The Golden Ratio
Student Worksheet

Name _____

Class _____

In this activity, you will explore:

- Interesting number patterns

- Ratios of the human body

- Ratios of certain parts of special figures

1. Open the *PTE-NumOps_GoldenRatio_EN.tns* document on your TI-Nspire™ math and
    science learning handheld, and follow along with your teacher to work through the
    activity (Figure 1). Use this document as a reference and to record your answers.
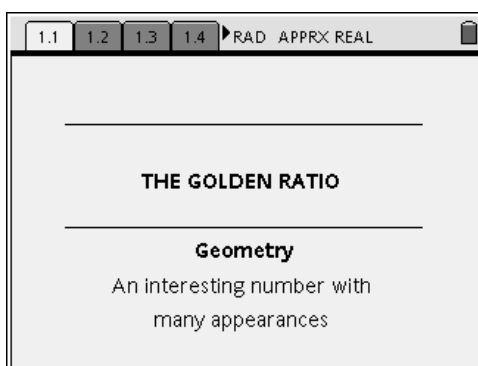
Figure 1

Problem 1 – Number Patterns

Read the description of the pattern on page 1.2 on your TI-Nspire™ document, and use the
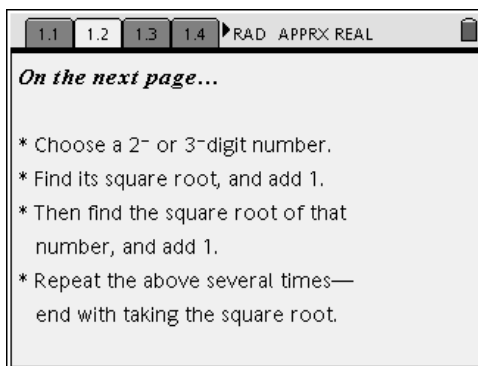Calculator application on page 1.3 to evaluate your calculations (Figure 2).

Figure 2

For the class to obtain the most interesting results, you should start with a different number than the students around you.

Start: _____   End: _____

2. Compare your numbers with those of four of your classmates. What do you observe?

Start: _____   End: _____

Start: _____   End: _____   Start: _____   End: _____

Start: _____   End: _____

3. Write the first 15 terms of the Fibonacci sequence.

4. Divide each term by its previous term ($1 \div 1, 2 \div 1, 3 \div 2, 5 \div 3, \ldots$).

5. Continue through the 15th term. What do you notice?

Problem 2 – A Human Body Ratio

Work with a partner to find the ratio of your height to the distance from the top of your head to the end of your fingers (with your arms down against your sides).

Record your data as well as data from your classmates.

Height	Head to Fingertips	Ratio

Height	Head to Fingertips	Ratio

6. What is the meaning of these ratios?

Problem 3 – Some Special Constructions

7. What are the length and width of the rectangle constructed on page 3.1?

8. What is the ratio of the length to the width?

9. What is the radius of the circle circumscribing the decagon on page 3.2?

10. What is the length of one side of the decagon?

11. What is the ratio of the radius to the length of one side of the decagon?

Problem 4 – What is this Number?

12. The ratio $\dfrac{1+\sqrt{5}}{2}$ is called the Golden Ratio. What is the decimal approximation of this number?

Problem 5 – Extension

13. Find this ratio: $\dfrac{\text{distance from top of head to fingertips}}{\text{distance from top of head to elbow}}$