

## 2015 Holiday Logic Problems



Logic Study Guide created by Education Test Creators  
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## Wordoku

Fill in the Wordoku so that every row, every column, and every box contains the letters in the word(s) listed below each puzzle.

Just like in Sudoku, no letters may be repeated in each row, column or box.

S		O			N
	C			N	R
					O
		C			
N	R				

ACORNS

			T		
			U	Y	B
		U			
N			O		
		Y			
	B			T	

BOUNTY

	S				K
A		T			
N					
	N			A	
			H	T	

THANKS


























Y				U	
R		T			
	T			K	E
	K	U		T	

TURKEY



## THANKSGIVING SUM IT ALL UP

The sum of the objects in each row total the number to the right. The objects in each column add up to the sum at the bottom of each column. Only whole positive integers are used. What is the value of each object?

					15
					18
					17
					14
					12
19	15	16	13	13	



= \_\_\_\_\_



= \_\_\_\_\_



= \_\_\_\_\_



= \_\_\_\_\_



= \_\_\_\_\_

## THANKSGIVING CRYPTOFAMILY

Cryptograms are substitution codes. Each letter in the cryptogram stands for another letter in the alphabet. No letter represents itself or more than one letter. Find the hidden message in the cryptofamily.

**Cryptofamily 1** - Hint: words are associated with Thanksgiving:

LYKAXYVO

RHXFWQ

VCQBKGEWX

IXCUDWXXYWO

LKQVGHRZ

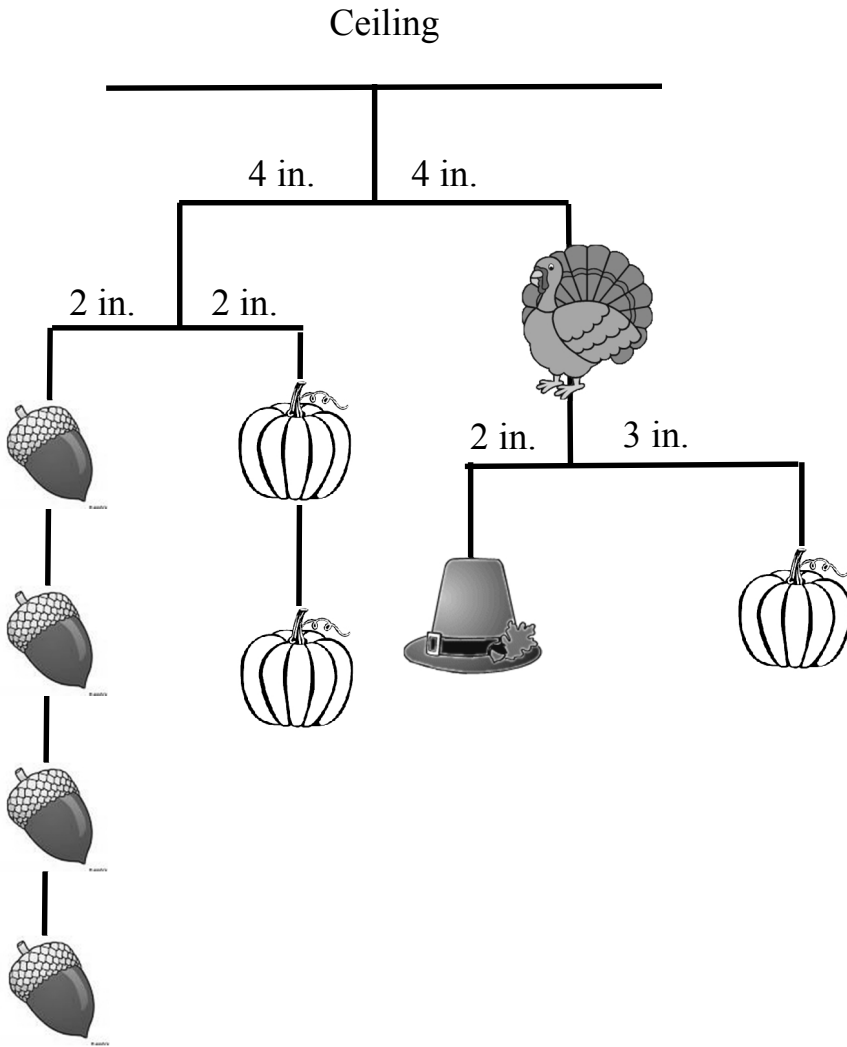
LHVLFYU LYW

UGJWVDWX




ORHBBYUA



# THANKSGIVING DECORATIONS

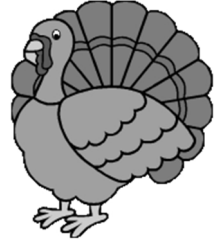


Amy is hanging decorations for her Thanksgiving dinner. If the pilgrim hat weighs 3 grams, can you determine the weight of each figure on the mobile so that all the objects are balance?

