Interschool Test

Mind Games

Mu Alpha Theta National Convention
July 10-15, 2022

1 Fun Zone (55 Points Total)

1.1 Two Lies and a Truth (20 Points Total)

Welcome to Two Lies and a Truth. We've got a ton of random facts for you, but in each category two of the facts are completely made up, and one is true. All you have to do is choose the letter corresponding to the correct fact. Each question is worth 2 points, and a wrong answer will cost you 1 point. If you manage to get all the questions right, you get an extra 2 points! Happy educated guessing!

1. Animals (2 Points)

    (a) The tree frog's padded feet allow it to stick to and climb trees. However, these pads can actually hinder its jumping ability, sticking to the launch point and absorbing some of the energy expelled in each jump.

    (b) Hippopotami are the densest mammals, resulting from their extremely strong leg muscles. These muscles, in addition to their strong jaws, make them formidable predators.

    (c) Snails are able to enter a state of hibernation when weather is unfit for maintaining moisture. If necessary, snails can stay asleep in this state for three years.

2. Plant Diseases (2 points)

    (a) "Red Root" is the common name for a fungal disease known to target coleus plants. Though easily identified by the plant's roots turning a red tint, the main other effect on the plant is increased difficulty in producing chlorophyll, inevitably resulting in the plant's death.

    (b) "Ergot" is a disease that is able to infect a plant when an ergot kernel gains access to a plant's stigma. Humans that ingest plants infected by ergot may experience ergotism, symptoms of which include spasms, mania, and diarrhea.

    (c) "Anthracnose" is a disease experienced by plants which results in structural failure throughout the organism. The disease can be treated by coating the very base of the stem in heated wax (preferably beeswax).

3. Broadway Musicals (2 points)

    (a) The musical *Wicked*, featuring a plot that plays off of the original story *The Wizard of Oz*, also contains a number of musical homages to the film version of *The Wizard of Oz* (1939).

    (b) While many Disney animations such as *Aladdin* and *The Little Mermaid* have made their way to Broadway as musicals, in fact many of these animations were originally intended to be musicals. However, Disney was not able to work its way into the Broadway scene in the 1990s, and resorted to its animation assets for these stories.

    (c) The well-known musical *Les Miserables* actually doesn't take place during the French Revolution of 1789. Instead, it begins in 1815 and takes place over the following 20 years.

4. Nintendo (2 points)

    (a) In *Mario Kart 64* on the "Bowser's Castle" course, Marty the Thwomp can be seen imprisoned within a cage in the wall, and can be "freed" (iron bar sprite is removed) by driving into a certain spot on the wall.

    (b) Contrary to his debut game's final product, Mario was originally designed to be a factory worker, not a plumber.

(c) While many fans are familiar with the secret cheat code "Up, Up, Down, Down, Left, Right, Left, Right, B, A, Start" found in many games such as the original *Contra*, that game's sequel, *Super C*, actually used a variation of this code: "Right, Left, Down, Up, A, B, Start."

5. Music Theory (2 points)

(a) In music theory, in addition to adding a string of multiple notes on a single beat going up to create a harmony, a composer may also add in the "negative harmony," formed by adding notes in a similar fashion but going down the staff, creating what is known as "harmonic polarity."

(b) In a composition, the combining of multiple different musical modes (ionian, dorian, phrygian, mixolydian, etc.) together creates a new mode together, which is named as a combination of the modes used; for example, "mixolydic ionian."

(c) A "two-variable polyrhythm" is a meter formed by the relationship between x evenly spaced events in time and y evenly spaced events in time, with x being the central pulse and y being the alternate pulse; however, by switching these variables, we can form what is known as an "inverse meter."

6. Disney (2 points)

(a) Disney's *Pocahontas* (1995) was rewritten and reworked dozens of times; early versions portrayed the natives, aside from Pocahontas, as bad, and the English as good, but this idea was scrapped due to controversy around nativism near the time of the movie's development.

(b) In early development of *The Jungle Book* (1967), at least one storyboard artist travelled to India and attempted to live for multiple days in the wild as Mowgli would.

(c) Following Disney's release of *The Lion King* (1994), a researcher from a hyena research facility attempted to sue Disney for "defamation of character" based on their portrayal of hyenas in the film.

7. The Internet (2 points)

(a) The first "internet" was called CERNET and was actually just a database used by a consortium of European institutions for nuclear research.

(b) The first "internet" was called ARPANET, originally made during the cold war to allow many military computers to communicate without a central core that could be attacked.

(c) The first "internet" was called ENQUIRE, created by Tim Berners-Lee, and a direct predecessor to the WorldWideWeb. It was officially decommissioned in 1988.

