SPACE:
THE FINAL FRONTIER

July 2019

Words such as "final", "end", "ultimate", "concluded" in the text are clues to take the last letter of each answer.

This month, Puzzled Pint looks at some people, programs, and probes which have been important to space exploration so far. In the *end*, we hope to offer a glimpse of the eventual destination of our species.

Company headed by Richard Branson; its ultimate goal is to provide sub-orbital spaceflights to the paying public. Virgin Galactic C

Space probe which concluded its mission by plunging into Jupiter's atmosphere on September 21, 2003. Galileo   O

Lander whose final resting place is on the surface of Saturn's moon Titan.
Huygens   S

Astronaut whose life was tragically ended alongside Edward White and Roger Chaffee in the Apollo 1 launch pad fire on January 27, 1967.
Gus Grissom   M

Program whose final mission was crewed by Eugene Cernan, Ronald Evans, and Harrison Schmitt.
Apollo   O

Space probe which had among its secondary objectives, according to Wikipedia, "Map the terminators of Pluto and Charon with high resolution."
New Horizons   S

COSMOS

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MESSAGE FROM ORBIT

July 2019

```
− − x . x . . . x . . . x . − x − − . x . x x . . − . x . − . x − − − x − − x x − − − x . − . x − . . . x . . x − x
 5   4   4   7   4   7   4   6   5   8   8   4   1   8   1   8   5   6   5   3   5   6   1   8   2   7   4   8   6
```

From Wikipedia: "Sputnik 1 was the first artificial Earth satellite. The Soviet Union launched it into an elliptical low Earth orbit on 4 October 1957. It was a 58 cm (23 in) diameter polished metal sphere, with four external radio antennae to broadcast radio pulses. It was visible all around the Earth and its radio pulses were detectable. This surprise success… triggered the Space Race… The launch ushered in new political, military, technological, and scientific developments."

1 = . —   4 = X.   7 = ..

2 = —.   5 = — —   8 = .X

3 = XX   6 = —X   9 = X—

The following message has been received from orbit. American scientists are dashing to figure out the method of encoding. They need to know by 7:00 PM on the dot. Can you help them decipher it?

```
2  5  9  5  4  1  4  2  3  1  9  8  7  8  1  6  8
-. -- x- -- x. .- x. -. xx .- x- .x .. .x .- -x .x
 Y     O     U     R     A     N     S     W     E
```

```
1  8  4  8  7  8  9  7  8  8  8  1  2  4  8  2  9  2
.- .x x. .x .. .x x- .. .x .x .x .- -. x. .x -. x- -.
 R     I     S     B     E     E     P     I     N     G
```

B E E P I N G

UNMANNED

The Apollo 4 mission, conducted on November 9, 1967, was the first unmanned test flight of the Saturn V launch vehicle.

Construct a gantry from the words below and examine it to discover the part of the Saturn V that would be manned in future missions.

