

Question One:

SELL ALL SHARES OF MILWAUKEE RECORDING CORPORATION STOP WE HAVE HEARD ADVANCED COPIES OF THEIR NEWEST SINGER WHO IS ABYSMAL STOP SOUNDS LIKE A DUCK PLAYING THE BAGPIPES WHILE BEING RUN OVER BY A STEAMROLLER END OF MESSAGE

Question Two:

WE HAVE REASON TO BELIEVE THAT NORTH KOREAN AGENTS ARE PLANNING TO KIDNAP SEVERAL OF THE BEST WINE MAKERS IN FRANCE. THEY ARE PLANNING TO TAKE THEM BACK TO NORTH KOREA AND TO FORCE THEM TO ESTABLISH VINEYARDS FOR EXPORTING WINE.

Question Three:

CHIPPEWA
DIJQQFXB +1
EJKRRGYC +2
FKLSSHZD +3
GLMTTIAE +4
HMNUUJBF +5
INOVVKCG +6
JOPWWLDH +7
KPQXXMEI +8
LQRYYNFJ +9
MRSZZOGK +10 <-----
NSTAAPHL +11
OTUBBQIM +12
PUVCCRJN +13
QVWDDSKO +14
RWXEETLP +15
SXYFFUMQ +16
TYZGGVNR +17
UZAHHWOS +18
VABIIXPT +19
WBCJJYQU +20
XCDKKZRV +21
YDELLASW +22
ZEFMMBTX +23
AFGNLCUY +24
BGHOODVZ +25
CHIPPEWA +26 :)

Question Four:

Here is the list:

1. Petroleum Engineering
2. Physician Assistant Studies
3. Computer Science and Engineering
4. Mining Engineering
5. Chemical Engineering
6. Computer Engineering
7. Nuclear Engineering
8. Electrical and Computer Engineering
9. Electronics and Communications Engineering
10. Electrical Engineering

Question Five:

Someone is using an affine cipher, based on the following encryption function

$$c \equiv f(p) \equiv 17p + 19 \pmod{26}$$

Now find for me the ciphertext associated with the plaintext "MONTANA."

Please use the following alphabet mapping:

$$\left\{ \begin{array}{lllllll} \text{a} = 01 & \text{b} = 02 & \text{c} = 03 & \text{d} = 04 & \text{e} = 05 & \text{f} = 06 & \text{g} = 07 \\ \text{h} = 08 & \text{i} = 09 & \text{j} = 10 & \text{k} = 11 & \text{l} = 12 & \text{m} = 13 & \text{n} = 14 \\ \text{o} = 15 & \text{p} = 16 & \text{q} = 17 & \text{r} = 18 & \text{s} = 19 & \text{t} = 20 & \text{u} = 21 \\ \text{v} = 22 & \text{w} = 23 & \text{x} = 24 & \text{y} = 25 & \text{z} = 0 & & \end{array} \right.$$

For ease of grading, please put a box around your final answer.

Hint: Your ciphertext should be composed of letters, not numbers.

Plaintext = MONTANA

$$\begin{aligned} f(\text{"M"}) &= f(13) = (17)(13) + 19 = 240 = 6 + 234 = 6 + 9(26) \equiv 6 = \text{"F"} \\ f(\text{"O"}) &= f(15) = (17)(15) + 19 = 274 = 14 + 260 = 14 + 10(26) \equiv 14 = \text{"N"} \\ f(\text{"N"}) &= f(14) = (17)(14) + 19 = 257 = 23 + 234 = 23 + 9(26) \equiv 23 = \text{"W"} \\ f(\text{"T"}) &= f(20) = (17)(20) + 19 = 359 = 21 + 338 = 21 + 13(26) \equiv 21 = \text{"U"} \\ f(\text{"A"}) &= f(1) = (17)(1) + 19 = 36 = 10 + 26 = 10 + 1(26) \equiv 10 = \text{"J"} \\ f(\text{"N"}) &= f(14) = (17)(14) + 19 = 257 = 23 + 234 = 23 + 9(26) \equiv 23 = \text{"W"} \\ f(\text{"A"}) &= f(1) = (17)(1) + 19 = 36 = 10 + 26 = 10 + 1(26) \equiv 10 = \text{"J"} \end{aligned}$$

Final Answer = FNWUJWJ

Question Six:

TO HEADQUARTERS,

WE MUST IMPROVE THE HEALTH REQUIREMENTS FOR SECRET AGENTS, INCLUDING ALLERGIES. ONE NEW AGENT MANAGED TO CLIMB THROUGH THE SEWERS, THE BASEMENT, AND THE AIR DUCTS OF A RUSSIAN PRISON, AND WAS CAUGHT BECAUSE HE HAD A SNEEZING FIT.

Question Seven:

Ciphertext = JMPSNWJ

$$\begin{aligned}f(\text{"A"}) &= f(1) = (17)(1) + 19 = 36 = 10 + 26 = 10 + 1(26) \equiv 10 = \text{"J"} \\f(\text{"R"}) &= f(18) = (17)(18) + 19 = 325 = 13 + 312 = 13 + (12)(26) \equiv 13 = \text{"M"} \\f(\text{"I"}) &= f(9) = (17)(9) + 19 = 172 = 16 + 156 = 16 + 6(26) \equiv 16 = \text{"P"} \\f(\text{"Z"}) &= f(0) = (17)(0) + 19 = 19 = 19 + 0 = 19 + 0(26) \equiv 19 = \text{"S"} \\f(\text{"O"}) &= f(15) = (17)(15) + 19 = 274 = 14 + 260 = 14 + 10(26) \equiv 14 = \text{"N"} \\f(\text{"N"}) &= f(14) = (17)(14) + 19 = 257 = 23 + 234 = 23 + 9(26) \equiv 23 = \text{"W"} \\f(\text{"A"}) &= f(1) = (17)(1) + 19 = 36 = 10 + 26 = 10 + 1(26) \equiv 10 = \text{"J"}\end{aligned}$$

Final Answer = Plaintext = ARIZONA

Question Eight:

Four score and seven years ago our fathers brought forth on this continent a new nation, conceived in liberty, and dedicated to the proposition that all men are created equal. Now we are engaged in a great civil war, testing whether that nation, or any nation so conceived and so dedicated, can long endure. We are met on a great battlefield of that war.

Question Nine:

$$\begin{aligned}c &= 17p + 19 \\c - 19 &= 17p \\c - 19 + 26 &= 17p + 26 \\c + 7 &= 17p + 0 \\c + 7 &= 17p \\23(c + 7) &= (23)(17)p \\23c + 161 &= 391p \\23c + 5 + 156 &= (1 + 390)p \\23c + 5 + 6(26) &= (1 + 15(26))p \\23c + 5 &= 1p \\23c + 5 &= p = g(c)\end{aligned}$$

The final function is

$$p = g(c) = 23c + 5$$

but it can also be written

$$p = g(c) = 23c - 21$$

It is worth checking that

$$g(23) = 14 \quad g(21) = 20 \quad g(10) = 1$$

from question five. (Actually, checking any two distinct letters would suffice.)

Question Ten:

Corrientes es la ciudad mas antigua del nordeste de Argentina, y es la capital de la provincia Corrientes. Esta ciudad de 428 años esta situada a orillas del rio Parana, distante 50 km aguas abajo de la confluencia con el rio Paraguay. Ciudad administrativa, edilicia, universitaria y sanitaria, con gran auge en el turismo por sus atractivos naturales y culturales.