DKC^3 2017 - Word Problems

(Each word problem is worth 5 points)

1. **Einstein's Riddle**

   There are 5 houses in five different colors.
   In each house lives a person with a different nationality.
   These five owners drink a certain type of beverage, smoke a certain brand of cigar and keep a certain pet.
   No owners have the same pet, smoke the same brand of cigar or drink the same beverage.

   The question is: Who owns the fish?

   Hints
   The Brit lives in the red house
   The Swede keeps dogs as pets
   The Dane drinks tea
   The green house is on the left of the white house
   The green house's owner drinks coffee
   The person who smokes Pall Mall rears birds
   The owner of the yellow house smokes Dunhill
   The man living in the center house drinks milk
   The Norwegian lives in the first house
   The man who smokes blends lives next to the one who keeps cats
   The man who keeps horses lives next to the man who smokes Dunhill
   The owner who smokes BlueMaster drinks beer
   The German smokes Prince
   The Norwegian lives next to the blue house
   The man who smokes blend has a neighbor who drinks water

2. **Love in Kleptopia**

   Jan and Maria have fallen in love (via the internet) and Jan wishes to mail her a ring. Unfortunately, they live in the country of Kleptopia where anything sent through the mail will be stolen unless it is enclosed in a padlocked box. Jan and Maria each have plenty of padlocks, but none to which the other has a key. How can Jan get the ring safely into Maria's hands?

3. **Sherlock's Cipher**

   Sherlock Holmes was decoding an encrypted message. If in the encryption, DISTANCE is written as IDTUBECN and DOCUMENT is written as ODDVNTNE.

   Can you help him decipher HTVSTYAD?

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4. Count the Ways

Out of 7 consonants and 4 vowels, how many words of 3 consonants and 2 vowels can be formed?

5. Horse Hay

You have 25 horses and you need to figure out the three fastest horses by placing them into races. Assume there is no tie in the speed. There are five lanes on the track so you can place five horses in each race to figure out the relative rank among them. You don't have the exact finishing time, i.e. there is no direct comparison between results from two different races. What's the minimum number of races you need to arrange in order to figure out the three fastest horses?

6. Poker Hands

A poker hand is a random subset of 5 elements from a deck of 52 cards. A hand has four of a kind if it has four cards with the same value—for example, four sixes or four kings. It is a full house if it has three of one value and two of a second—for example, three twos and two queens. Which hand do you have a higher probability of receiving?

7. Two-part Word Game

First, answer the question correctly. Then replace one letter in the answer with an L (without changing the placement of any letters) to get a wholly different word.

1. Word that follows kidney, tomb, or rolling. _____ _____
2. The number on the black ball in billiards. _____ _____
3. The absence of war. _____ _____
4. To put money way for a rainy day. _____ _____
5. A practical joke or mischievous act. _____ _____

8. Think of a Number

Old Mother Jones loves her gummy sweets. They come in three colors: orange, red and yellow. There were exactly twice as many red sweets as yellow ones in the packet. After eating seven orange ones, she had one less orange than yellow left, and the number of orange sweets remaining represented 20 percent of the sweets she started with. How many did she start with?

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9. Magic Squares

Complete the square using 9 consecutive numbers, so that all rows, columns and large diagonals add up to the same total.

	18	
	20	
	22	

10. Figure Out the Number (submitted by Carrie, verified by Kyle and Cory)

If MEN equals **47147** and TEA equals **4471**, which of the numbers below represents HIT?

A) **471**
B) **1147**
C) **774**
D) **1441**
E) **447**

11. Monkeys

You are in a room with 3 monkeys. One monkey has a banana, one has a calculator and one has nothing.

Which primate in the room is the smartest?

12. Math Burn

What is the mathematical word that is closest to completing the sentence?

"He came to the beach a pale man, but went home as a …."

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13. Elephant

You buy an elephant for $5,500.
A traveling circus buys it from you for $5,500.
After the season, they sell it back to you for $5,000,
and you sell it to a zoo for $6,000.

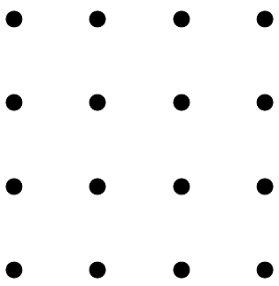
How much money have you made or lost on this transaction?

14. Pick a Word

Alarming is to marginal as enraged is to
(a) angered
(b) dormant
(c) caustic
(d) belligerent

15. Dots

Given 16 dots as shown



Draw a line through the center of each dot using only 6 straight lines.
The next line must start where the last line ended.

16. Today?

When the day after tomorrow is yesterday, then today will be as far from Wednesday as today was from Wednesday when the day before yesterday was tomorrow. What day is today?

