import math

# --- Part a) ---

A = set()

for i in range(1,1000):   # Interval: [1,1000) (Z+)

    last\_digits = (i//10 % 10)\*10 + i%10   # Get last two digits

    if i < 10:  # If single digit number

        last\_digits = i

    if last\_digits % 43 == 0:

        A.add(i)

# print(186 in A) # OK

# --- Part b) ---

B = set()

for i in range(1,1000):

    if i >= 10:

        k = math.floor(math.log10(i))   # Get power of 10 for i

        first\_digits = (i//10\*\*k)\*10 + (i//10\*\*(k-1)%10)    # Get 2 digits using k

    else:

        first\_digits = i

    if first\_digits % 24 == 0:

        B.add(i)

# print(72 in B)    # OK

# --- Part c) ---

C = set()

for x in A:

    C.add(x)

for x in B:

    C.add(x)

# OR

# C = A|B

# --- Part d) ---

D = set()

for x in C:

    if x in A and x in B:

        D.add(x)

# OR

# D = A&B

# --- Part e) ---

print(len(A) + len(B) == len(C) + len(D))

# --- Part f) ---

def cartesian(A, B):

    cartesian\_product = set()

    for i in A:

        for j in B:

            cartesian\_product.add((i,j))

    return cartesian\_product

# print(cartesian(set([1,2,3]), set(['a','b','c']))) OK

# --- Part g) ---

print(cartesian(D, set(['RED','YELLOW','GREEN'])))