The Three-Day Puzzle Hunt 1990

Team Information

Please enter the information below for your team and then give this back.

Team name: ____________________________

Phone number(s): ____________________________

Team members:

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The Three-Day Puzzle Hunt 1990

The object of this hunt is to find an unusual coin that has been hidden somewhere on campus. Whoever gets it first will be declared the winner. Call us as soon as you think you are near to getting the coin; we'd like to share your moment of triumph.

This hunt is for fun only. If you find yourself not having fun, stop whatever it is you're doing, call us and we'll see what we can do. The only prize for winning (other than having to run one of these things next year), is the satisfaction and enjoyment of the hunt, so please don't do anything that would spoil the fun for other hunters.

You can reach us at 864-7940. Check in regularly to let us know how you're doing so that we can prepare additional hints that will be fair and useful to all hunters. If you suspect something is wrong with the hunt, please let us know immediately.

The latest status of the hunt (hints, corrections, announcements, if someone's found the coin, etc.) will be kept on an answering machine at 876-9463. Call it frequently to check what's going on. When you call, press "#" to interrupt the intro message. Then press the password, 222220.

The majority of the hunt is doable at any time of the day or night. You can certainly get the coin at any time. We (and we hope Security) will excuse a few minor illegalities. After all, college should be a time for expanding your horizons.

Let the hunt begin!

Best wishes,

The Spanish Inquisition

1800 777 9463
Some Puzzles

Ignore all punctuation when entering words and numbers during this hunt. Always include leading zeros and the building number in room-numbers. For example, enter “In-A-Gadda-Da-Vida!” as “INAGADDADAVIDA” and enter 7-003 as “7003”.

(Q1) Last two digits of the year of the penny under the rug in Lobby 7 directly under the dome. 

(Q2) A man works in Enfield, Massachusetts. What kind of suit does he put on every day (_____)?

(Q3) Last word of the TV phrase associated with Vinko Bogataj (______).

(Q4) Type of plane pictured on separate sheet (XX-__).

(Q5) Number of olives on the olive branch held by the eagle on a one-dollar bill.

(Q6) You are given the following information for the circuit diagram pictured on a separate sheet:

\[ R_A = 76 \, \text{k}\Omega \]
\[ R_B = ([A] *[G]) \, \text{k}\Omega \]
\[ C = 25 \, \mu\text{F} \]

The chip is a ([J2]+59). What is the duty cycle?

(Q7) Guide acrostic (______-______-______-______).

(Q8) Guide index (______-______-______-______).

(Q9) The chessboard pictured on a separate sheet depicts a position from late in a chess game. Amazingly, neither White nor Black has ever made a move in which a piece started on a square of one color and ended up on a square of the other color. How was the Black Queen Knight Pawn captured? 

EN PASSANT
18. PZI Final Exam

This is a closed book exam; calculators are not permitted. You have one hour. This counts for 50% of your grade.

Actually, here are the rules: if the answer to a problem is a number, write it as a number (write “17,” not “seventeen”). It may be necessary to use decimal points occasionally. And if the answer to a problem is a word, write it as a word (write “defenestrate,” not “17”). The book Mathematics and Humor by John Allen Paulos is the recommended text, although it probably won’t be much help in solving any of these. . . . Anyway, good luck, and have fun.

There are supposed to be two pages here.

J1 How many riffle shuffles does it take to randomize an ordinary 52-card deck of playing cards? This number also happens to be one fewer than the number of perfect riffle shuffles necessary to return the deck to the order that you started. (In case you’re interested, it takes several thousand overhand shuffles to randomize a deck.)

J2 Speaking of perfection, you may know that 6 and 28 are perfect numbers. What is the next smallest one? It is not known whether there are infinitely many perfect numbers.

J3 What is the last name of the mathematician who discovered L’Hôpital’s Rule?

J4 In 1832, this mathematician produced a work which, according to Hermann Weyl, “is perhaps the most substantial piece of writing in the whole literature of mankind.” Name the mathematician (again, last name only).