8. Climate Change (2 points)

(a) Many scientists predict that climate change may lead to ocean water being acidified. Within the next century, pH levels are expected to jump anywhere from .14 to .35, posing severe threats to all marine wildlife.

(b) Many know about the Ozone Hole, a region over the Antarctic with severely depleted ozone in the stratosphere. However, scientists predict new ozone holes to emerge in the next few decades, possibly over southern Africa or central Russia.

(c) Air pollution has been proven to disrupt respiration in plants, and has statistically significantly decreased the oxygen levels in areas that are both highly populated as well as highly polluted.

9. Astronomy (2 points)

   (a) Mercury is currently shrinking; similar to Earth, the planet is tectonically active, and is still contracting since its astronomically recent formation.

   (b) Jupiter's iconic storm, the Great Red Spot, has been steadily increasing in size. The rate of increase is very low, but maintaining this rate, the storm would be larger than Neptune by the year 3000.

   (c) While we know stars to be primarily red, orange, and yellow, there exist stars of even more colors, such as blue and green. We see stars as these colors as a result of the radiation they give off.

1.2   Spoiler Warning! (10 Points Total)

Prepare for questions involving spoilers to all of those movies, TV shows, and animes you've been meaning to get to. Is it worth a few measly points to ruin an entire watching experience for yourself? Each question is worth 1 point and if you manage to get all the questions right, you get an extra 1 point!

1. (1 point) In *Fight Club* (1999), we discover that anarchist Tyler Durden, who we are led to believe is the Narrator's bad influence of a friend, is actually another portrayal of the Narrator's personality. What actor plays the imaginary Tyler Durden?

2. (1 point) This character regains his physical body when Edward Elric, skillful alchemist, gives up his alchemy ability entirely in the final episodes of *Fullmetal Alchemist: Brotherhood*. Who is it?

3. (1 point) In *Psycho* (1960), we discover that motel owner Norman Bates actually suffers from a split personality. While one of his personalities is Norman Bates, what is the identity of the other personality, a real person whom he murdered years earlier?

4. (1 point) Barbara is dead. Bob is dead. Dart is dead. Mrs. Driscoll is dead. Heather is dead. Billy is dead. And, Hopper is presumed dead. What show is this?

5. (1 point) When Tony Stark, A.K.A. Iron Man, sacrifices himself at the end of *Avengers: Endgame* (2019), a funeral is held for him, attended by his family, multiple other heroes, and one teenage boy, standing alone. What is the only other MCU film this boy can be found in?

6. (1 point) What is the name of this iconic event where viewers saw Robb Stark, Talisa Stark, Catelyn Stark, Gregor Forrester, and many other members of the Northern army brutally ambushed and murdered in HBO's *Game of Thrones*?

7. (1 point) At the end of *Death Note*, Light Yagami dies. The question is, who is ironically the one to be the final-most cause of his death?

8. (1 point) In *Mission: Impossible - Fallout*, after losing Solomon Lane and the plutonium, Ethan Hunt and his team follow John Lark (AKA Agent Walker) to a small Indian village where he finds his ex-wife, who he married in which other *Mission: Impossible* movie?

9. (1 point) This object's intended use is to disturb the air passing over and around the vehicle. Spoiler alert, most road cars have these not for the aerodynamic boost, but because they look cool. What is the aptly named object?

1.3   Bash (25 Points Total)

You've reached the Bash Section! For those of you who may not know, a question is "bashy" if it requires a seemingly excessive amount of mindless algebra or casework to complete. We want you to have fun taking this Interschool, so we figured we'd get all of the bashiness out of the way at once! At least no one will be at a loss for something to do. Is it worth your time to get the 5 points each question gives you? Should you buy-in more competitors to help with the grunt work? You decide...

1. (5 Points) Multiply the following:

$$1,553,174,626 \times 2,347,617,425$$

2. (5 Points) Factor completely:

$$24x^8 + 505x^7 - 107,715x^6 - 3,498,913x^5 - 497,537x^4 + 92,327,256x^3 - 68,792,932x^2$$

$$-164,974,848x - 6,747,840$$

3. (5 Points) Find the determinant of the following matrix:

$$\begin{bmatrix} 8 & 11 & 4 & 0 & 8 \\ 7 & 3 & 1 & 3 & 83 \\ 9 & 5 & 2 & 3 & 7 \\ 5 & 0 & 5 & 20 & 8 \\ 1 & 3 & 5 & 31 & 8 \end{bmatrix}$$

4. (5 Points) Evaluate:

$$\int_{-31}^{95} \mid 12x^4 + 528x^3 + 3348x^2 - 3888x \mid dx$$

5. (5 Points) Evaluate:

$$\sqrt[3]{116,930,169}$$

2   Math (65 Points Total)

Unlike the Buy-In math questions, these are not divided on Mu Alpha Theta standards. Instead, they all come from past AMC and AIME tests. Points are given based on the difficulty of the problem, with each question being worth either 1, 2, 4, or 6 points. Good luck!

