarize it. What is this saying?

Don't forget to write down any questions you have from your reading! We'll discuss them together!

**GEOMETRY READING GUIDE – SECTION 8.5**

Read pages 488 – 491 in your textbook, making sure that you study the examples. Then respond to the following:

1) Copy into your notes the **Side-Side-Side Similarity (SSS ~) Theorem** and the **Side-Angle-Side Similarity (SAS ~) Theorem**. Compare and contrast SSS similarity to SSS congruence and SAS similarity to SAS congruence.

2) What triangle congruence postulates or theorems do not have a corresponding similarity theorem? Why do you suppose we don't have (or need) them?

3) Study Examples 4 through 6 carefully. Application problems with similar triangles are extremely common and will turn up often in Trigonometry (or Honors Algebra 2).

Don't forget to write down any questions you have from your reading! We'll discuss them together!

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**GEOMETRY READING GUIDE – SECTION 8.6**

Read pages 498 – 501 in your textbook, making sure that you study the examples. Then respond to the following:

1) Copy into your notes the **four theorems** from this section.

2) After studying **examples 1 through 4**, write and solve your own example problem for each theorem.

Don't forget to write down any questions you have from your reading! We'll discuss them together!

**GEOMETRY READING GUIDE – SECTION 9.1**

Read pages 527 – 530 in your textbook, making sure that you study the examples. Then respond to the following:

1) **Do** the activity in the middle of page 527. We'll use these in class tomorrow.

2) Copy into your notes **Theorem 9.1**. Use your cut-outs from the activity to try and make sense of the theorem.

3) Draw a right triangle. Label the vertices and mark the right angle. Draw an altitude to the hypotenuse. Name the point of intersection of the altitude and the hypotenuse. Write the **similarity statement** for the three right triangles you have formed.

This section can get very tricky, so study the examples very carefully!

Don't forget to write down any questions you have from your reading! We'll discuss them together!

## GEOMETRY READING GUIDE – SECTION 9.2 and 9.3

Read pages 535 – 537 and 543 – 545 in your textbook, making sure that you study the examples. Then respond to the following:

1) Explain what a **Pythagorean triple** is. Give two examples of a Pythagorean triple. Find the measures of the sides of a right triangle whose sides do NOT form a Pythagorean triple.

2) Copy the **Converse of the Pythagorean Theorem** into your notes. Summarize this theorem in your own words.

3) The other two theorems in Section 9.3 are related to the converse of the Pythagorean Theorem. What do they each say?

Don't forget to write down any questions you have from your reading! We'll discuss them together!

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## GEOMETRY READING GUIDE – SECTION 9.4

Read pages 551 – 553 in your textbook, making sure that you study the examples. Then respond to the following:

1) There are two types of **special right triangles**. What are they called? Why are they named that way?

2) Copy the theorems on page 551 into your notes, including the diagrams and their labels. Use the Pythagorean Theorem to verify both theorems.

3) How many side lengths do you need to know to use the Pythagorean Theorem? How many side lengths do you need to know to use special right triangles?

***Special right triangles are one of the most important basic skills that will carry into trigonometry. The faster you can use/apply them, the better!

Don't forget to write down any questions you have from your reading! We'll discuss them together!

## GEOMETRY READING GUIDE – SECTION 9.5

Read pages 558 – 561 in your textbook, making sure that you study the examples. Then respond to the following:

1) Define/describe the following terms: **trigonometric ratio, sine, cosine, tangent, angle of elevation, angle of depression** and **vertical drop** (both are defined in problem 39 on page 563)

2) What are the abbreviations for **sine, cosine** and **tangent**? Even when the abbreviations are written, we still say the entire word (e.g. **sin 30°** is still read as "**sine of 30 degrees**").

3) In the middle of page 558, the sentence reads, "The value of a trigonometric ratio depends only on the measure of the acute angle, not on the particular right triangle that is used to compute the value." Why is this true?

4) Draw a right triangle and label the vertices. Label the measures of the sides of the right triangle (consider using any Pythagorean triple). Find the **sin, cosine** and **tangent** of both acute angles. Write answers as both reduced fractions AND as a decimal rounded to the nearest thousandths.