 = \_\_\_\_\_  
 = \_\_\_\_\_  
 = \_\_\_\_\_

## Holiday Helpers

Happy Holidays is a charity organization that provides meals for homeless families during the holidays. Many people donate food, such as turkeys, stuffing, and canned goods. Some people help by packing food in the warehouse and distributing the food. Others help by donating money. 500 people that helped Happy Holidays in the past were surveyed. They were asked if and how they helped this year.



4% of those surveyed were not able to help this year.

110 people helped in all three ways.

20 people donated money only, but were hoping to do more next year.

The number of people who donated food and money, but could not volunteer time was 10 less than 5 times the number of people who volunteered time and donated money.

220 people donated money and participated in at least one other way.

180 of the people surveyed did not volunteer their time.

100 people participated in only 1 way.

Using the information provided above, answer the following questions:

How many people did not donate money? \_\_\_\_\_

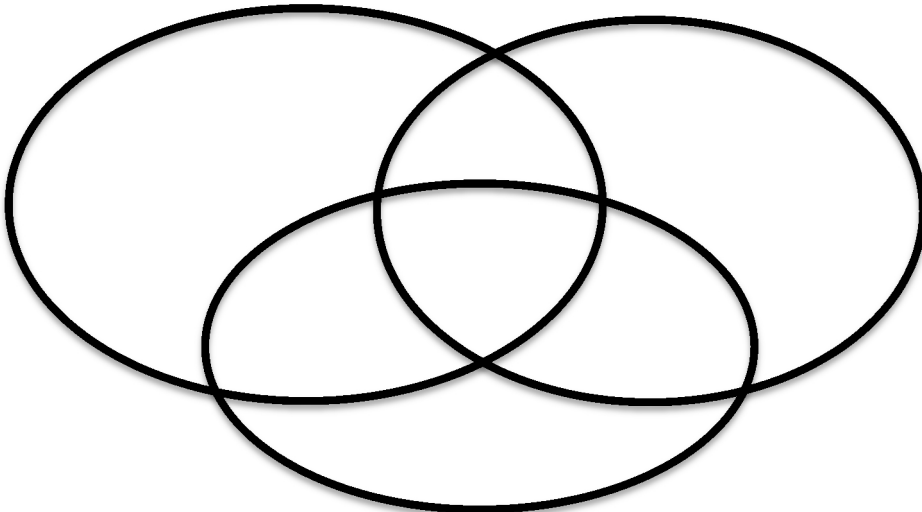
How many people donated food? \_\_\_\_\_

How many people donated food and volunteered their time but did not donate money? \_\_\_\_\_

What percentage of the people did not donate food? \_\_\_\_\_

What fraction of the people participated in more than one way? \_\_\_\_\_

Use the Venn diagram below to help you:



### Santa's Reindeer

Santa always leaves plans for his elves to determine the order in which the reindeer will pull his sleigh. This year, for the European leg of his journey, his elves are working with the following instructions, which will form a single line of nine reindeer:

1. Comet is behind Blitzen and Cupid, and in front of Dancer and Donder.
2. Blitzen is in front of Cupid, Donder, Vixen, and Dancer.
3. Donder is behind Vixen and Dancer, and in front of Dasher and Prancer.
4. Rudolph is behind Prancer, Cupid, Donder, Blitzen, and Dasher.
5. Prancer is immediately in front of Rudolph, and just behind Dasher.
6. Dasher is behind Donder, and in front of Prancer and Rudolph.
7. Vixen is in front of Dasher, Dancer, and Prancer, and is behind Comet.

Can you help the elves work out the order of the reindeer?