2.1   AMC Problems (19 Points Total)

1. (1 point) Roy's cat eats $\frac{1}{3}$ of a can of cat food every morning and $\frac{1}{4}$ of a can of cat food every evening. Before feeding his cat on Monday morning, Roy opened a box containing 6 cans of cat food. On what day of the week did the cat finish eating all the cat food in the box?

2. (1 point) For a science project, Sammy observed a chipmunk and a squirrel stashing acorns in holes. The chipmunk hid 3 acorns in each of the holes it dug. The squirrel hid 4 acorns in each of the holes it dug. They each hid the same number of acorns, although the squirrel needed 4 fewer holes. How many acorns did the chipmunk hide?

3. (1 point) A radio program has a quiz consisting of 3 multiple-choice questions, each with 3 choices. A contestant wins if he or she gets 2 or more of the questions right. The contestant answers randomly to each question. What is the probability of winning?

4. (1 point) The ratio of the length to the width of a rectangle is $4 : 3$. If the rectangle has diagonal of length d, then the area may be expressed as kd^2 for some constant k. What is k?

5. (1 point) A sequence of numbers is defined recursively by $a_1 = 1$, $a_2 = \frac{3}{7}$, and

$$a_n = \frac{a_{n-2} \cdot a_{n-1}}{2a_{n-2} - a_{n-1}}$$

for all $n \geq 3$ Then a_{2019} can be written as $\frac{p}{q}$, where p and q are relatively prime positive integers. What is $p + q$?

6. (2 points) Let $f(x) = 10^{10x}, g(x) = \log_{10}\left(\frac{x}{10}\right), h_1(x) = g(f(x))$, and $h_n(x) = h_1(h_{n-1}(x))$ for integers $n \geq 2$. What is the sum of the digits of $h_{2011}(1)$?

7. (2 points) Bernardo and Silvia play the following game. An integer between 0 and 999 inclusive is selected and given to Bernardo. Whenever Bernardo receives a number, he doubles it and passes the result to Silvia. Whenever Silvia receives a number, she adds 50 to it and passes the result to Bernardo. The winner is the last person who produces a number less than 1000. Let N be the smallest initial number that results in a win for Bernardo. What is the sum of the digits of N?

8. (2 points) Jerry starts at 0 on the real number line. He tosses a fair coin 8 times. When he gets heads, he moves 1 unit in the positive direction; when he gets tails, he moves 1 unit in the negative direction. The probability that he reaches 4 at some time during this process $\frac{a}{b}$, where a and b are relatively prime positive integers. What is $a + b$? (For example, he succeeds if his sequence of tosses is $HTHHHHHH$.)

9. (4 points) For certain real numbers a, b, and c, the polynomial

$$g(x) = x^3 + ax^2 + x + 10$$

has three distinct roots, and each root of $g(x)$ is also a root of the polynomial

$$f(x) = x^4 + x^3 + bx^2 + 100x + c.$$

What is $f(1)$?

10. (4 points) A bee starts flying from point P_0. She flies 1 inch due east to point P_1. For $j \geq 1$, once the bee reaches point P_j, she turns $30°$ counterclockwise and then flies $j+1$ inches straight to point P_{j+1}. When the bee reaches P_{2015} she is exactly $a\sqrt{b} + c\sqrt{d}$ inches away from P_0, where a, b, c and d are positive integers and b and d are not divisible by the square of any prime. What is $a+b+c+d$?

2.2 AIME Problems (46 Points Total)

1. (2 points) Jar A contains four liters of a solution that is 45% acid. Jar B contains five liters of a solution that is 48% acid. Jar C contains one liter of a solution that is $k\%$ acid. From jar C, $\frac{m}{n}$ liters of the solution is added to jar A, and the remainder of the solution in jar C is added to jar B. At the end both jar A and jar B contain solutions that are 50% acid. Given that m and n are relatively prime positive integers, find $k + m + n$.

2. (2 points) Nine people sit down for dinner where there are three choices of meals. Three people order the beef meal, three order the chicken meal, and three order the fish meal. The waiter serves the nine meals in random order. Find the number of ways in which the waiter could serve the meal types to the nine people so that exactly one person receives the type of meal ordered by that person.

3. (4 points) An $a \times b \times c$ rectangular box is built from $a \cdot b \cdot c$ unit cubes. Each unit cube is colored red, green, or yellow. Each of the a layers of size $1 \times b \times c$ parallel to the $(b \times c)$ faces of the box contains exactly 9 red cubes, exactly 12 green cubes, and some yellow cubes. Each of the b layers of size $a \times 1 \times c$ parallel to the $(a \times c)$ faces of the box contains exactly 20 green cubes, exactly 25 yellow cubes, and some red cubes. Find the smallest possible volume of the box.

