

Name: _____

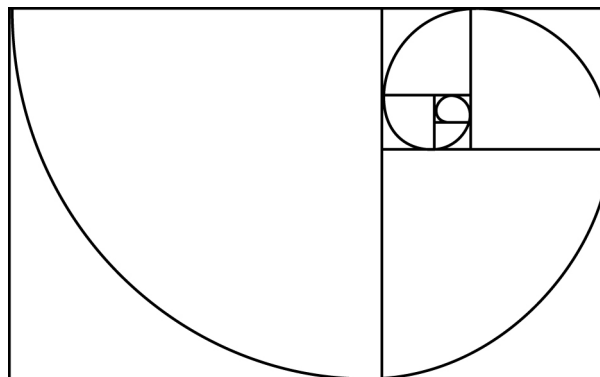
Date: _____

Section 6.1 Investigate Geometric Shapes and Figures

- What is the golden ratio? How is it used in design?
 - What is a golden rectangle?
- A picture frame has a length of 21 in. What should the width of the frame be to form a golden rectangle?
- Look through a car magazine. Identify as many geometric shapes as you can in several cars. Why do you think these shapes were chosen?
- Work with a partner. Find a large photograph of a person from the Internet or a magazine. Measure each horizontal or vertical distance to the nearest millimetre.
 - top of head to chin
 - top of head to centre of eyes
 - centre of eyes to tip of nose
 - centre of eyes to middle of lips
 - width of nose
 - distance between outer corners of eyes
 - width of head
 - hairline to centre of eyes
 - tip of nose to chin
 - centre of lips to chin
 - width of mouth
 - tip of nose to centre of lips
- Refer to your answers to question 4. Calculate each ratio.
 - $\frac{\text{Top of head to chin}}{\text{Width of head}}$
 - $\frac{\text{Top of head to centre of eyes}}{\text{Centre of eyes to middle of lips}}$
 - $\frac{\text{Tip of nose to chin}}{\text{Centre of lips to chin}}$
 - $\frac{\text{Tip of nose to chin}}{\text{Centre of eyes to tip of nose}}$

- $\frac{\text{Width of nose}}{\text{Tip of nose to centre of lips}}$
- $\frac{\text{Distance between outer corners of eyes}}{\text{Hairline to centre of eyes}}$
- $\frac{\text{Width of mouth}}{\text{Width of nose}}$

- How does each ratio from question 5 compare to the golden ratio?
- List four geometric shapes that can tile a plane.
- Create a geometric figure that can tessellate.
 - Use the shape to tile a plane.
- The diagram shows the cross-section (spiral) of a nautilus shell.



- If the smallest rectangle in the middle has a width of one unit, what is the width of the smallest square located beside it?
- What is the width of the next larger square?
- What is the ratio of the two measures?
- Explain how the width of each larger square is related to the next two smaller widths.