5) You will need a **scientific calculator** for the rest of this chapter. If you have your own calculator, make sure you understand how to change the mode to "degrees" (usually indicated with a **D** or **DEG** on the top of the display). If you have a graphing calculator, you can change this in the **Set Up**.

6) Study Examples 6 and 7 closely. Problems involving **angle of elevation** are very common applications of trigonometry.

7) Use a dictionary or the internet to find out what a **clinometer** is. Explain how it was used. How does it relate to examples 6 and 7?

Don't forget to write down any questions you have from your reading! We'll discuss them together!

## GEOMETRY READING GUIDE – SECTION 9.6

Read pages 567 – 569 in your textbook, making sure that you study the examples. Then respond to the following:

1) What does it mean to **solve a right triangle**? What pieces of information do you need to know in order to solve a right triangle.

2) What does the expression $\mathbf{\sin^{-1}x = A}$ mean? How is this different from
**sin A = x** ? Read the Activity box on the bottom of Page 567 to learn how to use your scientific calculator to solve the equation **sin A = 0.6**.

3) Try Examples 1 and 2 on your own. Check your work.

Don't forget to write down any questions you have from your reading! We'll discuss them together!

## GEOMETRY READING GUIDE – SECTION 9.7

Read pages 573 – 575 in your textbook, making sure that you study the examples. Then respond to the following:

1) Define/describe the following terms: **magnitude of a vector, direction of a vector, equal vectors, parallel vectors, sum of two vectors**

2) What notation do we use to denote "the magnitude of vector AB?" How do you find the magnitude of a vector if you know its component form?

3) If you know the component form of two vectors, how do you find the component form of the sum vector?

4) Study carefully the examples, especially the "real-life applications." In particular, read examples 2 and 5 carefully.

Don't forget to write down any questions you have from your reading! We'll discuss them together!

## GEOMETRY READING GUIDE – SECTION 10.1

Read pages 595 – 598 in your textbook, making sure that you study the examples. Then respond to the following:

1) Define/describe the following terms: **circle, center of a circle, radius of a circle (two definitions), congruent circles, diameter of a circle (two definitions), chord, secant, tangent, interior of a circle, exterior of a circle, point of tangency**
2) What notation do we use to denote "circle P"?
3) How does the measure of a diameter of a circle compare to the measure of the radius of the same circle?
4) Draw a circle and label its center **M**. Then draw a radius to **A**, a diameter from **B** to **C** and a chord (but not a diameter) from **D** to **E**. Then draw a line that is **tangent to circle M at point A**.
5) Copy the three theorems into your notes. Do you understand the proof of the theorem on page 598? It just uses congruent triangles and CPCTC to prove it!

Don't forget to write down any questions you have from your reading! We'll discuss them together!

## GEOMETRY READING GUIDE – SECTION 10.2

Read pages 603 – 606 in your textbook, making sure that you study the examples. Then respond to the following:

1) Define/describe the following terms: **central angle of a circle, minor arc, major arc, semicircle, congruent arcs, midpoint of an arc, bisector of an arc**

2) How do you name a minor arc? How do you name a major arc? How do you name a semicircle?

3) How do you find the measure of a minor arc? What information do you need to know in order to find the measure of a minor arc? What notation do we use to denote "the measure of arc AB"?

4) How do you find the measure of a major arc? What information do you need to know in order to find the measure of a major arc? What notation do we use to denote "the measure of arc ACB"?

5) Copy the **Arc Addition Postulate** into your notes. Summarize this postulate. What other postulates have you seen that resemble this postulate?

6) Copy the four theorems about chords and diameters (pages 605 and 606) into your notes. Study the examples on those pages to get a sense of what the theorems are saying.

Don't forget to write down any questions you have from your reading! We'll discuss them together!