4. (4 points) Point A, B, C, D, and E are equally spaced on a minor arc of a circle. Points E, F, G, H, I and A are equally spaced on a minor arc of a second circle with center C as shown in the figure below. The angle $\angle ABD$ exceeds $\angle AHG$ by $12°$. Find the degree measure of $\angle BAG$.
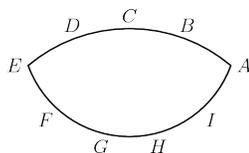
5. (4 points) Let $ABCDEF$ be an equiangular hexagon such that $AB = 6, BC = 8, CD = 10$, and $DE = 12$. Denote by d the diameter of the largest circle that fits inside the hexagon. Find d^2.

6. (6 points) A special deck of cards contains 49 cards, each labeled with a number from 1 to 7 and colored with one of seven colors. Each number-color combination appears on exactly one card. Sharon will select a set of eight cards from the deck at random. Given that she gets at least one card of each color and at least one card with each number, the probability that Sharon can discard one of her cards and *still* have at least one card of each color and at least one card with each number is $\frac{p}{q}$, where p and q are relatively prime positive integers. Find $p + q$.

7. (6 points) Find the number of second-degree polynomials $f(x)$ with integer coefficients and integer zeros for which $f(0) = 2010$.

8. (6 points) For a positive integer p, define the positive integer n to be p-safe if n differs in absolute value by more than 2 from all multiples of p. For example, the set of 10-safe numbers is $\{3, 4, 5, 6, 7, 13, 14, 15, 16, 17, 23, \ldots\}$. Find the number of positive integers less than or equal to $10,000$ which are simultaneously 7-safe, 11-safe, and 13-safe.

9. (6 points) In $\triangle ABC$, $AC = BC$, and point D is on $\overline{BC}$ so that $CD = 3 \cdot BD$. Let E be the midpoint of $\overline{AD}$. Given that $CE = \sqrt{7}$ and $BE = 3$, the area of $\triangle ABC$ can be expressed in the form $m\sqrt{n}$, where m and n are positive integers and n is not divisible by the square of any prime. Find $m + n$.

10. (6 points) Let $\overline{AB}$ be a chord of a circle ω, and let P be a point on the chord $\overline{AB}$. Circle ω_1 passes through A and P and is internally tangent to ω. Circle ω_2 passes through B and P and is internally tangent to ω. Circles ω_1 and ω_2 intersect at points P and Q. Line PQ intersects ω at X and Y. Assume that $AP = 5$, $PB = 3$, $XY = 11$, and $PQ^2 = \frac{m}{n}$, where m and n are relatively prime positive integers. Find $m + n$.

3   Puzzles (64 Points Total)

These are not your run-of-the-mill jigsaw or logic puzzles. Instead, we would like to introduce lateral-thinking puzzles, which require indirect and creative approaches in order to arrive at a solution. At first glance, it might seem impossible to decipher the question or motive of the problem let alone the answer, but if you look closely and search meticulously for clues, the answer will be hidden in plain sight. Some puzzles' answers involve a question or phrase and the answer to this question or phrase, while others only have an answer. Check the answer sheet to see what each puzzle asks of you. Don't worry if you can't get the second part, it is only worth one extra point!

3.1   Perfect Clear (5 points)

HOLD

TIME

3:14

NEXT

B	L	E	Q	U		C	A	A	S
F	O	A				F	H	G	I
R	S	W	O	U	D	H	F	E	E
M	J	I	L	Y	E	R	U	Y	K
S	C	O	X	U	N	N	T	M	I
P	G	U	M	A	E	B	L	U	H
R	V	A	M	C	I	N	B	Z	V
O	G	U	J	T	S	P	X	N	U
O	M	K	R	R	I	P	Y	E	A
C	T	U	W	D	S	F	E	L	O
Q	I	G	A	R	E	C	K	H	L
X	T	W	O	A	V	B	G	D	E
Z	L	U	N	I	T	Y	E	S	S
M	R	O	O	T	R	H	T	H	
F	H	A	P	L	E	D	M	O	
T	W		Y	O	S				
A				R					
				E					
				L					
				O					

3.2 Chocolate Confections (5 points)

Recipe for Strawberry-Filled Nutella Truffles
Just follow the directions!

