Welcome

I originally wrote this puzzle hunt for an in-person event this past winter, but now that we're all working and having fun from home I'm releasing it to the Formlabs community.

There are a total of five puzzles and one meta-puzzle in this puzzlehunt. You will use the answers from the five puzzles to solve the meta puzzle.

The solution to each puzzle is a 5-letter English word. Once you think you have an answer Slack me (Dan Recht), and I'll let you know if it's right.

This packet also has some informational materials you might find helpful. All of these informational pages say "Informational · Not A Puzzle" at the top. You might not need all of the information on these pages.

I encourage you to work in a team! Any size of team is fine, but you'll probably have the most fun with no more than 5 people.

Tips for puzzle hunting as a remote team:
- Use a google sheet as your whiteboard. I recommend a separate sheet (file) for each puzzle
- Create a private slack channel for your team
- Your team can split up and work on two (or more) puzzles at the same time
- Have occasional voice or video chats to recap progress

Rules of the hunt:
- Using a computer or the internet to help you solve puzzles is not cheating. In fact, I strongly recommend it.
- You shouldn't need to go anywhere in order to solve any of these puzzles.
- Have fun. If you're not having fun, Slack me so I can give you a hint. This isn't a race or a competition; it's for your enjoyment. This puzzle hunt is a bit harder than the Formlabs hunt we ran over the summer, so I encourage you to be kind to yourself and get hints as often as you need.

Enjoy the Hunt!
Dan Recht

A Guide To Puzzle Hunting

Never done a puzzle hunt before? That's great!

One thing you'll probably notice is that I've given you puzzles, but I haven't given you instructions for how to solve them. That's part of the fun! You'll need to figure it out for yourself how to solve the puzzle. Some of them might look like kinds of puzzles you've solved before, but there's probably a twist in there somewhere.

The answer to each puzzle is a 5-letter English word. Figuring out the "extraction" -- how to extract this answer from the puzzle -- is a key part of the hunt. Some common techniques you might need to use:

- Sorting: You might have to re-order what you have alphabetically, or according to some other order hinted at in the puzzle
- Indexing: You might get a list of "indexes" -- numbers that indicate which letter of a word to look at. For example, if the puzzle says something like "Cowbell (1); Medley (4); Test (2); Avid (2); Robot (1)", the answer might be CLEVER (the first letter of "cowbell", the fourth of "medley", etc.)
- Decoding: you might have to replace letters or numbers with other letters according to a set of substitution rules
- Adding or removing letters to make a new word or words.
- Ask someone else. Explaining your work to someone else is a great way to get un-stuck, and if you're stuck on a clue, it might be a reference to something you're not familiar with -- so find someone who is!

The meta-puzzle will use the answers from all of the other puzzles. Beware! Meta-puzzles are intentionally more challenging than ordinary puzzles. A certain amount of frustration is normal.

Generally, every puzzle (including the meta-puzzle) will give you a hint about how to extract the answer (and if you get stuck, ask Dan for additional hints!)

Team Name: _____

Team Members: _____

Answer Sheet

Sunny day: _____

Common expressions: _____

Musical numbers: _____

Two-parter: _____

Full circle: _____

The enemy's code word (Meta): _____

Dear MI6 colleagues,

I need a miracle. I was tailing my target last night at the opera when everything went wrong. The opera was staging an adaptation of a Marx Brothers movie set at a sanitarium, and I briefly got distracted by a bit of innuendo. Then, in a flash, my target got behind me and hit me over the head. Brutal, you might say, but that's how the game is played. I came to tied up in a small hot space (probably the boiler room) sure that they were going to give me the works to get me to talk. Luckily the ropes binding my wrists loosened on their own as if by a kind of magic (well, probably because of the steam from the boiler) and I was able to escape.

You have to save my mission. I've discovered the enemy's five-letter code word, but I need to go dark for a while. They're monitoring my communications so thoroughly you'd think they had the entire staff of that defunct Murdoch newspaper working for them. It's liable to give me a heart attack. To protect what I've learned, I've hidden their five-letter code word using five five-letter code words of my own. Because our communications aren't secure, I then hid each of my code words in a different ordinary document: a video game, a list of common expressions, a playlist, a set of crossword-style clues, and some math puzzles. Unfortunately, if you haven't already figured this out, I'm a terrible spy and so I had some problems hiding the code words. In case it helps, I've included a note with each document describing what went wrong. Your mission is to find my five code words and use them to decrypt the enemy's code word.