For the next two questions, let \( x = 1 + \frac{1}{1 + \frac{1}{1 + \frac{1}{1 + \cdots}}} \).

J5 What substance is associated with \( x \)?

J6 What name is usually given to the sequence of numbers \( \left\{ \frac{2^n - (1 - x)^n}{2^n - 1} \right\} | n = 1, 2, \ldots \} \)?

J7 Here are four true-false questions. Using the answers as binary digits (1 for true, 0 for false), translate your answers into a single number between 0 and 15. (Oh, we want it in base 10.)

- There exists a function \( f : \mathbb{R} \to \mathbb{R} \), so that \( f \) is continuous at every real number \( x \), and so that \( f \) is not differentiable at any real \( x \).

- The equation \( x^n + y^n = z^n \) has no non-trivial integer solutions for \( n \geq 2 \).

- It is impossible to construct a regular 17-sided polygon with a straight-edge and compass.

- Assume that the earth is a perfect sphere. Given any point on the surface of the earth, its antipode is its image upon reflection through the center of the earth (so if the sphere is given by \( x^2 + y^2 + z^2 = r^2 \), then the antipode of \( (x, y, z) \) is \( (-x, -y, -z) \)). True or false: there is a point on the surface of the earth so that it and its antipode are at identical temperatures and identical barometric pressures.

J8 Write down two numbers which, combined, use the digits 1, 2, . . . , 9 exactly once each, and whose quotient is \( \frac{4}{5} \). (For example, if you try to get quotient \( \frac{1}{2} \), one pair of numbers is 9267 and 18534.) What is the denominator?
Word Problems

J9 Once upon a time, there was a widget factory (as there often are in math problems). There was also a widget store, which happened to be exactly 1 mile in a straight line from the factory. The widgeteers wanted to ship their widgets by rail, so they ordered a piece of railroad track exactly 1 mile long. Unfortunately, due to a bureaucratic mixup, they received a track which was 1 foot too long; the widgeteers, being widgeteers and not mathematicians, decided to use it anyway: the track was fairly flexible, so they bent it into an arc of a circle, and then put it in place. Not so needless to say, the widgeteers were a bit surprised with the results. To the nearest half-foot, how far off the ground was the track halfway between the factory and the store? (You may as well assume that the earth is flat for this one, by the way.)

J10 One of the recent missions of the Enterprise was to escort a diplomatic envoy from the Planet of Syndicated Television Shows to a Federation meeting at Starbase II; the envoy happened to consist of Sabrina, Kelly, and Jill from Charlie’s Angels. After the meeting, Kirk, Spock, McCoy, and their three guests were relaxing in the rec room having a few cold ones, discussing their favorite hobbies, and getting a bit sloshed. Eventually they paired off into couples (let’s call them Couple A, Couple B, and Couple C) and had romantic evenings, the different couples making use of different facilities on board (for example, one couple went hot-tubbing); afterwards, each pair retired for the night to one of the pair’s cabins (each of the Angels had her own cabin, as did each of the crew members). By talking to friends, you have been able to piece together the following information:

- The origami enthusiast didn’t go to the movies.
- Kirk, the horseback rider, was not in Couple B.
- Sabrina and McCoy ate lunch with the person who likes to cook.
- One of Sabrina, McCoy, and Spock enjoys skinny-dipping.
- Spock didn’t go to the movies.
- McCoy’s cabin is down the corridor from where the couple slept whose members’ hobbies are skinny-dipping and watching football.
- Kelly didn’t go out dancing.
- The next morning, they made it to breakfast in this order: first McCoy, then Jill, the target shooter, one of Couple B, and finally both members of Couple C.

You should really find out what each couple did in the evening, what each person’s hobby is, and who slept with whom, but all we want to know is, who did Kirk spend his evening with? (Don’t assume the earth is flat for this one.)
PICTURES

I stood at my office window, glaring out at the January snow. It had been a molasses day and I was beginning to go stir crazy. Hell, the whole month had been dead slow, and the reward money from my most recent case was already long gone. I had been living off the return deposits from my Pepsi empties, but the Stop & Shop manager had threatened violence last time I brought the cases in.