Part 1: Setting Up

1. Place your Nutella in a pan and flatten with a rolling pin for approximately 1 minute

2. Preheat your oven to 405 degrees

3. Add a small sprinkling of Nutritious Walnuts to the pan– no more than 1.5 grams

4. Flip the contents of the pan over

5. Mash some Sweetened Elderberries (Note: must be the same amount as walnuts added)

6. Warm the berries to 90 degrees

7. Chop off a small piece of Nepalese Eggplant, about 1.5 centimeters in length

Part 2: Preparing the Strawberry Filling

1. Fill a bowl with Strawberries and blend for at least 2 hours

2. Heat the mixture to 450 degrees

3. Crack and thoroughly mix in 1 Egg

4. Reheat the mixture to 450 degrees

5. Shape the Nutella into spheres, poke a hole in the top (about 2 mm radius), and pipe in the filling

Part 3: Finishing Touches

1. Put the Nutella truffles into the fridge and set a timer for 2 hours

2. Ensure the temperature is no more than -225 degrees

3. Spread about 1.5 decigrams of Sweetened Elderberries on top of each truffle

4. Chill in the freezer to a cool -270 degrees

5. Place the Nepalese Eggplant on top as a garnish, offset from the center by about 1.5 millimeters

6. Let the truffles sit at room temperature until they once again come to about -225 degrees

7. Drizzle any remaining Strawberry filling around each truffle, then cool them in the fridge for at least 2 days

Enjoy!

3.3 A Contemporary Piece (6 points)

Comer's Ode

Ambers Fulsome

3.4   Engineers Are Not Handymen (7 points)

Beep. . . beep. . . beep. . .

You wake up groggily to a monotonic, repetitive beep that you quickly realize is the sound of a ticking bomb. In the darkness, you see two flickering images of some weird diagrams, a QWERTY keypad, and a timer that reads 00:59:32. A page of instructions lies at your feet. It reads:

Sorry I had to kidnap you, but I needed an electrical engineer for the light show I'm putting on for this year's "explosive" fireworks. Hehe. You would think someone who built a bomb could surely do this, but there wasn't an online tutorial. Meh. Your task is simple: program two light bulbs so that they increase in brightness with each bitwise combination of switches. Each numbered node is a switch that can either be off or on at a given time. Only certain combinations will turn the 2.5 V light on, and higher indexed switches in the on position will result in greater apparent brightness, with an indicial increase of 1 corresponding to a light twice as bright. Good luck. Your life depends on it. The information you'll need will be included within this message.
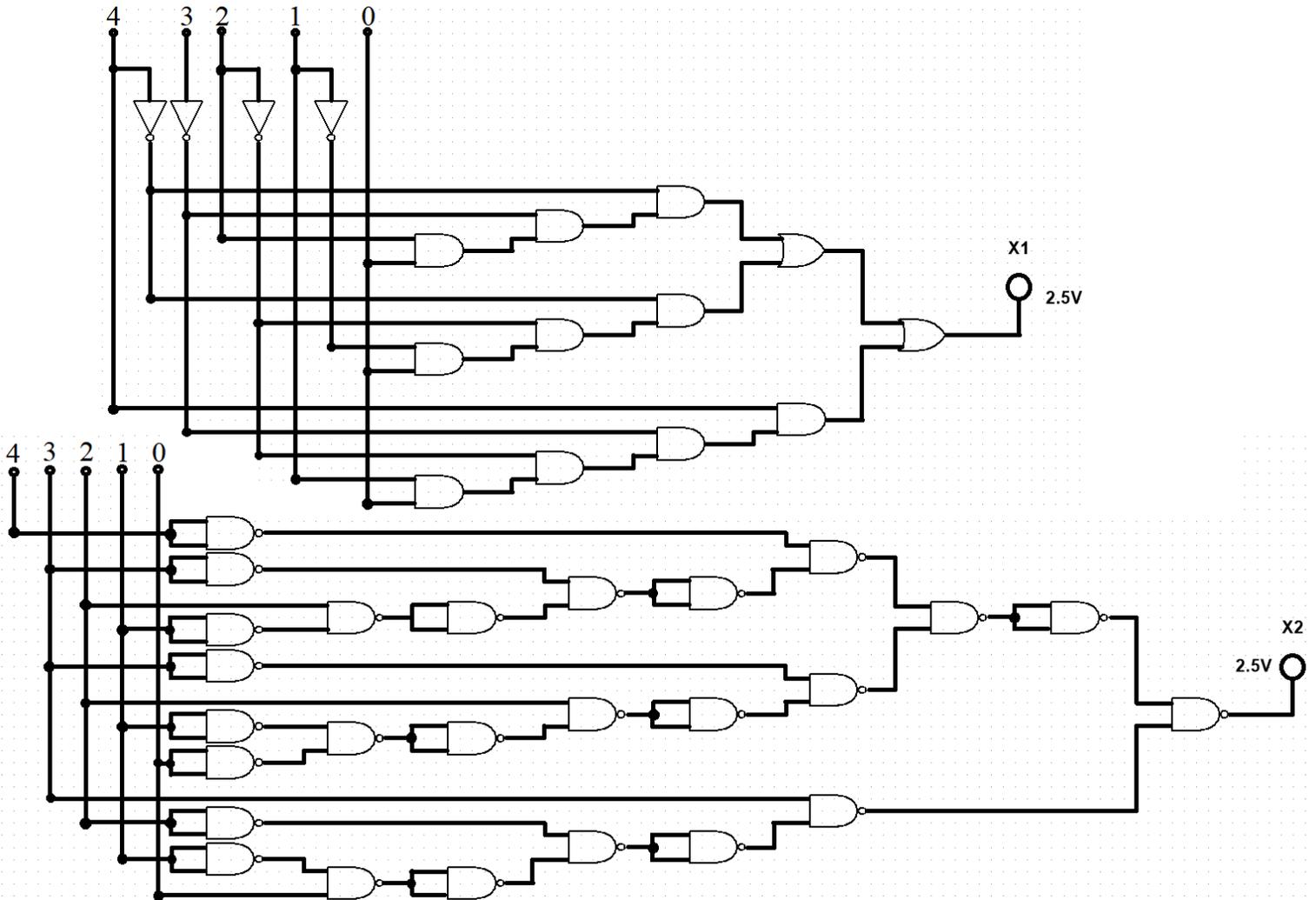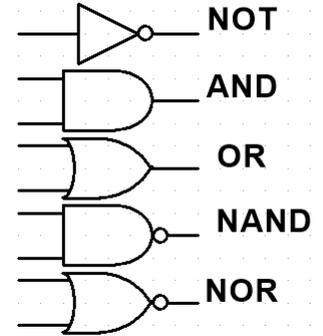
Oh, how do you stop the bomb? Decode the hidden message in the circuitry and enter the four-letter answer on the keypad. It'll be obvious once the job is done.