	1st	2nd	3rd	4th	5th	6th	7th	8th	9th
Blitzen									
Comet									
Cupid									
Dancer									
Dasher									
Donder									
Prancer									
Rudolph									
Vixen									



			5	4				
9		7						4
8			2	7			9	
1		3						
		5	6					
4			3		2	9	7	1
2	8				4	6		5
3		4		6				8
			1				4	

### Sudoku

Fill in the Sudoku so that every row, every column, and every box contains the digits from 1 to 9. No digits may be repeated in each row, column or box.

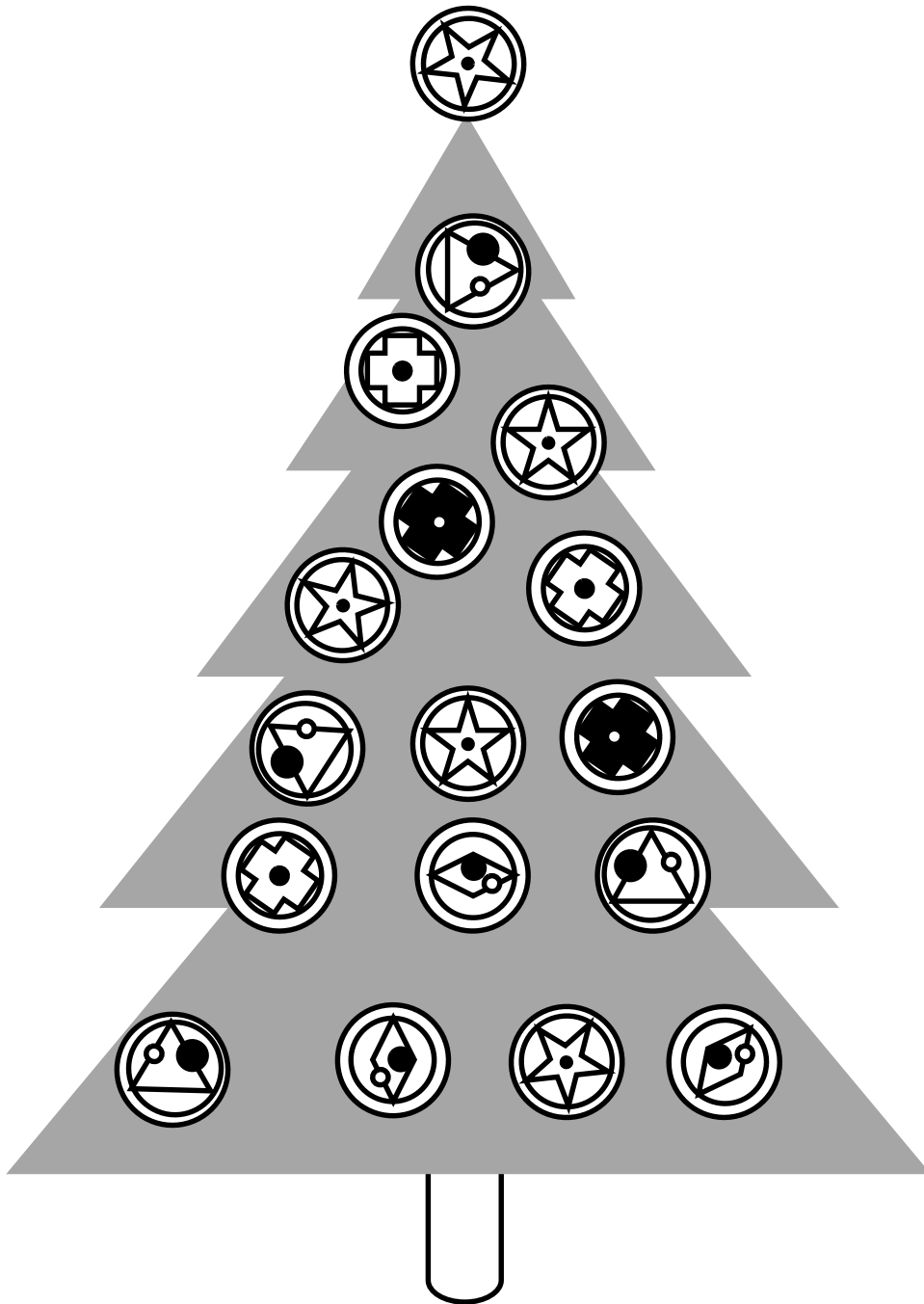
### Wordoku

Fill in the Wordoku so that every row, every column, and every box contains the letters in the word(s) listed below each puzzle.