Good luck and all that jazz. God save &c &c.

Agent X

Sunny Day

I tried to hide a five-letter code word in a video game and give you a decoder, but I went down the wrong street.

Video game:

Decoder:

Has a name that originated as a mid-20th-century slang term relating to broadcast entertainment (5)

Has a cape and a stereotypically evil laugh (3 5)

The serious one of the pair (4)

Red, hairy, hugs a lot (4)

Introduced in 1993 to increase the number of strong female characters (3)

Portly, enjoys eating. (6 7)

Has a name derived from a color word (6)

Has a name that's an unintentional NBA reference (7)

Has been voiced by Satoshi Tsuruoka in Japan (use the US character name) (3 4)

The fun-loving one of the pair (5)

Deliberately included in the cast to represent a particular segment of the audience (5)

Has a name that starts with an award given to actors: (5 3 6)

In early appearances was notable for being hard to find (13)

Has a name that means meadow (7 4)

Scrawny, sometimes plays an action hero (6)

Sometimes portrayed as a reporter (6 3 4)

Magically creates things that are round and orange; can teleport and float in the air (4 7)

Common Expressions

I tried to hide a five-letter code word in a message that can be decoded using some common expressions, but I got distracted by a butt dial... or was it a booty call?

Message: CFGHJKPQTUVXZ

Decoder:

A. Backside
B. Musical Note
C. Space Flight
D. Court Order
E. Acute Angle
F. Dark Humor
G. Point Guard
H. Clean House
I. Profit Motive
J. Equal Footing
K. Dateline
L. Sackcloth
M. Room Escape
N. Party Platform
O. Sanitary Pad
P. Singing Telegram
Q. Critical Perspective
R. Fairground
S. Joint Custody
T. Barkeeping
U. Dancefloor
V. Finance Team
W. Spot Check
X. Take Aim
Y. Dimwit
Z. Fire blanket

Musical numbers

I tried to hide a clue to a five-letter code word in a playlist and give you a decoder, but all the digital information was lost in transmission.

Artist **Song** **Decoder**

Artist	Song									
DRAKE....		Maroon	Inch Nails				Dog Night			
LILUZIVERt			Tops	Lions	LAU					
PARKBOM..						Ball & MJG				
CATFISHANdthebottlemen					Days		-Bit Arcade			Non Blondes
BRITNEYSPears							Republic	For Fighting		
LEWISCAPAldi			Hot Brass Band	pence None the Richer		Chainz				Doors Down
BILLIEEILish										Lane
ALLTHATREmains		Direction	LACK		Jackson	Tech	Tenors			dust
POUYA....				Days Grace	Avenged fold					Eve

Two-parter

I tried to hide the definition of a five-letter code word in a list of crossword-style clues, but I couldn't hear what order to put them in.

A distinctive cake pan hit short intentionally
A goddess of deoxygenated blood
Armored rider after sunset
Circle twist
Downsized in groups of two
Eat cut in two
Ensemble's lowest voices, they can be loaded
Enumeration composer and pianist
Everyone's units of time
However posterior
Imprecate something that holds water
Innoncence's opposite covered in gold
Liturgical book shaker user
Located yonder contraction
Mailed a smell
Nero's was from 54 to 68 C.E., check!
No-good situation where you mount a hinge
Nobles, for example, threw
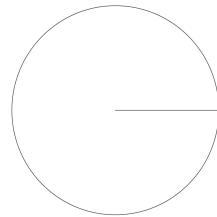Reaper's epithet a big name in fairytales
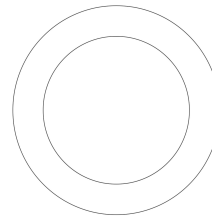Usher's area key
Voids in teeth stocks

Full circle

I tried to hide a five-letter code word in some math puzzles, but upon reflection I can't solve them.