3.5 Mastermind (8 points)

SLIM ○
EMIT ○ ○
HACK ● ○
TYPE ○
???? ● ● ● ●
9 11

POUTY ●
ZEBRA ○ ○
LIMBO ○ ○ ○
TRIED ● ○
FLUNG ●
????? ● ● ● ● ●
3 12

ACUTE ○ ○
WORST ● ○
PILAF ○ ○
MEDAL ● ○
????? ● ● ● ● ●
1 10

UNSURE ○ ○ ○
TUNDRA ○ ○ ○ ○
CASINO ○ ○
VIABLE ● ○
PHOBIC ●
FLIRTY ○
?????? ● ● ● ● ● ●
8 6

BRUTAL ○ ○
MAXING ● ●
FROLIC ○ ○ ○
PARKED ○
SORBET ● ○ ○ ○
?????? ● ● ● ● ● ●
5 2   13

BECKONS ● ○ ○
GLACIAL ● ○
DOWAGER ○ ○ ○ ○
JUSTICE ● ● ○
SWIRLED ● ○ ○ ○ ○
LAMPOON ● ○
??????? ● ● ● ● ● ● ●
7   16

REVENGE ○ ○ ○ ○
DOLPHIN ● ○
GOURMET ● ● ● ○ ○
CHANNEL ● ●
BUOYANT ○ ○ ○ ○
??????? ● ● ● ● ● ● ●
15 4   14

__ __ __ __ __ __ __   __ __ __ __
1   2   3   4   5   6   7   8   9   10 11

__ __   __ __ __ ?
12 13   14 15 16

## 3.6 A Strange Digital Device (5 points)

I found a some machine with for buttons and a small display.
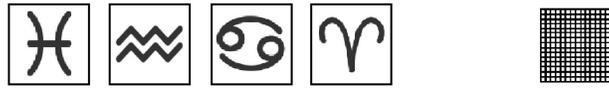
Buttons Pushed   Display
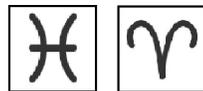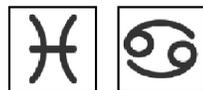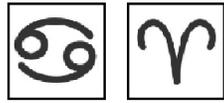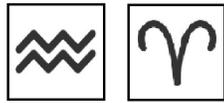
3.7 Only 375 Possibilities (5 points)

Begin with seven, of first importance,
Yet infinitely many are proven to exist.
Everything they are starts with themselves,
Take note of the positions of this list.

Next connect the dots, linearly so,
'Til all roads are drawn betwixt each city.
Then observe the three fateful convergences
That Oedipus himself will surely pity.

Search internally to locate these points' center
And equilibrate the correct password to enter.