## GEOMETRY READING GUIDE – SECTION 10.3

Read pages 613 – 616 in your textbook, making sure that you study the examples. Then respond to the following:

1) Define/describe the following terms: **inscribed angle, intercepted arc, inscribed polygon, circumscribed circle**

2) Copy the theorem for the **Measure of an Inscribed Angle** into your notes. In your own words, describe the relationship between the measure of an inscribed angle and the measure of its intercepted arc. Compare this to what we learned yesterday about the measure of a central angle and how it relates to the measure of its minor arc.

3) Copy theorem 10.9 into your notes. Summarize in your own words what this theorem says. Try completing a two-column proof for this theorem.

4) Copy the **theorems about inscribed polygons** into your notes. Summarize them both in your own words.

Don't forget to write down any questions you have from your reading! We'll discuss them together!

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## GEOMETRY READING GUIDE – SECTION 10.4

Read pages 621 – 623 in your textbook, making sure that you study the examples. Then respond to the following:

1) Copy **Theorem 10.12** into your notes. Summarize it in your own words. Compare and contrast this theorem to what we learned about **inscribed angles** in section 10.3.

2) Copy **Theorems 10.13 and 10.14** into your notes. Summarize them in your own words.

3) Notice that Theorem 10.14 shows three different equations for the three different situations. Compare and contrast the equations. The more you can recognize the commonalities between the three equations, the easier it will be to remember them!

Don't forget to write down any questions you have from your reading! We'll discuss them together!

## GEOMETRY READING GUIDE – SECTION 10.5

Read pages 629 – 631 in your textbook, making sure that you study the examples. Then respond to the following:

1) Define/describe the following terms: **segments of a chord, tangent segment, secant segment, external segment (of a secant segment)**

2) This section introduces three new **theorems** that all involve formulas/equations. Copy the theorems into your notes, including the drawings and the formulas.

3) For each of the three theorems, write your own problem and solve it.

4) Read **example 3** carefully. Describe how to use one of the segment length theorems to find the radius of a circle. Compare this to how we found the radius of a circle in a similar problem using Pythagorean Theorem and tangents to circles.

Don't forget to write down any questions you have from your reading! We'll discuss them together!

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## GEOMETRY READING GUIDE – SECTION 10.6

Read pages 636 – 637 in your textbook, making sure that you study the examples. Then respond to the following:

1) What information do you need to know (or be able to find) in order to write the equation of a circle in the coordinate plane?

2) What is the **standard equation of a circle**? What do all the variables represent?

3) Explain how to graph a circle given its standard equation.

4) Simplify the **standard equation** of a circle (that is, multiply it out) and make it equal zero. This is called **general form**.

5) Use notes from previous courses or this course to review the process of "completing the square." This will be used!

Don't forget to write down any questions you have from your reading! We'll discuss them together!

## GEOMETRY READING GUIDE – SECTION 11.1

Read pages 661 – 664 in your textbook, making sure that you study the examples. Then respond to the following:

1) There are no new terms to define/describe. However, you should review the following terms: **polygon, n-gon, convex polygon, regular polygon, interior angle of a polygon, exterior angle of a polygon**

2) After reading page 661, complete the table in the **Activity: Developing Concepts** box. Do you see the pattern? This is where Theorem 11.1 (**Polygon Interior Angles Theorem)** comes from.

3) What kind of polygon must you have in order to apply the **Corollary to Theorem 11.1**? Can you explain why the **Corollary to Theorem 11.1** works?

4) Read the top of page 663 to understand the basis for **Theorem 11.2**.

5) What kind of polygon must you have in order to apply the **Corollary to Theorem 11.2**? Can you explain why the **Corollary to Theorem 11.2** works?

Don't forget to write down any questions you have from your reading! We'll discuss them together!

## GEOMETRY READING GUIDE – SECTION 11.2

Read pages 669 – 671 in your textbook, making sure that you study the examples. Then respond to the following:

1) Define/describe the following terms: **center of a regular polygon, radius of a regular polygon, apothem of a regular polygon, central angle of a regular polygon**

2) Page 669 gives a formula for finding the area of a regular triangle (equilateral). We have actually done this before using what we know about **special right triangles**. If you would like to memorize the formula in Theorem 11.3, you are welcome to do so, however it is not necessary.

