

Name: _____ Score: _____ / 45

PLEASE DO NOT FILL IN THE "SCORE" BLANK!

Grade: _____ Team: _____

This is a round consisting of 9 problems that is to be done in 35 minutes. The problems are split into 3 themes, which are in ascending difficulty. For example, problem 3 in category 3 is significantly harder than problem 3 in category 1. The problems within each theme are also in ascending difficulty. The problems are each worth 5 points.

No aids are permitted aside from pencils, pens, and scratch paper. In particular, no calculators or other computers are permitted. Communication with other people is not permitted.

Record your answers in the box corresponding to the correct problem. Only answers printed in the boxes below will be scored.

Your Answers

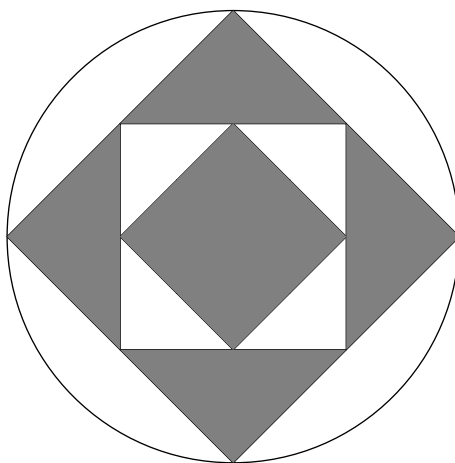
Squares! Squares!	Among Us	Snorlax: A Day in the Life
1.	1.	1.
2.	2.	2.
3.	3.	3.

Squares! Squares!

1. Today, April 16, is a special kind of day known as a *square day*, where the number of the month squared is the number of the day ($4 \times 4 = 16$). How many *square days* are there in a year?
2. The "magic square" below is missing some numbers in the boxes. When the boxes are filled in, each row, column, and diagonal will add to the same number. What number should be in the bottom right corner?

3		6
		4
8		?

3. Kathleen submits a logo design to the Winchester Math Team, with three squares inscribed within each other as shown in the diagram below. The side length of the largest square is 8. Find the total area of the shaded regions.



Among Us

1. Green Crewmate has to complete the following tasks: Card Swipe, Wires, Reactor, Shields, Trash Chute, and Medical Bay. It takes 10 seconds to do Card Swipe, 5 seconds to do Wires, 8 seconds to do Reactor, 4 seconds to do Shields, 7 seconds to Trash Chute, and 33 seconds to do Medical Bay. If it takes 11 seconds to walk to each different task and Green Crewmate has to walk to their first task, how, in seconds, long will it take for green crewmate to complete all their tasks?

2. Four crewmates, Red, Green, Pink, and Cyan, each chose a favorite accessory from a closet with a bandana, pilot cap, party hat, and chef hat. The following is true:

- (a) The crewmate wearing the chef hat loves to cook sushi, much to Pink's dismay.
- (b) Pink, Cyan, and the bandana-wearing crewmate had a discussion in the locker room about cafeteria cleanliness.
- (c) In the laboratory, Green was talking with the crewmate wearing the pilot cap and the crewmate wearing the bandana.
- (d) Green has never used the kitchen and can't cook.

Which crewmate wasn't talking with Green in the laboratory? Answer 1 for Red, 2 for Pink, and 3 for Cyan.

3. In a guessing game, there are 10 amogi, 9 of them being crewmates and one of them being an imposter. The game goes by rounds. Every round, the imposter kills one crewmate and then they take a vote after, and one of the amogi on the spaceship is randomly voted out. The amogus voted out can be a crewmate or an imposter. What is the probability that the imposter is voted out within three rounds?