A pounding on the door shattered my thoughts into tiny shards. “Come in!” I growled, getting seated behind my desk. A young man with fiery red hair burst in.

“You’ve got to find him!” he cried.

“Find who?”

“The Jolly Green Giant.”

So that was it. I’d heard about the disappearance in the papers, of course, but it hadn’t meant much to me. I like my corncob on the cob, not in the can. But there’s no percentage in pushing your opinions on others, especially when they’re waving enough green to keep you in cola for a month.

“What’s the bird’s-eye lowdown on this caper, Red?” I asked, popping back the tab on a warm one.

“I think he’s been kidnapped. I received these pictures in the mail just this morning. There wasn’t a ransom note, but I’m sure that one will come.”

I scanned the stuff he handed me. I thought I recognized a few places, but memory is no substitute for legwork. “I’ll take the case. I get two hundred a day, plus expenses. No promises, but I think I can help you.”

He pealed off six presidents. “You’ve got three days, shamus. By that time, I want to see Mr. Giant in the flesh. So to speak.”

“I’ll do what I can.”

***

A) I started with the one that I had the brightest idea about. I now knew what was at the end of Their Lives [__41 – XXXX], but I was still in the dark about Jolly’s. Maybe I was too late. Maybe he already knew. Maybe it was time for another Pepsi and a new angle.

B) Call it international communication 101 or the bird. Either way, they deserved it. I headed in to Mrs. Kendall T.’s. As usual, I had to wait. If Jolly didn’t know what was at the end of his life, I wasn’t going to find out there. I left. So far this case was at a Dead End. I was going to have to turn things upside down before I got anywhere. It seemed like it was time for a poll [CEL _/\_]. How many preoperational transexuals of the Catholic clergy have spent Yom Kippur with Iranian Islamic lesbians? Some questions, you know the answer before you ask.

C) Was it some kind of joke? Sick, they were. Twisted, yes. But subtle just wasn’t in this band of thieves’ vernacular. Quickly I reasoned that this wasn’t Jolly’s epitaph, but rather the date of the fiends’ next delivery of stolen joules [19%]:

D) Still, I had some clues. I’d heard rumors that Jolly had been seen in the vicinity of Goodale. No contesting that. I knew I was close when the smell hit me. I gazed in horror at the hefty hunk of steaming junk in building [E_] [15фф].

E) Shaken, I explored another possibility. Perhaps they’d tried to smuggle him under ground. No, he wouldn’t fit [8’ _"].
F) I was running low on ideas. It was time to visit Professor Conehead. I'd always enjoyed his lofty classes. He was the only one I knew who put the class on the podium instead of himself. Maybe it was an attempt at self-preservation in order to get downwind of his ever-flatulating students. Today he was teaching three classes with two assistants to his right. As usual, much of his lecture was hot air. Seeing more students than usual, I called out, "Hey, Conehead, what's your size [T-___] now?" He belched some profanities and profundities and told me to jump off a roof. That Conehead — what a joker!

G) Before I blew him off entirely, Conehead gave me an idea. Maybe they canned Jolly by pushing him off a roof. That certainly would have ruined his day. It was time to investigate. I drained a Pepsi and looked around. I was just about to give up and head home when a silver glint caught my eye. On it I found a small red dot [CFSB] of blood. The sample lacked a freshness stamp, so I knew it wasn't Jolly's. Perhaps it had come from a United Way blood drive.

H) Since sniffing Jolly out hadn't worked, maybe triangulation would. But what would I use as my reference? Gazing out through the window, I got an idea. If I could just find the closest room [XX-3___] to the window, maybe there'd be a clue. There wasn't. I moved on.

I) Death. I was staring into dead faces. I've heard it said that death is just another horizon, but from where I stand it doesn't look much like Acapulco. Curse you, Red Baron! Curse your stupid war! Suddenly I was seeing stars, (2) tiny stars. I'd had enough.