3) There are two versions of the **Area of a Regular Polygon** formula on the bottom of page 670. Copy these into your notes, making sure you write what each variable stands for.

4) Explain how you can find the **measure of a central angle** of a regular polygon. The top of page 671 explains this.

5) The examples on Page 671 involve trigonometry. Study these examples as carefully as you can. We will be going over this process in class, so just do the best you can to understand this!

Don't forget to write down any questions you have from your reading! We'll discuss them together!

## GEOMETRY READING GUIDE – SECTION 11.4

Read pages 683 – 685 in your textbook, making sure that you study the examples. Then respond to the following:

1) Define/describe the following terms: **circumference, pi, arc length**

2) How do you find the **circumference of a circle?** What information do you need to know in order to find the circumference of a circle?

3) How can you find the radius or diameter of a circle if you are given the circumference?

4) What is the difference between **arc measure** and **arc length**.

5) Copy the **Arc Length Corollary** into your notes. Notice how proportions are used here.

Don't forget to write down any questions you have from your reading! We'll discuss them together!

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## GEOMETRY READING GUIDE – SECTION 11.5

Read pages 691 – 694 in your textbook, making sure that you study the examples. Then respond to the following:

1) Define/describe the following terms: **area of a circle, sector of a circle**

2) How do you find the **area of a circle?** What information do you need to know in order to find the area of a circle?

3) How can you find the radius or diameter of a circle if you are given the area?

4) Copy the **Area of a Sector** theorem into your notes. Compare this to the formula you used to find the **Length of an Arc** in Section 11.4. How are they similar/different?

Don't forget to write down any questions you have from your reading! We'll discuss them together!

## GEOMETRY READING GUIDE – SECTION 11.6

Read pages 699 – 701 in your textbook, making sure that you study the examples. Then respond to the following:

1) Define/describe the following terms: **probability, geometric probability**

2) What does a probability of 0 mean? A probability of 1? A probability of 0.5?

3) Study the formulas for **Probability and Length** and **Probability and Area** in the middle of page 699. How do these relate to how we usually find probability (i.e. # favorable outcomes / # of possible outcomes)?

4) Study the examples in this section to see how we can use geometric probability to solve problems involving probability?

5) Try the **Guided Practice** problems on the bottom of Page 701. Specifically, try **#4 – 8**.

Don't forget to write down any questions you have from your reading! We'll discuss them together!

## GEOMETRY READING GUIDE – SECTION 12.1

Read pages 719 – 722 in your textbook, making sure that you study the examples. Then respond to the following:

1) Define/describe the following terms: **polyhedron, face (of a polyhedron), vertex (of a polyhedron), polyhedra, regular polyhedron, convex polyhedron, cross section, Platonic solid, tetrahedron, octahedron, dodecahedron, icosahedron**
2) What makes a **polyhedron** different from a polygon?
3) On the bottom of page 719 is a green box with five solids drawn. Explain why the cone, cylinder and sphere are NOT polyhedra.
4) Relate a **regular polyhedron** to a **regular polygon** (in a regular polyhedron, <u>all</u> faces are congruent to <u>each</u> <u>other</u>).
5) Copy **Euler's Theorem** (pronounced "oiler") into your notes. Make sure you include what F, V and E represent.
6) Study example 4. This example describes how to determine the number of **edges** a polyhedron has if you know the number and type of polygon faces. Describe this process.

Don't forget to write down any questions you have from your reading! We'll discuss them together!

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## GEOMETRY READING GUIDE – SECTION 12.2

Read pages 728 – 731 in your textbook, making sure that you study the examples. Then respond to the following:

1) Define/describe the following terms: **prism, base of a prism, lateral faces, altitude (height) of a prism/cylinder, right prism, oblique prism, surface area of a polyhedron, lateral area of a polyhedron, net, cylinder, right cylinder, lateral area of a cylinder, surface area of a cylinder**
2) Explain the difference between **Lateral Surface Area** and **Surface Area**. Copy into your notes the formulas for the **Surface Area of a Right Prism** and **Right Cylinder.** How would you alter each formula to find just the **lateral area** of each figure?
3) Notice that a prism may or may not be "standing" on its base (look at the figures for **a** and **b** in Example 2 on page 729). Explain how to determine which faces are the **bases** of a prism.
4) Compare and contrast the surface area formulas for a **right prism** and **right cylinder**?