MANET
MANTA
ROMAN

ADAMANT
ALMANAC
EMANATE

GOURMAND
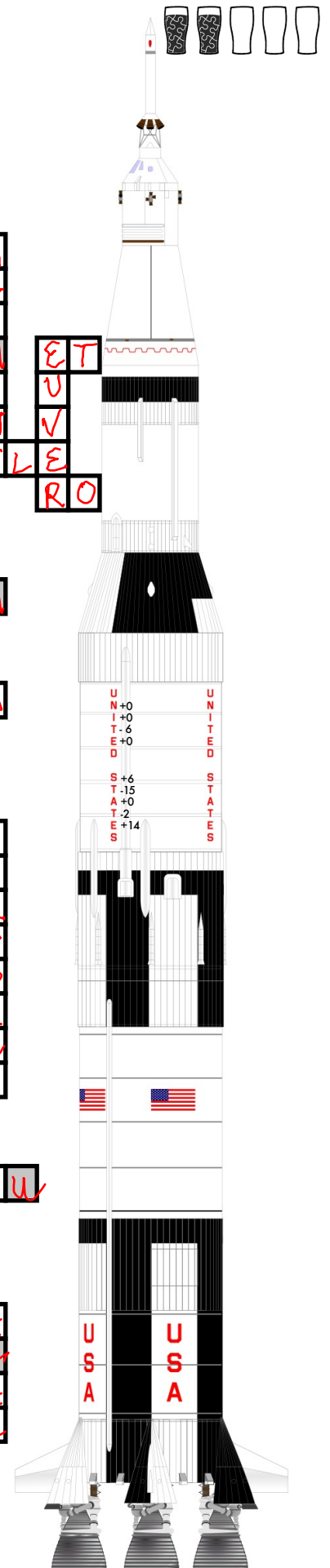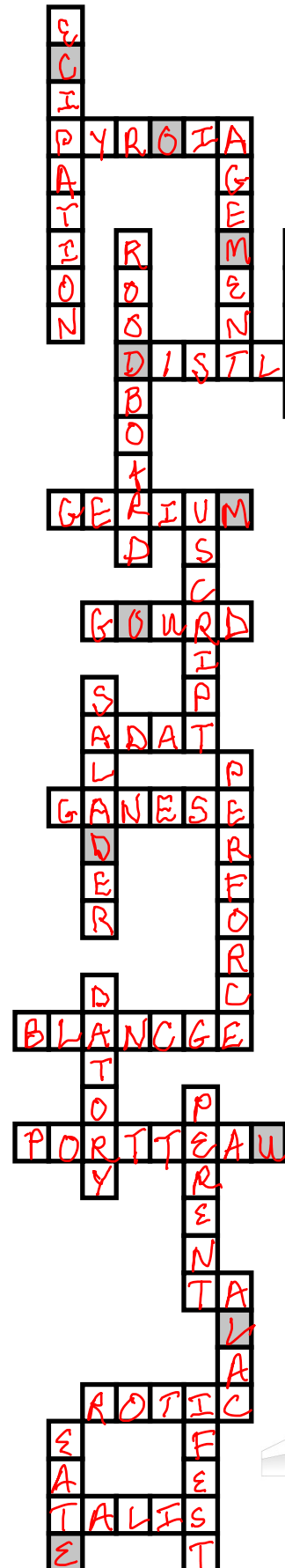MANEUVER
MANIFEST
ROMANTIC
TALISMAN

DISMANTLE
GERMANIUM
MANDATORY
MANGANESE
PERMANENT
PYROMANIA

BLANCMANGE
MANAGEMENT
MANUSCRIPT
SALAMANDER

PERFORMANCE
PORTMANTEAU

EMANCIPATION
ROOM AND BOARD

COMMAND MODULE

HIDDEN FIGURES

Katherine Johnson, one of the women whose work for NASA was portrayed in the 2016 film *Hidden Figures*, played a crucial role in calculating the trajectories for many manned missions.

According to Wikipedia, "When NASA used electronic computers for the first time to calculate John Glenn's orbit around Earth, officials called on Johnson to verify the computer's numbers; Glenn had asked for her specifically and had refused to fly unless Johnson verified the calculations." In one interview, Johnson said of that incident: "He knew that I was the only woman that worked on it. He said, if she comes up with the same answer that they have, then the computer's right. It took me a day and a half to compute what the computer had given them. Turned out to be the exact numbers that they had."

To honor her work, we present the "hidden figures" in these cryptarithms. Every digit in these division problems (https://en.wikipedia.org/wiki/Long_division) is represented by a letter, and the same letter represents the same digit everywhere it occurs.

Record the letter representing each digit in order from 0 to 9 to reveal a two-word phrase. Then use the letter-digit correspondences to calculate the value of the equation below. Expressing that value using the same letter-digit key will yield your final answer.

```
              ERUP
              8965
    MY | OUTPUT
    41 | 367567
        -OCE
         328
        ORP
        395
        -OUR
         369
        CUU
        266
        -CMU
         246
        CBT
        207
        -CBP
         205
        C
        2
```

```
                      C
                      2
    CORRECT | MERCURY
    2399827 | 4892691
            -MTRRUPM
             4799654
            ROBOT
            93037
```

B Y C O M P U T E R
0 1 2 3 4 5 6 7 8 9

(51 x CUBE) + (17 x ROOT) – YUM =

C R Y P T O

(51 X 2608) + (17 X 9337) - 164 =
133,008 + 158,729 - 164 = 291,573 = CRYPTO

```
00101
00110
00000
```
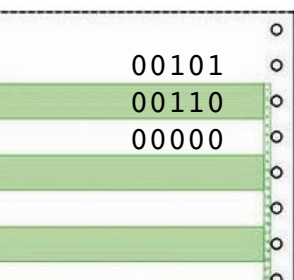
SMALL STEPS

In July 1969 – 50 years ago this month – Apollo 11 landed on the moon. After descending from the Lunar Excursion Module to the lunar surface, Neil Armstrong spoke the historic words, "That's one small step for [a] man, one giant leap for mankind."