330	999	678	567	246	590	121	144	046	771	998	812	432	434	500
422	686	105	387	185	205	969	089	297	975	051	574	236	177	888
693	329	784	266	768	707	098	554	413	696	024	366	913	212	077
226	227	123	374	754	959	284	668	381	361	582	675	800	040	282
315	388	289	063	963	897	182	600	476	847	294	232	964	925	094
034	886	758	299	595	452	687	621	305	906	054	650	320	853	004
749	208	203	535	298	924	966	192	579	275	912	112	854	069	130
380	950	654	597	632	035	813	572	102	273	965	685	196	274	981
934	753	865	725	922	958	188	923	995	244	332	949	141	091	586
200	006	012	635	663	976	369	111	848	447	755	234	038	171	553
549	398	708	209	172	565	849	841	724	948	864	286	190	045	867
845	290	873	472	935	583	723	817	174	092	657	689	250	198	679
573	795	221	326	532	759	676	936	799	584	720	513	852	128	076
065	673	858	756	921	475	442	217	124	968	837	401	666	552	860
788	481	606	009	375	882	909	738	056	153	248	256	542	992	386
698	640	546	777	750	081	512	729	210	869	036	555	291	143	049
395	961	831	684	939	222	703	498	152	614	575	062	752	166	952
245	114	008	760	187	444	649	507	075	254	764	945	204	855	645
168	032	456	681	899	656	890	385	651	730	519	742	096	176	020
609	016	933	078	596	368	902	002	671	496	674	530	363	581	772
278	682	247	392	662	261	430	973	538	356	412	237	796	904	334
885	541	580	489	700	262	667	050	216	240	365	033	129	115	646
623	706	183	798	680	194	228	672	901	957	027	589	448	979	119
352	834	807	288	106	780	100	486	598	989	055	213	348	866	253
789	495	322	343	633	868	195	175	993	044	861	169	670	497	382

3.8 A Coordinate Space (5 points)

(3,1)
(4,14)

(11,4)

(2,5)

(3,6)

(3,7)

(1,13)

(6,9)

(3,11)
(4,3)
(4,12)

(5,2)
(5,8)

(3,10)

(6,15)
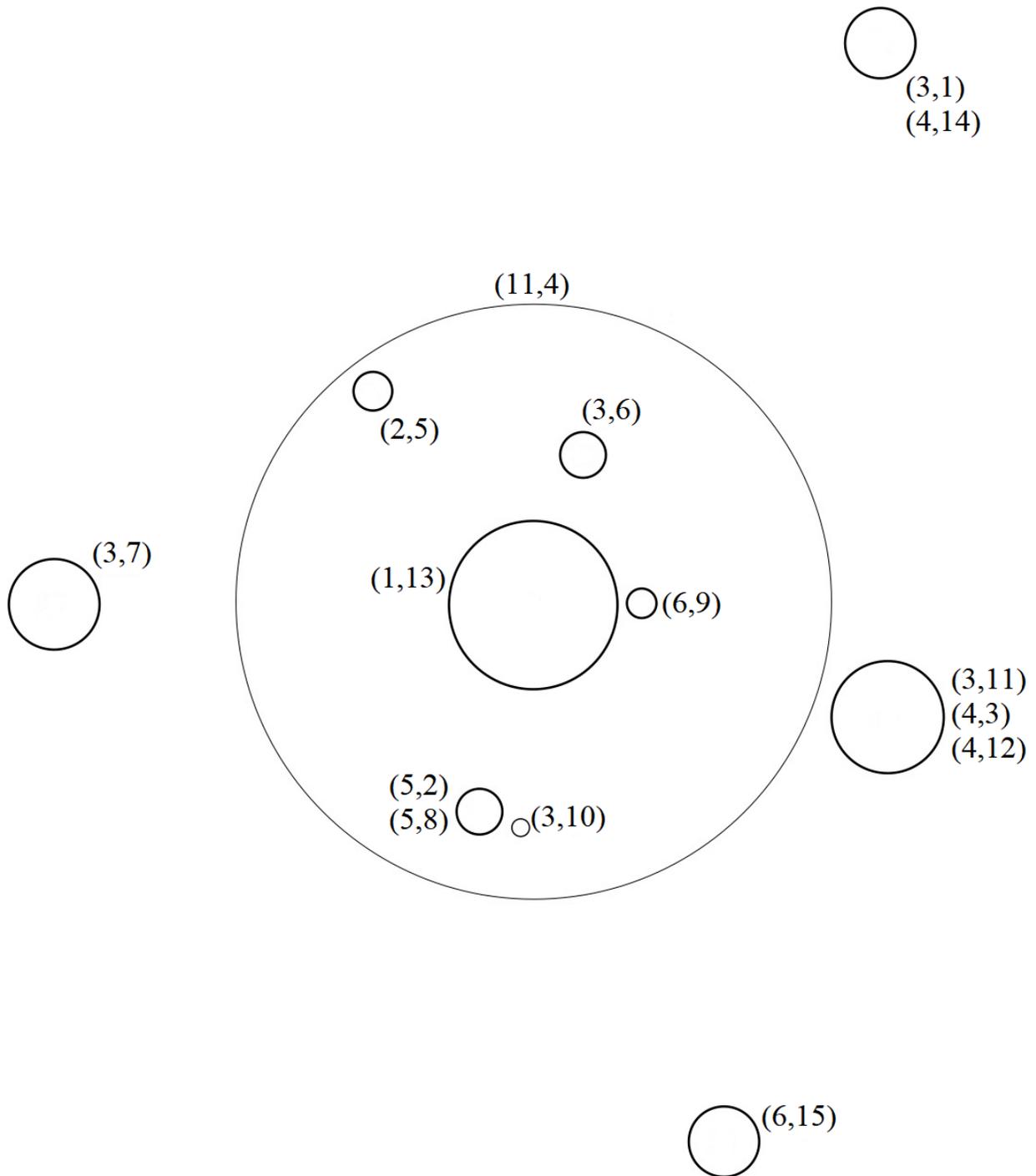
Metacomet's Revenge

```
T  E  K  O  N  A  K  O  P  D  M  W  E  K  G
A  A  N  S  P  M  R  W  L  S  Q  N  T  C  N
I  P  A  O  E  L  A  A  U  Y  C  X  T  N  I
T  P  P  H  I  M  Y  O  I  R  P  T  E  O  D
S  S  C  R  S  S  N  M  O  D  N  B  S  I  A
C  A  T  U  O  E  R  A  O  E  I  N  N  L  E
S  I  T  T  G  P  C  E  M  U  O  N  A  L  H
W  T  E  I  E  H  R  E  V  I  T  E  G  E  E
A  A  D  P  M  S  L  I  T  N  C  H  A  B  B
S  N  M  E  O  T  U  A  A  N  O  V  R  E  D
I  A  N  P  T  H  M  H  A  T  Z  C  R  R  R
O  T  L  E  A  I  T  T  C  F  I  G  A  A  A
U  I  S  M  C  N  S  N  R  A  R  O  N  F  W
Q  V  I  E  N  I  O  A  U  S  S  R  N  R  T
O  E  D  A  S  I  L  A  T  O  W  S  D  A  S
R  Y  R  E  V  A  L  S  G  P  M  R  A  W  E
I  T  R  T  I  O  S  A  S  S  A  M  M  M  W
```