There's a classic math puzzle that goes as follows. Draw a circle and its radius as in the picture labeled Example 1 below. Next choose two (uniformly) random points inside the circle. What is the probability that the line segment between the two random points intersects the radius you drew? It turns out that there is a simple trick to showing that the answer is 1/4. There's a related calculus puzzle asking the same question for two concentric circles, one with half the area of the other, as pictured in Example 2 below. It takes some work, but you can show that the probability of intersecting the circumference of the inner circle with a line segment connecting two random points in the outer circle is $1/2 + 1/(2\pi)$. For the five large circles below, calculate the probability that a segment connecting two random points in that circle intersects whatever is drawn inside at at least one point. All line segments drawn are either radii or half radii. The leftmost figure represents an infinite series of concentric circles, each with half the area of the circle immediately outside it. All figures are drawn to scale and should be assumed to be as regular/symmetric as possible. Express all probabilities as fractions in lowest terms. As a check, the sum of the final answers (not the probabilities) for the five circles will be divisible by seven.
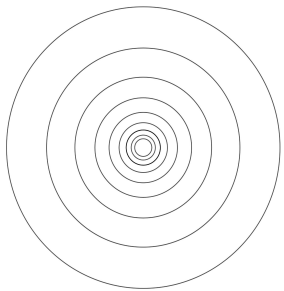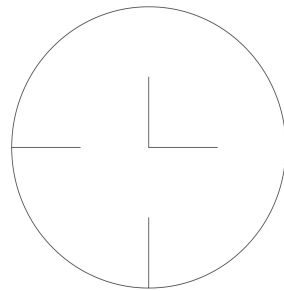

Example 1   Example 2

The angle is 90°   The angle is 45°   The small angle is 30°
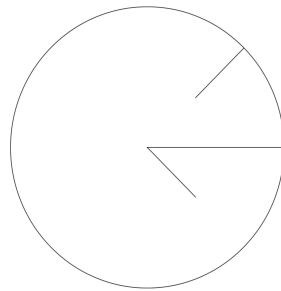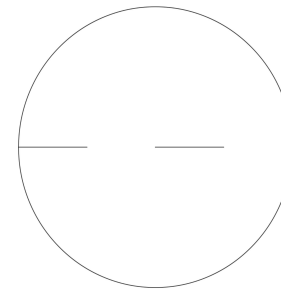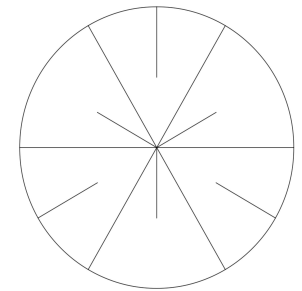

Value divided by
(1+1/π) times twelve

Denominator minus
numerator

Denominator plus
numerator plus one
all divided by four

Value times twenty

Numerator plus
denominator plus four

The enemy's code word

I tried to hide the enemy's code word using my code words, common expressions, math puzzles, a song, a video game, and crossword clues but the decoding instructions got redacted by censors.

Instructions:

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Step 1. Use ██ ████ ████        to identify the ████ ███
Step 2. Use the ████ ███ to identify the ███
Step 3. Extract the category of the ███ █████ from the ████ ██████
Step 4. List the first 26 words in the ████ that have 5 or more letters in their original order
Step 5. Label the words in that list A through Z
Step 6. Solve the ████ ████
Step 7. Solve the ██████ ███
Step 8. Combine the answers to the ██████ ███ and the ███ █████
Step 9. Compare with the list from Step 4 to extract the ████ ███ ███
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Common Expressions: Michigan, Nebraska, Southwest, Electrical Engineering, Physical Education, Reverse

Math Puzzles:

0		3	
	3		3
1		3	
2			
1	2		1

	3		2
4		4	4
	3		3
0		2	1

		2	
	2		2
	3		2
3			2
	3	2	2

1	3	4	3	1
1				1
1	3		3	1
		1		

2			2
	4		1
1	2		3
	1		2
		1	

Crossword Clues:

Note: Down clues for words that are not proper nouns are omitted

Across
1. Code word
2. Laconic
3. Protein
4. View
5. Zenyatta and Azeri

Down
2. Religion
4. River

Across
1. Island
2. Code word
3. Representative
4. Fake
5. Deep _____

Down
4. Currency

Across
1. Sends in bulk
2. Golden
3. Code word
4. Fruit
5. Fungus

Down
4. King

Across
1. Poorest
2. Call up
3. Fruits
4. Code word
5. Dye

Down
1. Language
3. Alphabet
5. Inventor

Across
1. 2% club
2. Make waves
3. Lexicographer
4. Perfect
5. Code word

Down
1. Sandwich
3. River