Tonight you too will be turning a SMALL STEP into a GIANT LEAP. Change one letter at each step of your descent (never the same position twice in a row).

	S M A L L	S T E P	
	STALL		
Jack and the bean____	STALK	SEEP	To ooze or leak
	STANK		
	STINK	BEEP	
Move in a sinuous, provocative manner	SLINK		
	BLINK	BEER	Pilsner, lager or stout
Fill in the _____	BLANK		
	BLAND	BEAR	
Mark with a hot iron	BRAND		
	GRAND	LEAR	Father of Regan, Cordelia & Goneril
	GRANT		
	G I A N T	L E A P	

How does an astronaut get to the surface of the moon?

TAKES LADDER
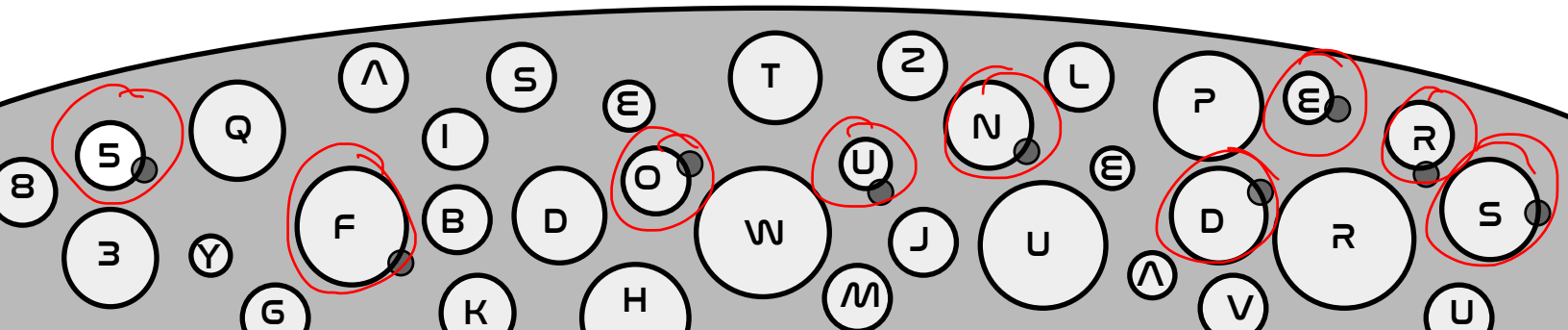
META: LAUNCH WINDOWS

And so our review of the Space Age arrives at the present day, in which SpaceX is hard at work on developing reusable launch systems.

Each of your four answers represents a reusable rocket. Three series of launches have been scheduled for this group of rockets. During each group of launches, each rocket is launched at the time of day indicated, and travels upward at the rate of one square per minute. There is also an aerial drone, already airborne, which begins traveling eastward at the indicated time at the rate of one square per minute. At the moment that the drone and the rocket occupy the same volume of space (don't worry, they don't actually crash into each other, as much as they might appear to do so!), the drone will "gather telemetry" about the rocket and transmit that info.

When each rocket has been launched three times and all the telemetry has been analyzed, you will have created a…. **SPACE PROGRAM**

