

Five Minutes to Go ...  
What Can I Do?

By

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- Use the digits 0 to 9 once each to create a 10-digit number with the property that the first  $n$  digits form a number divisible by  $n$ , for each  $n$  from 1 to 10.
- What's the next two letters in this sequence? O, T, T, F, F, S, S, \_, \_
- How is this series derived?  

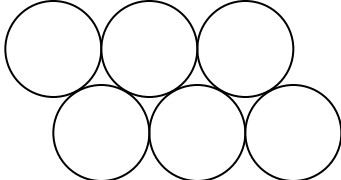
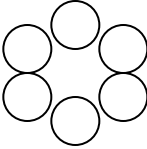
A=4	B=0	C=3	D=1	E=0	F=1	G=1	H=1	I=4	J=0
K=2	L=1	M=8	N=8	O=3	P=1	Q=0	R=1	S=2	T=2
U=1	V=2	W=4	X=0	Y=0	Z=0				
- Assuming that A=1, B=2, ..., Z=26, find the value of your name.

For example, Jane Tanner =  $10+1+14+5+20+1+14+14+5+18 = 102$

- Find a word that adds up to exactly 100.
- Pick a number between 1 and 10. Multiply it by 2. Add 5 to it. Multiply it by 50. If you had your birthday this year, add 1752. If you have not had your birthday this year, add 1751. Subtract the year of your birth. Tell me your number. The first digit is your original number and the next two digits are your age.
- Fill in the box, using only once the digits 1-9, so that no number next to each other is one higher or lower.
- PUZZLE ABOUT PUZZLES

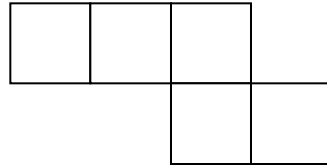
Ms. Tanner begins every day working a crossword puzzle – the harder the better. Being a very competitive person, she decides to give herself 2 points for every crossword puzzle that she completes correctly and to forfeit 3 points for every crossword that she completes incorrectly or cannot complete.

After 30 days of working the puzzles, Ms. Tanner has a score of zero. How many puzzles has she solved incorrectly?

- Change  to 

- Choose a card. Double the number. Add 2. Multiply by 5. Subtract 7. Put your card face down on the table. I will put down a card on the table. Miraculously, the cards will display your result.

11. Choose a card. Multiply the number by 5. Add 5. Multiply by 2. Subtract 8. Put your card face down on the table. I will put down a card on the table. Miraculously, the cards will display your result.
12. What are the next two entries in this series?
13. Say that the owner of a dog kennel has a setup of 5 pens shaped like those below. She needs to board four dogs that detest each other, and she wants none of them to share a common fence. How can she move only 2 of the fences and accomplish this goal?



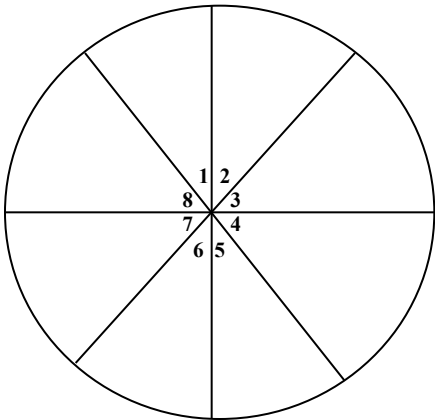
14. Minesweeper, Anyone?

Each board is divided into 49 squares. Diamonds are hidden in 10 of them. Your task is to determine the positions of the diamonds. The numbers in the diagram provide clues: A number in a square indicates how many diamonds lie next to the square – in other words, how many adjacent squares (including diagonally adjacent squares) contain diamonds. No square with a number in it contains a diamond, and a diamond may appear in a square with no numbers adjacent to it. Can you locate the 10 diamonds?