J) There was only one picture left. I headed for the skylight. Once inside, I walked along the wood path. There were two obvious six-digit numbers, and I noticed that the square of their difference was (_,). It's little thoughts like that that sometimes have the biggest payback. But not this time.

Exasperated and out of ideas, I went back to my office to review the facts. I was missing something. There had to be more to this case than I realized...
Enter answers below; don't worry if there are a few left-over letters at the end.

\[
\begin{array}{|c|c|c|c|c|c|c|c|c|c|}
\hline
9 & BERN & OULLI &  \\
8 & A & N &  \\
7 & DFI & BON & ACC &  \\
6 & I & S & P & O & C & K & R & E & M  \\
5 & ONC &  \\
4 & T & I & C & K & E & T & T & J & O & M  \\
3 & E & C & C & A & O & W & L & S & T  \\
2 & R & E & T & C & H & I & N & G & T  \\
1 & I & M & E & E & N & P & A & S & S  \\
\hline
\end{array}
\]

**X**

\[
\begin{align*}
a &= C - E \\
b &= F - I - J \\
c &= A - H \\
d &= E(E + G) \\
e &= J_1 \cdot J_7 \\
f &= Q_5 + E \cdot H \\
g &= H \cdot Q_5 \\
h &= Q_1 - Q_4 \\
i &= Q_1 \\
j &= D + Q_4 \\
k &= J + J_7 - E \\
l &= Q_1 - H \cdot B \\
m &= J_2 \cdot (A + E) - J_8 + D + J_6 \\
n &= G + H + I + J \\
o &= J_9 + B \\
p &= E \cdot B \\
q &= Q_5 \\
r &= I + J_7 \\
s &= Q_4 - H \\
t &= J \cdot Q_6 \cdot J_7 \\
u &= F - I \\
v &= J_1 + J_7 \\
w &= H + I + J \\
x &= J \\
y &= J_1 \cdot G \cdot H \\
z &= A - J_1 \\
\alpha &= Q_1 - A \\
\end{align*}
\]

Go down stair: AT ONE AUSLN ELMK

ab cdef ghijkl mn opq rstuvw xyzα
CROSSWORD

ACROSS

1. Women’s club
5. What Eskimos eat?
9. Perverse spirit
12. _____ bleu!
17. Snarls
22. Midday
23. Add to the pot
24. Nope
25. Electronic communication
26. Arm bones
30. Soup implement
31. “Eating _____”
32. Slippery one
33. Language
34. “Rope a dope” fighter
38. Law enforcers: abbr.
39. Catty noises
41. Crowded quarter of Algiers: alt. sp.
43. Anagram of sammed?
44. They’re Greek to me
45. Long rod
47. Church location
48. Young ____ (little folk)
49. Red letters?
58. In case it’s appropriate?
61. Having quick grace
62. “Cries and Whispers” director
63. Place to get down from
64. Fusses
65. Sass
67. Oolong, for one
68. Nocturnal rodent
69. Happen as a consequence
70. Robin’s bear
73. Make an additional impression: abbr.
75. Desire
78. Takes what is rightfully another’s
79. Call to Georgie Girl
82. Vim
84. Spinning fiber
86. Lots
88. Medical thriller
90. Guy up front: abbr.
91. Prayer ending
92. Bolivian city
94. Permission