The first letter is 'S' because that rocket starts at 1903, and we have to find the letter that will be in the top square at the same time as the drone (1917). So basically 14 steps from the top. (1917 -1903), The S is 14 steps. The numbers in red on the side show how this will occur.
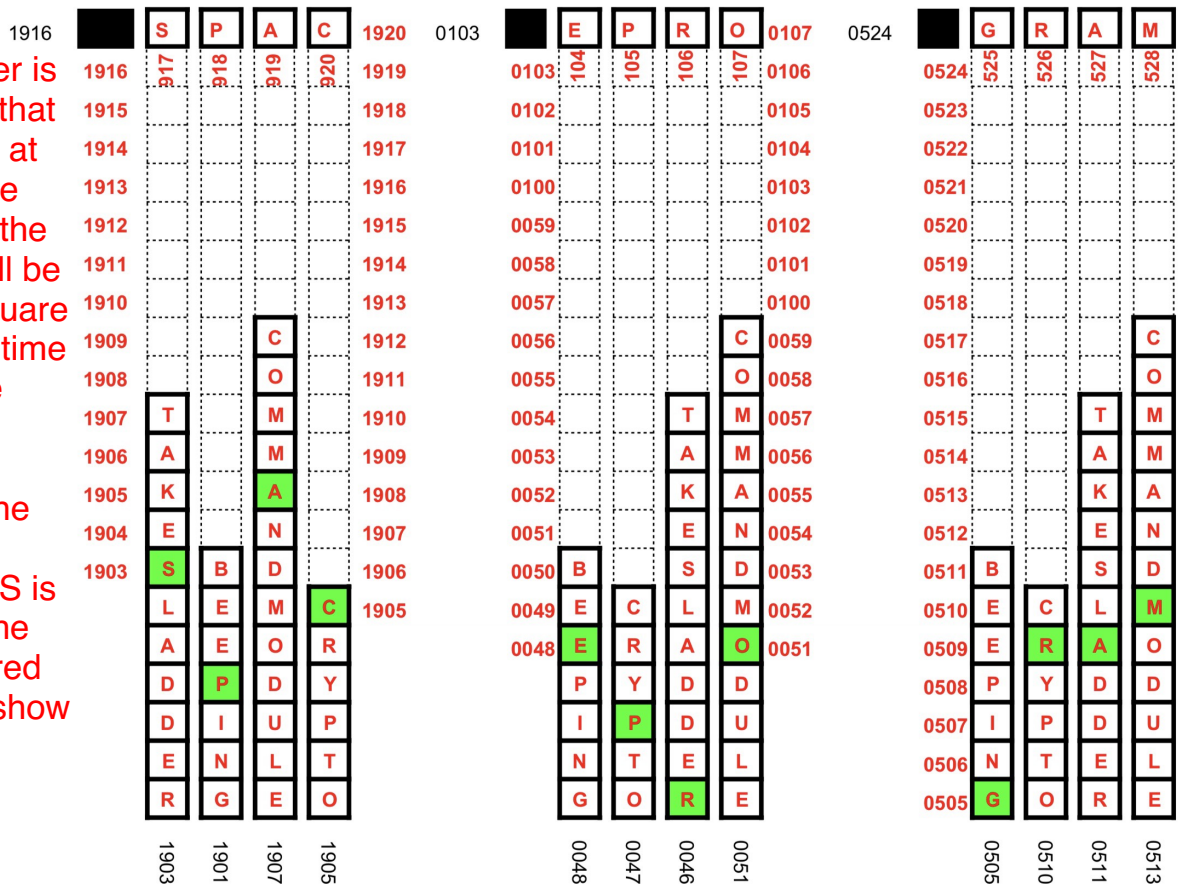
Happy Anniversary Puzzled Pint!

This month marks Puzzled Pint's anniversary and to celebrate it, we've given you 9 puzzles to solve. You've already solved four main set puzzles and the metapuzzle. Where are the other four puzzles? They're hidden in the four main set puzzles. Go back and examine them closely.

Puzzled Pint started in __Portland__ (8) and was built on the

goal of being a beginner-friendly puzzling event that takes

place in a __PUB__ (3). Puzzled Pint has been running for

__NINE YEARS__ (4,5) and there were __5 Founders__ (1, 8).

PORTLAND OREGON is from the Message from Orbit - number around logo which uses same mechanism as the puzzle.

