Name: _____

Reading Questions

1. Explain the geometric proof of the quadratic formula.

2. The door problem was created to teach students how to use what two facts/theorems?

3. Pick your two favorite odd numbers and use them to generate a Pythagorean triple using the Babylonian method.

4. What struck you in reading this section? Any points of confusion?

Name: _____

Reading Questions

1. Using the parametrization in Prop. 1.2, what is the parameter t corresponding to the point $P = (\frac{\sqrt{3}}{2}, \frac{1}{2})$ on the unit circle? What point on the unit circle corresponds to a t-value of 1?

2. Give the definition of *Pythagorean point*, and draw a picture to illustrate. Come up with three examples, using Plimpton 322 (Figure 1.5 in Section 1.1) and Prop. 1.3.

3. Draw a picture of the unit circle and the two lines corresponding to $t = \sqrt{2} - 1$ and $t = 1$ in Thm. 1.4.

4. Do exercise 1.19(i). (Warning: the answer given in the text is incorrect.)

5. What is a *primitive* Pythagorean triple?

6. What struck you about this section? What was confusing?

Name: _____

Reading Questions

1. Give the statement of Fermat's Last Theorem (FLT). Why is it named after Fermat? Did he prove it?

2. What is the "method of infinite descent"?

3. Explain, in your own words, why FLT would be true if every odd prime were "good."

4. What struck you in this section? What part was the most unclear or confusing?

Name: _____

Reading Questions

1. What is the definition of a congruent number?

2. Pick a Pythagorean triple from Plimpton 322 and use it to find a congruent number, using Prop. 1.10.

3. What struck you in this section? What part was the most unclear or confusing?

Name: _____

Reading Questions

1. State the Least Integer Axiom. If the words "natural numbers" were replaced with "integers," would the statement still be true? Explain.

2. Do 1.3.37.

3. What is the restriction on the remainder in the Division Algorithm? Why is it important?

4. State the definition of prime.

5. What struck you in this section? What part was the most unclear or confusing?

Name: _____

Reading Questions

1. State the definition of gcd

2. State Theorem 1.19.

3. Give an equivalent condition for the definition of gcd (Corollary 1.20).

4. Give an equivalent condition for the definition of prime. (Theorem 1.21, Euclid's Lemma).

5. What struck you in this section? What part was the most unclear or confusing?

Name: _____

Reading Questions

1. Find $\gcd(480, 126)$ using antanairesis as in the first paragraph on page 31.

2. Use the Division Algorithm and Lemma 1.27(i) to describe your work above more efficiently, as in the second paragraph on page 31.

3. Rewrite your work above in the notation of the proof of Theorem 1.29 as in the paragraph after the proof.

4. Find coefficients s and t expressing $\gcd(480, 126)$ as a linear combination of 480 and 126, as in the paragraph after the proof of Theorem 1.30.

5. What struck you in this section? What part was the most unclear or confusing?

Name: _____

Reading Questions

1. List the nine fundamental properties (with names, applicable.)

2. Does $\mathbb{Q}$ satisfy all nine properties? Does $\mathbb{Z}$? Does $\mathbb{N}$? If not, which properties are not sastisfied?

3. What struck you in this section? What part was the most unclear or confusing?