98. Important information
103. Japanese city
104. “The game is _____!”
105. Common grain
106. Follower of Louis?
107. Slip
108. Anagram of hapala?
110. Endless nest?
111. _____ longa, vita brevis
112. Foxlike
113. Not as fresh
119. Blackjack
122. Tree after Pine-A?
127. Slanty: abbr.
128. Woman’s name
130. Join with
134. Apropos
136. Pasta type
137. Sound prefix
138. Kind of house construction
139. Smallest in degree
141. C.E.O.s, e.g.
145. An American Gigolo
146. In addition
147. Greek parapsychology letter
149. Snowplow, etc.
150. Ours: sp.
151. Have a TV set that receives a network?
154. French woman’s name
157. Anagram of zeskp?
159. Twice as likely to get a date?
165. Football gain: abbr.
167. Opposite of dn.
168. Tariff, e.g.
169. Ocean-going vessel
170. Having a trig function?
175. Anagram of iakan?
176. Anagram of gleam?
177. Dull grayish brown
178. Greenish blue
179. Milking need
180. Anagram of tenny?
181. Lilliputian
182. Ovum
183. Cause to agree in rate of speed
184. Get ready for
2. Romanced
3. Electromagnet part
4. Fiery insect
5. Picasso
6. Anagram of cuiiwn?
7. Old letter
8. Intercourse grade?
9. "A Passage to ___"
11. Epithet of Artemis
12. Oriental nurse
13. Core group
14. Angered
15. Beautifully, to mathematicians
16. Wise ones
17. About (roughly)
18. Hawaiian island
19. Kind of made man?
20. Walk on water (almost)
21. Fraternal member
22. Old adage
23. Project GNU leader
24. Whisper softly
25. Swell
26. Word with shopping and killing
27. Negatory
28. Black magazine
29. Instrument from 9 down
30. Snooze
31. Gets what one’s sown
32. Slantwise: abbr.
33. Pinhead dancer: abbr.
34. Maim
35. Clap amount
36. Anagram of fun terms?
37. Wedding vows
38. An old-fashioned store?
39. Mark, for example
40. Highest point
41. Anagram of undi?
42. They’ll pay for it
43. What every sports team desires?
44. Between H-egg and H-pupa?
45. Thousands and thousands of years
46. Men’s club
47. ___ Sprout
48. Hawaiian necklace
49. Not basic
50. From _____ Z
51. "___ You Experienced?"
52. Sets as a price
53. What a nun takes
54. Contrary current
55. Anagram of the nabu?
56. He’s ___ (homely)
57. Knight’s address
58. Vacation in a location
59. Side x side, often
60. "___ want for Christmas …"
61. Cone home
62. "___ Is Born"
63. Goes with Idi and Antib
64. What lusty people feel
65. "___ ben Adhem"
66. Lager measures
67. Crude plant
68. Go from dive to dive
69. Redundances
70. Take a powder
71. Entry inhibitors
72. Apple PCs
73. Red Sox ref
74. Princess’ tormentor
75. Orange piece
76. What Ms. Minnelli did in the 10K?
77. Tease?
78. PVH
79. Leave an imperfect union
80. Strangely weird
81. Dance
82. Ululate trillingly
83. Lacing
84. Old letter
85. Famous count
86. Sheeted conehead group
87. Like octopus output
88. Prisoner’s pen
89. Fast fliers
90. Autocrat
91. It comes in 4x6 and 9x12
92. A minor, e.g.
93. Not adj. or hyp.
Suddenly, things clicked into place. Jolly, the juggler, those ubiquitous Wind Hotline signs... It all fit together! I raced back to the place I'd seen the [I' down]. Now, where was that [158 down]? Ah, yes. I walked under it and entered the hall called [WJ]. Mentally, I counted doors: five on the right, five on the left. I stopped at the sixth and checked whose it was. I didn't recognize the first guy, but the last name of the second [W2] rang a bell. I hadn't known he was back on the streets.

The door gave me trouble for a moment and then I was through. I passed a door or two and hung a right, then right again. There was another door, but this one was even easier than the first. I crossed the room and left through the opposite door, ignoring the poor suckers around me. They'd find out soon enough. Just in time, I saw the EXIT. I wasn't about to fall for that one again. Before I reached the sign I spun left and ducked through the door into the stairwell.

There was a door on my right, but there was no point in using it. I went up a flight. There was a room on the right. I went in only long enough to grab the name of the manufacturer off the MIXED AIR TEMP panel [W3]. I continued my climb, bearing right when necessary, until I was at the [59 down]. Before going there, I checked out the door on my left. Nope, no help there either.