Don't forget to write down any questions you have from your reading! We'll discuss them together!

## GEOMETRY READING GUIDE – SECTION 12.3

Read pages 735 – 737 in your textbook, making sure that you study the examples. Then respond to the following:

1) Define/describe the following terms: **pyramid, base (of a pyramid), lateral faces of a pyramid, vertex of a pyramid, lateral edge of a pyramid, altitude (height) of a pyramid/cone, regular pyramid, slant height, (circular) cone, right cone, lateral surface of a cone**
2) Copy into your notes the formulas for the **Surface Area of a Regular Pyramid** and **Right Cone.** How would you alter each of these formulas to find just the **lateral area** of each figure?
3) What are the similarities and differences between the surface area formulas for a **regular pyramid** and **right cone**?
4) Explain the difference between the **height** and the **slant height** of a pyramid or cone.

Don't forget to write down any questions you have from your reading! We'll discuss them together!

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## GEOMETRY READING GUIDE – SECTION 12.4

Read pages 743 – 745 in your textbook, making sure that you study the examples. Then respond to the following:

1) Define/describe the following term: **volume of a solid**
2) What kind of units of measure are used for **volume**?
3) Copy the formulas for **Volume of a Prism** and **Volume of a Cylinder** into your notes. Once again, notice that the formulas for prism and cylinder are essentially the same. How are they different?
4) Copy the formulas for the **Volume of a Pyramid** and **Volume of a Cone** into your notes. Once again, notice that the formulas for pyramid and cone are essentially the same. What's the only difference?

Don't forget to write down any questions you have from your reading! We'll discuss them together!

**GEOMETRY READING GUIDE – SECTION 12.5**

Read pages 752 – 754 in your textbook, making sure that you study the examples. Then respond to the following:

1) Copy the formulas for the **Volume of a Pyramid** and **Volume of a Cone** into your notes. Once again, notice that the formulas for pyramid and cone are essentially the same. How are they different?

Don't forget to write down any questions you have from your reading! We'll discuss them together!

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**GEOMETRY READING GUIDE – SECTION 12.6**

Read pages 759 – 761 in your textbook, making sure that you study the examples. Then respond to the following:

1) Define/describe the following terms: **sphere, center of a sphere, radius of a sphere, chord of a sphere, diameter of a sphere, great circle, hemisphere**

2) Copy the formulas for the **Surface Area of a Sphere** and **Volume of a Sphere** into your notes.

3) In addition to studying this section, also review the **surface area formulas** you read about yesterday.

4) Example 4 is a great application problem involving formulas you've seen in throughout this chapter. Take a good look at it.

Don't forget to write down any questions you have from your reading! We'll discuss them together!

**GEOMETRY READING GUIDE – SECTION 11.3**

Read pages 677 – 678 in your textbook, making sure that you study the examples. Then respond to the following:

1) Read through the "Area Relationships in Similar Figures" activity on Page 676. Trying this activity for yourself will give you a very concrete understanding of Section 11.3.

2) Copy the theorem on page 677 about "Areas of Similar Polygons" into your notes.

3) Example 1 is a very straightforward example illustrating the theorem you just copied. Make sure you work through it!

Don't forget to write down any questions you have from your reading! We'll discuss them together!

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**GEOMETRY READING GUIDE – SECTION 12.7**

Read pages 766 – 768 in your textbook, making sure that you study the examples. Then respond to the following:

1) Explain what it means for two solids to be **similar**.

2) Read **Example 1** carefully. Then draw and label your own example of two prisms that are similar and two prisms that are NOT similar.

3) Copy into your notes the **Similar Solids Theorem**. Also include the comment the book makes regarding the term "areas."

Don't forget to write down any questions you have from your reading! We'll discuss them together!