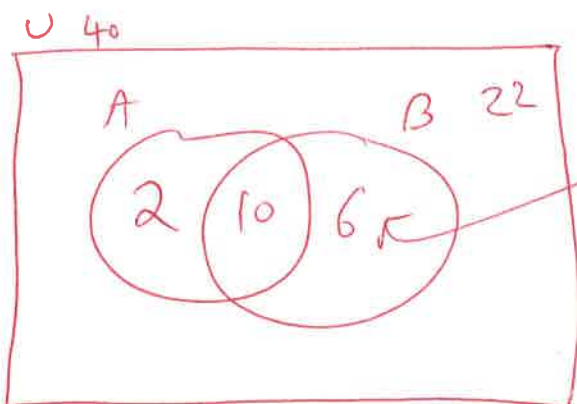# Finite Mathematics (Math 10120), Spring 2018

Quiz 1, Friday February 2

Name: SOLUTIONS

1. (5 pts) Let A and B be subsets of some universe set U. If $n(U) = 40$, $n(A \cap B) = 10$, there are 22 elements that are in neither A nor B, and there are 12 elements in A, then how many elements are there in B?

this is $40 - (22 + 2 + 10) = 6$

$n(B) = 10 + 6 = \boxed{16}$

2. (5 pts) How many different 4-letter "words" (including nonsense words) can be made from the letters

M A T H R U L E S

if one of the letters must be an M and no repetition is allowed?

(a) 5376
(b) 224
(c) 126
(d) 1344
(e) 504

Note one of the letters must be an M, which is different from saying that first letter must be an M.

M as first letter : $1 \times 8 \times 7 \times 6 = 336$
  put M in first slot, 2nd, 3rd, 4th

M as second letter : $1 \times 8 \times 7 \times 6 = 336$
  M in 2nd place, 1st, 3rd, 4th

M as third letter : 336, M as 4th letter : 336

Total : $336 + 336 + 336 + 336$