APPROPRIATION
BEHEADING
CONVERSION
DECIMATION
ENCROACHMENT
INDIGENOUS
IROQUOIS
MASSACHUSETTS
MASSASOIT
MOUNTHOPE
NARRAGANSETT
NATIVE
PLYMOUTH
POKANOKET
RAIDING
REBELLION
RESISTANCE
SACHEM
SETTLEMENT
SLAVERY
WAMPANOAG
WAMSUTTA
WARFARE
WESTWARD

"Serious" Bibliophilia (6 points)

So many amazing authors to read! Which should I choose? And, more importantly, in what order?

Noah A. — Mockingjay
Emma B. — Artemis Fowl: The Time Paradox
Liam C. — The Battle of the Labyrinth
Olivia D. — The Catcher in the Rye
William E. — A Song of Ice and Fire: A Dance with Dragons
Ava F. — The Handmaid's Tale
Ben G. — The Crucible
Isabella H. — Moby Dick
Jacob I. — Paper Towns
Mia J. — Alas, Babylon
Elijah K. — The Great Gatsby
Sam L. — The Lion the Witch and the Wardrobe
Ethan M. — The Count of Monte Cristo
Charlotte N. — The Scarlet Letter
Alex O. — Harry Potter and the Deathly Hallows
Amelia P. — The Fellowship of the Ring
Oliver Q. — The Secret Life of Bees
Harper R. — The Strange Case of Dr. Jekyll and Mr. Hyde
Daniel S. — A Clockwork Orange
Eve T. — Flowers for Algernon
Lucas U. — War and Peace
Abi V. — The Time Machine
Matt W. — The Book Thief
Emily X. — Frankenstein
Steve Y. — Pride and Prejudice
Eliza Z. — The Perks of Being a Wallflower

3.11 Memory Lane (6 points)

							0														
	1			3								1		3			2	1			
								1													
												3						5		3	
		2			5			5							3						
																		7		3 3	
	1				5																
		3					3				2		2		3			5		3	
									1			1									
	2				3										3			1			

Rules for Tapa: Shade some empty cells black to create a single connected wall. Numbers in a cell indicate the length of consecutive shaded blocks in the neighboring cells. If there is more than one number in a cell, then there must be at least one white (unshaded) cell between the black cell groups. Cells with numbers cannot be shaded, and the shaded cells cannot form a 2x2 square anywhere in the grid.