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N		E	A		L		K	
K					E			L
	W	L			S	O		A
		N				L		E
			E	W	N			
S		W				K		
O		S	L			N	A	
E			S					F
	L		F		K	E		S

SNOWFLAKE



### The Ornament Tree

There is one ornament that does not follow the same pattern as the rest of the ornaments on the Christmas tree. Can you find the ornament that is different from the rest?

Circle the ornament that does not follow the same pattern.



## HOLIDAY CRYPTOGRAMS

Cryptograms are substitution codes. Each letter in the cryptogram stands for another letter in the alphabet. No letter represents itself or more than one letter. Find the hidden message in the cryptogram. Each cryptogram below uses a different substitution code.

**Cryptofamily 2** - words associated with the Christmas Season.



DVMCOCMT

GYCYQVDT

TBUGMCHG

VHOGDM KPGVMQ

IQPCJMWVJ MPGG

RGMQUGQG

RVRT ZGJBJ

JMFISCDEJ

**Cryptogram 1**

KQNUN RB WX SNKKNV KRVN KQJW WXF, KQRB ENUH LQURBKVJB

BNJBXW, OXU JTT XO DB KX UNMNMRLJKN XDUBNTENB KX KQN

YURWLRYTNB KJDPQK SH ANBDB LQURBK. RK RB KQN KRVN KX

TXEN KQN TXUM, XDU PXM, FRKQ JTT XDU QNJUK - JWM XDU

WNRQPSXU JB XDUBNTENB. - KQXVJB B. VXWBXW





## Christmas Word Problems

1. Thomas, Jenna, and Maria are playing a game. They have a bag that contains 44 green Christmas ribbons and 2 red Christmas ribbons. Each player takes turns picking a ribbon at random and does not return the ribbon to the bag. The player who draws a red ribbon first is the winner. In the first round, Thomas goes first, then Jenna, and then Maria, and none of them draws a red ribbon. What is the probability that Thomas will win the game on his second turn?
2. Your music teacher has decided to randomly assign Christmas songs for the class to sing. The syllabus includes 2 country songs, 5 pop songs, 4 classic songs, and 3 instrumental songs (which you have to play on the kazoo!). What is the probability that you will be assigned a pop song and then an instrumental song?
3. How many different arrangements can be made with the letters in the word **ANGEL**?
4. Rudolph can fly 4800 km in 4 hours with the wind. The return trip against the same wind takes 5 hours. Find Rudolph's rate in with no wind and the rate of the wind.




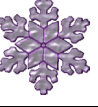
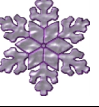

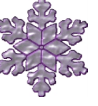
## Christmas KenKen

In this KenKen puzzle, the digits 1 through 7 appear exactly once in each row and column. Within the puzzle, the grid is divided into different shapes, shown by heavy outlines. Within each heavily outlined shape, use the indicated math operator (addition, subtraction, multiplication, or division) to find the solution indicated next to the math operator.

9+			19+		10+	
7+		2-				6-
9+	9+	2-		11+		
		3-		13+		
	9+		6-	3+		14+
18+		10+		2-		
	4			2-		

# Kakuro

Each row or column must add up to the the number provided above it or to the left. Numbers above the diagonals are sums of rows. Numbers below the diagonals are sums of columns. There are no zeros, and you may only use each digit 1 – 9 once in any given sum.

		23	4	24		3	6		42	3		26	13		17	7			
	4	18				4			11			4			13				
	17					3			8			9			10			34	
	12			12			9					16			7			3	17
				7	10			8				6			5			7	16
		11	17	10				10				5			24				
	17	17							12	17							5		
	22					20	3		7	16				17				11	
	11			17	4	17				9			3						
		27							16			11			7		7	17	16
			15				10			4			3			4	17		11
								10			23		3	27					17
			33	6					9			42	10				24	4	14
		10								39	7	13						19	
	16	9			17				24				7		3		7	12	
	26					4			5			12			11				
	17			12				6	12			7			5			6	23
		6			13						7				5			4	14
				16							16				4			4	
			13			6			12				3			20			
			8						8			16				7			13