			3			
		1		4		
					2	
	0		3			
				1		2
		2				

15. Start with a three-digit number and repeat the digits to make a six-digit number. Now divide by 7, then divide the answer by 11 and then divide this answer by 13. What do you notice?
16. If letter “a” costs \$1, “b” costs \$2, and so on, “z” costs \$26, can you find a word that costs \$100?
17. If two dice are thrown, what is the most likely difference between the two numbers?
18. Sometimes when you divide the day by the month you get a whole number, for instance May 15<sup>th</sup> gives 15 divided by 5 which is 3. How many days in a year give whole numbers?
19. How many days will there be this century? (Don’t forget leap years!)

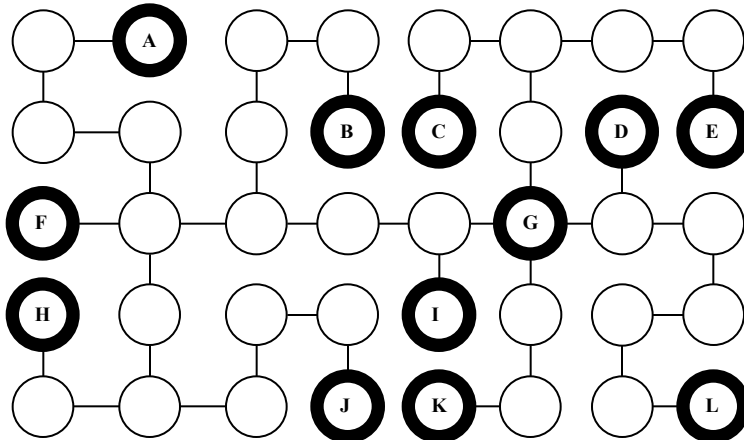
20. Each section of the wheel below is one of the following colors: beige, blue, crimson, gold, green, orange, purple, or white. Using the clues provided, can you figure out the color of each section?
1. Only colors having an even number of letters are in even-numbered sections.
  2. The colors in sections 4 and 5 begin with the same letter.
  3. The colors in sections 7 and 8 begin with the same letter.
  4. The colors in section 3 and 8 end with the same letter.
  5. Green is immediately between gold and purple.



21. Star Tours

You're in a spaceship among the stars (thick circles with letters) and space stations (small circles) along the lines shown. The distance between selected pairs of stars is shown below. Can you determine the name of each star?

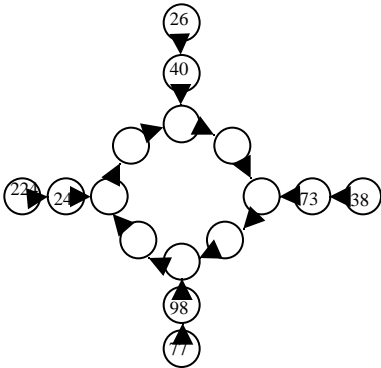
Botein—Deneb, 9; Vega—Meres, 5; Furud—Riegel, 4; Toliman—Botein, 8; Atlas—Subra, 11; Coxa—Polaris, 6; Kuma—Atlas, 4; Furud—Coxa, 12; Polaris—Vega, 5.



22. Fill in the eight missing digits so that the equation is correct and uses each of the digits from 0 to 9.

$$\frac{7}{\square} = \frac{\square \square}{\square \square} + \frac{\square \square}{\square 5}$$

23. Fill in the missing numbers on the carousel so that the same rule applies to all connected circles.



24. In this long division problem, the numbers have been replaced by letters. Each letter stands for the same digit throughout the problem. Solve each problem using logic and basic arithmetic; when the puzzle is completed, the letters representing the digits 0 to 9, written in order, will spell a word or phrase.

$$\begin{array}{r}
 \text{ORT} \\
 \text{GOTH} \overline{) \text{SPORTY}} \\
 \underline{\text{GOTH}} \\
 \text{YC PHT} \\
 \underline{\text{PRHRT}} \\
 \text{I I YCY} \\
 \underline{\text{RSRSG}} \\
 \text{ITCH}
 \end{array}$$

