

No books or notes may be used on this exam. **Choose one of the two problems below to solve.** You will have 40 minutes to answer your chosen question and upload a solution to Canvas. Please write legibly and keep your paper as organized as possible. I will collect both your scratch work and your final answer. **Your final answers should be nicely written to convey your ideas and convince the reader of the answer.**

Turn off your cell phone during the exam. You may use a calculator as long as it does not connect to the internet. Good Luck!

Name: _____

Wriggling Worms: A worm is exploring the wide world around itself.

- (a) The worm is at the bottom of a 12-foot wall. Every day it crawls up 3 feet, but at night it slips down 2 feet. How many days does it take the worm to get to the top of the wall?
- (b) Our heroic worm is trying to crawl around a big circular disk which has evenly spaced spikes along the edges that the worm has to dodge. If the tenth spike is exactly opposite the third spike, how many spikes are there in total?

Dwarf Delving: A company of seventeen dwarves is delving the deep depths of a dark mountain. The depths of the mountain are home to an evil spirit, shrouded in darkness and flame. Said spirit is mysteriously drawn to pairs of dwarves and any group of five or more dwarves and will invariably devour any such groups that enter the mountain. In how many ways can the dwarves split up into groups that can safely explore the mountain in search of gold?

Solution:

Problem Chosen: _____