PUB is from Hidden Figures - lower left hand corner binary which tranlates to numbers which are the letters from the puzzle.
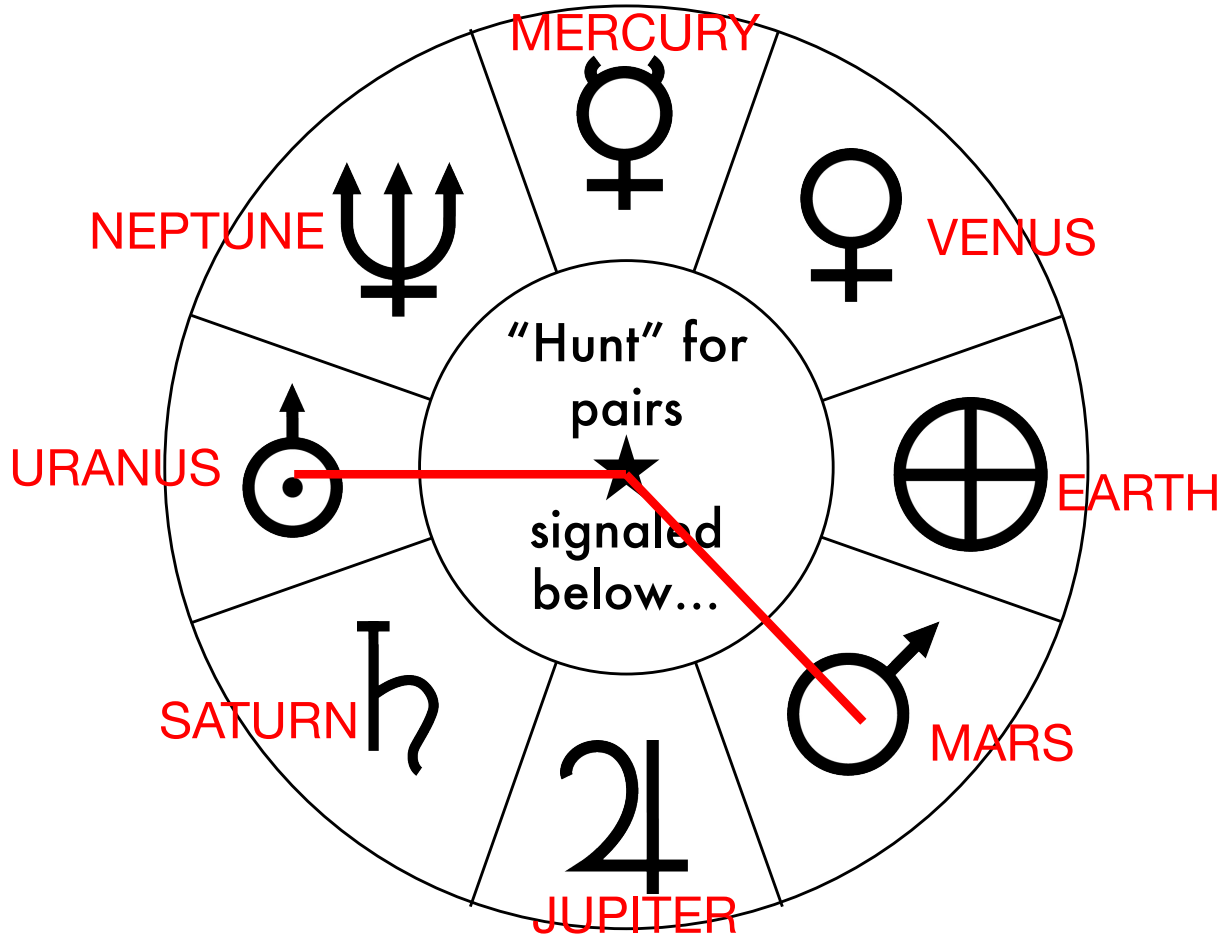
NINE YEARS is from UNMANNED - on the rocket, +/- numbers next to letters

5 FOUNDERS is from Small Steps. It's the moon crater letters with the extra circle.

Puzzled Pint

July 2019 – NINE YEARS!

MERCURY

NEPTUNE

VENUS

URANUS

"Hunt" for pairs

signaled below...

EARTH

SATURN

MARS

JUPITER

★ Your butt (URANUS), and a candy bar (MARS) – SHOWN ABOVE
★ In Roman mythology, the god of the sea (NEPTUNE) and the husband of Juno (JUPITER)
★ The one with the most prominent rings (SATURN) and the one with that Great Red Spot (JUPITER)
★ The two planets that start with the same letter (MERCURY & MARS)
★ The biggest planet (JUPITER) in our Solar System, and the hottest planet (VENUS)
★ Space probe Cassini's target (SATURN) and space robot Curiosity's destination (MARS)
★ The two planets on either side of the asteroid belt (JUPITER & MARS)
★ Fifth from the Sun (JUPITER), and second from the Sun (VENUS)
★ Our home planet (EARTH) has only sent one space probe—Voyager 2—to visit this distant "sideways planet" (URANUS)

ANSWER: "SCAVENGER"