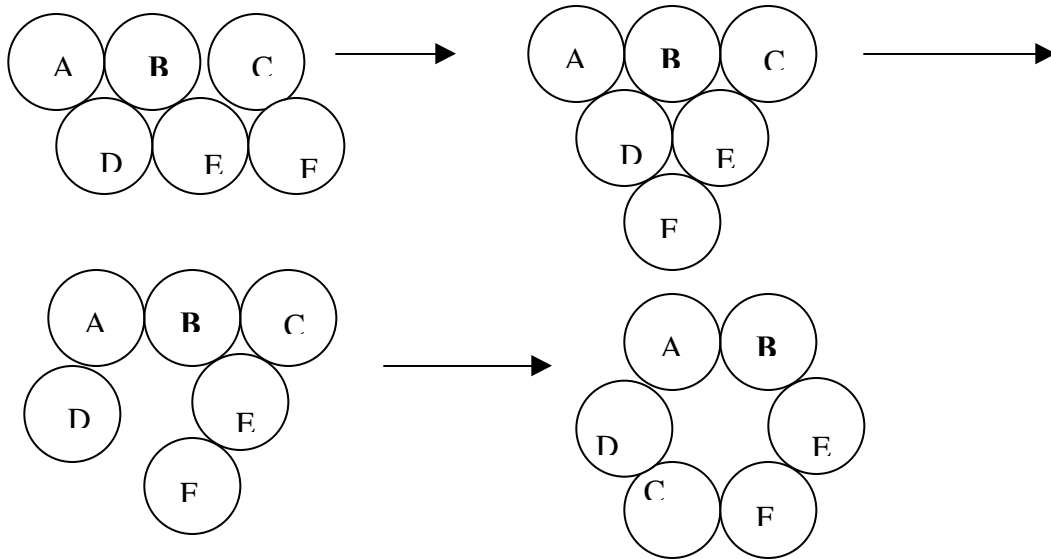
25. What do the following letters have in common: B E J Q X Y Z ?
26. Every blip is a blop. Half of all bleeps are blops. Half of all blops are blips. There are 30 bleeps and 20 blips. No bleep is a blip. How many blops are neither blips nor bleeps?

## SOLUTIONS

1. 3816547290
2. E, N for eight and nine
3. The series represents the number of states that begin with each of the letters of the alphabet.
4. Answers will vary.
5. One example is ATTITUDE.
6. Why does this work? A simple algebraic proof will reveal the mystery.
7. One answer is:

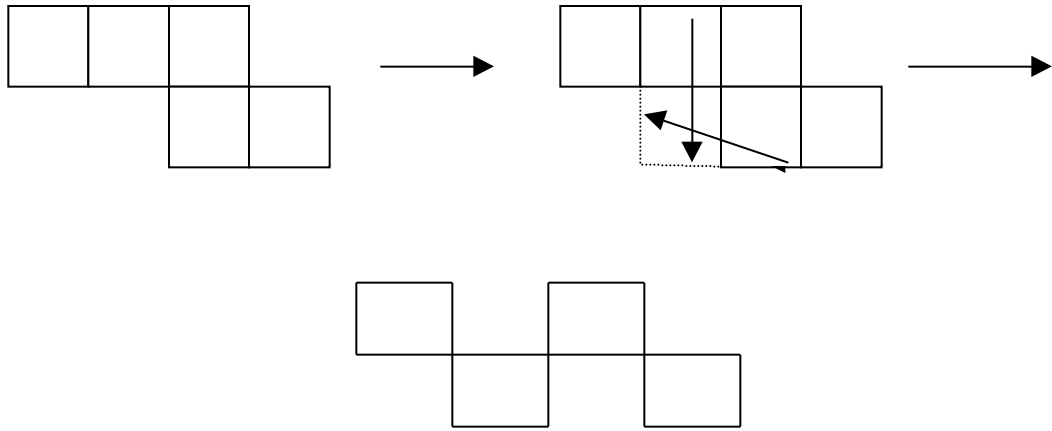
	7	
1	4	2
8	6	5
	3	

8. 18 puzzles worked correctly and 12 worked incorrectly.
- 9.