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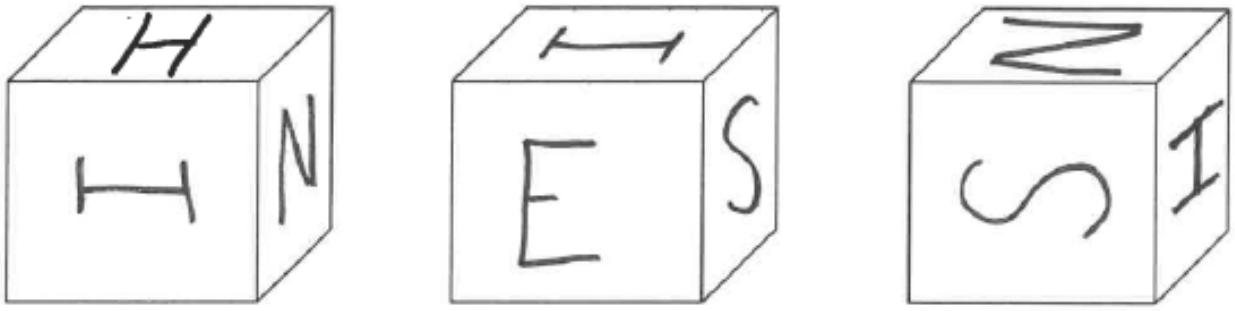
17. Cube Shine

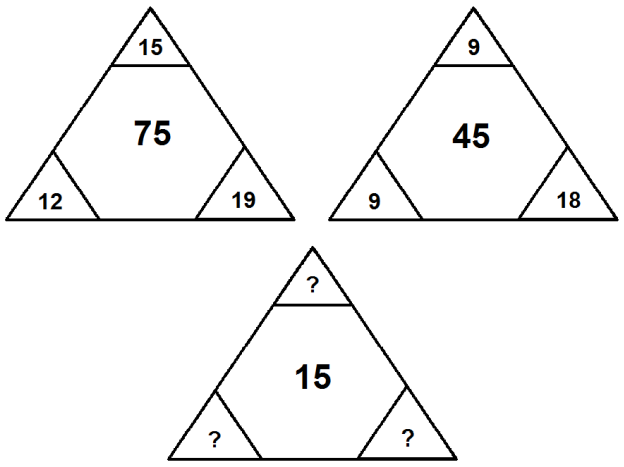


Three views of the same cube are shown above.

Which of the five letters – S, H, I, N, E occurs twice on the cube?

18. Triangle Teaser

What are the three missing numbers in the bottom triangle?



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19. Fancy Figures

Find a logical reason for arranging these numbers into four groups of three numbers each.

106 168 181 217 218 251 349 375 433 457 532 713

Group 1	Group 2	Group 3	Group 4

20. Interviews

100 students were interviewed.
28 took PE.
31 took BIO.
42 took ENG.
9 took PE and BIO.
10 took PE and ENG.
6 took BIO and ENG.
4 took all three subjects.

a) How many students took none of the three subjects?
b) How many students took PE but not BIO or ENG?
c) How many students took BIO and PE but not ENG?

21. Returning from World War II Bombing Missions

Suppose that you are a bomber pilot flying a B-17 in the European Theater of Operations during World War II. You know that 4% of bombers get shot down on average on each mission. You want to calculate the chance that you would successfully fly all the missions of your tour of duty--to make things simple, let's say 50 (a larger number than was actually asked of air crews) --without getting shot down.

What is the percent chance (rounded to the nearest whole percent) that you will have returned from your 50th mission without being shot down?

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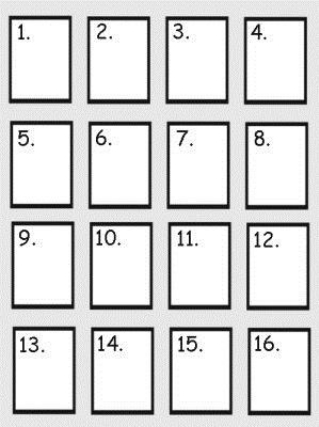
22. Card Game Logic Puzzle

A Las Vegas Dealer has shuffled only the Jacks, Queens, Kings, and Aces from a deck of cards. He deals them face up on a table from left to right in four rows of four cards each in the order shown in the picture. From the following clues, can you locate each of the 16 cards?

1. All of the aces are on the periphery of the arrangement.
2. The four corner cards, in no particular order, are the Jack of Hearts, the Jack of Clubs, the Queen of Diamonds, and the Ace of Clubs.
3. Each row and each column includes one card of each suit.
4. Each column includes one of each face card and one ace.
5. The second row has no Aces in it.
6. The first card dealt was a Club.
7. The Queen of Diamonds is not in the first row.
8. Card 12 is not a Diamond.
9. Card 2 is not a Spade.
10. The King of Clubs was dealt after the Queen of Clubs.



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23. Wire

A tree is supported by a wire anchored in the ground 6 feet from its base. The wire is 5 feet longer than the height that it reaches on the tree. How long is the wire?

24. Yard

Cecil can clean the yard in 2hrs by himself. Darren can clean the yard in 4hrs. If they work together how long will it take them to clean the yard together?

25. Large Number

Twice the larger of two numbers is three more than five times the smaller, and the sum of four times the larger number and three times the smaller number is 71. What is the larger number?