I crossed, and went up a flight. I searched for the [74 down], which wasn’t immediately visible. Once I found it, I used it. I spotted a staircase and counted stairs until I reached the broken one. It was number [W4], as I’d suspected. My pulse was pounding like a bongo drum so I took five to calm down and look around. Time for the [74 down] again. I used it as you’d expect and then turned right. I walked until I could walk no longer, and then stared. To my surprise, I could see their meeting room, straight ahead!

I didn’t want to go there directly, of course, but there was another way. A few minutes later, I was standing in front of the door. I counted the [12 down]. Yup, eight. I couldn’t go in while they were there, so I scouted about for a [18 down]. It took a little time, but I found a whole lot of them, and not too far away either. It was time to count again, this time the contiguous [162 down] [12 down] in the [160 down] [113 down] [W5]. Hey, call me paranoid. I didn’t make it this far without learning when to be careful. The scene under the [160 down] [113 down] caught my eye. High weirdness, to be sure, and the “explanation” on the wall didn’t help much. Punks.

I continued on, more or less in the same direction as before. I turned right and eyeballed the pane: [143 across]. Yeah, I used to spell like that too, after I had nine pints of Pepsi in me. I went through the door. A little way down was a door labelled [27 across]. I went in and counted the [76 across] in the [87 down] [W6] in this room only. Then, just for good measure, I also counted the [125 across] [W7], not including those of the [76 across]. God, Catherine would have thought they were great!

There was clearly nothing more for me here. I left and headed back the way I came. I went across the lobby and down the [53 across]. As I walked, I looked out for the drop spot. It had to be that [142 down] on the left. I took down the four-digit number on it [W8]. I went to the end and turned left, then right, then right after a while. My watch beeped. Damn electronics. Give me the old days when the phones binged and watches bonged and it was Saturday all Sunday long. But the past is a foreign country now, and I was trapped in the present. It was time to meet [71 across].

I made it to his floor and went left. I was too late. He was lying under the [171 across]. I dragged his body out, a dead weight. I checked the [171 across]. Another dead weight [W9]. I rifled his pockets and found a note. It was in Japanese, and looked like the storyline of a play. It was true, then: dead men tell Noh tales.

I struggled to translate the note. At least those years in ‘Nam were good for something. I haltingly read off, “Take [W6]. Add [W7]. Go to elevator 1 of that building.” What did I have to lose? Still, you take the breaks you get.
Minutes later, I was there. I unhesitatingly pressed button [W1]. When the machine stopped, I strode across the hall and through a door. One floor up, I entered a room. There, straight ahead and up on a door was a number [W10]. I knew better than to go that way, so I took a few steps and went left and down. I was in the heart of their operations now. The machines stretched on farther than I could see. I began to walk. And walk. And walk. I passed through a doorway, and still the trek continued. At last an entryway appeared on my right, with [79 down] written over it. That's where the precious stones belonged, but there was no time for that now.

I took the right and found myself in a control room. I scanned the panels, searching, searching... and then I saw the label [W11] on Fan #F-36, under the green light. I hadn't realized their plan was so deadly. I used a nearby door to get a breath of fresh air, and noticed that Conehead's class was still in session. That buoyed my spirits, and I went back to the control room and left via the door I had originally used.

I turned right and continued through the machines. At the very end I turned left, went through the door, and passed a vat of [161 across]. I went down to the [35 across], and out the door. A right, and I was in front of an elevator. I took it to [116 across].

There I turned left, went through a door, went left, and took an immediate right. I noticed a [74 down] on my right and smiled, remembering the earlier part of my journey. After going down, I saw the files. They were in haphazard order, but I was eventually able to find 8493-21 — 8493-36. I noted the word [W12] after IRON Russia.

Further on, I took a left, followed by two rights. I saw a sign that had [92 down] replaced with [W13]. A short while later I saw a similar sign that had been similarly dealt with [W14]. The artist's rendition was clever, but was nothing sacred? I took a right and gazed through the door [W15] volts said the sign — enough juice to fry the entire Central Time Zone outside of Indiana! I split, using the stairs at my left. I went through the door, took a left, and a short while later was by the year [W16] on the wall.

* Actually, I gazed through the glass window in the door at the end of the very short corridor.