10. Why does this work? A simple algebraic proof will reveal the mystery.
11. Why does this work? A simple algebraic proof will reveal the mystery.
- 12.

13.



		◆	3	◆		
				◆	◆	
		1		4		
			◆	◆	2	
	0		3			◆
			◆	1		2
	◆	2				◆

14.

15. you get your original number

16. one example is "TURKEY"

17. 1

18. 90

19. 36525

20. 1=crimson; 2=orange; 3=white; 4=gold; 5=green; 6=purple; 7=beige; 8=blue

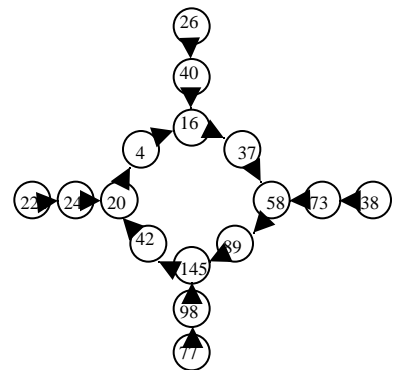
21. A=Meres; B=Subra; C=Atlas; D=Furud; E=Toliman; F=Vega; G=Kuma; H=Polaris; I=Rigel; J=Coxa; K=Botein; L=Deneb

22.  $\frac{7}{2} = \frac{39}{18} + \frac{60}{45}$

24. 0=C; 1=O; 2=P; 3=Y; 4=R; 5=I; 6=G; 7=H; 8=T; 9=S

25. None of our 50 state names begin with any of these letters

26. 5



Sample Relay

1. Take the year and divide by 2. This is the number you will pass on.
2. Divide TNYWR by the number of planets. Pass on the remainder.
3. Multiply TNYWR by the number of U.S. states. Pass on this number.
4. Mary has a penny, nickel, dime, quarter, and a half dollar. Subtract the number of cents she has from TNYWR. Pass on this number.
5. Add together all the odd numbers less than TNYWR. Stand up when you get your answer.

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Relay #1

1. What is the largest odd number that can be obtained when the scores on two dice are multiplied together? This is the number you will pass on.
2. A square floor is tiled using 121 square tiles. Add the number of tiles that make up the two diagonals to the principal square root of TNYWR. Pass this number on.
3. Subtract TNYWR from the smallest number that will leave a remainder of 1 when divided by any of 2, 3, 4, 5, or 6. Pass this number on.
4. If you write all the numbers from 1 to 100, find the number of times that you have written the digit 1. Pass on the GCF of this number and TNYWR.
5. A number's double exceeds its half by 99. Divide this number by TNYWR. What is the remainder? Stand up when you get your answer.

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Relay #2

1. Ten men dig 10 holes in 10 hours. How many hours will it take 20 men to dig 20 holes? This is the number you will pass on.
2. Let  $x$  be the smallest even number that cannot be obtained when the score on two dice are multiplied together. Pass on the LCM of  $x$  and TNYWR.
3. Two friends were working out how many sweets they had. One said "I've got twice as many as you and if we eat one each I will have three times as many as you. Subtract the total number of sweets from TNYWR. Pass this number on.
4. Let  $x$  be the number of integers between 1 and 99 inclusive that contain different digits. Pass on  $\sqrt{x} + \sqrt{TNYWR}$ .
5. There are 24 possible numbers using all the digits 2, 3, 4, 5. Let  $x$  be the number of these that are odd numbers. Stand up when you know the sum of all the odd numbers (inclusive) between  $x$  and TNYWR.

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Sample Relay:	1. 1001	2. 2	3. 100	4. 9	5. 16
Relay #1:	1. 25	2. 26	3. 35	4. 7	5. 3
Relay #2:	1. 10	2. 70	3. 64	4. 17	5. 45

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