Math 200 - Quiz 4

September 29, 2010

Name ___key___

Score _____

Show all work to receive full credit. Supply explanations when necessary.

1. (2 points) Shade each of the following regions on a three-set Venn diagram.

   (a) $(A \cap C) \cup (A \cap B)$

   SEE ATTACHMENT.

   (b) $(\overline{A} \cap B) - C$

   SEE ATTACHMENT.

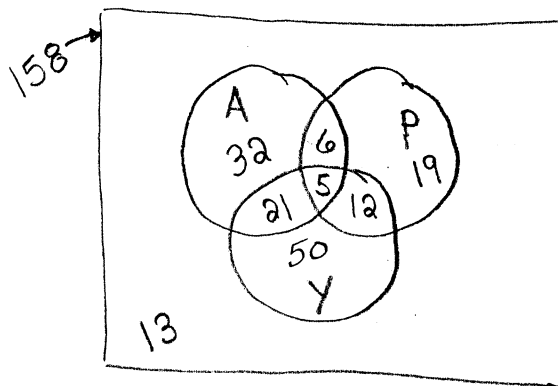2. (1 point) If A and B are sets, is it always true that $n(A - B) = n(A) - n(B)$? Explain.

   No. LET $A = \{a, b, c\}$ AND $B = \{c, d, e\}$

   $A - B = \{a, b\}$

   $N(A) = 3$, $N(B) = 3$, BUT $N(A - B) = 2$.

3. (2 points) 158 fitness buffs were asked about their exercise preferences.

   - ✗ 64 do aerobics
   - ✗ 42 do pilates
   - ✗ 88 do yoga
   - ✗ 11 do aerobics and pilates
   - ✗ 26 do aerobics and yoga
   - ✗ 17 do pilates and yoga
   - ✗ 5 do aerobics, pilates, and yoga

   (a) Use a three-set Venn diagram to organize this information.

   158→
   A 32 6 P 19
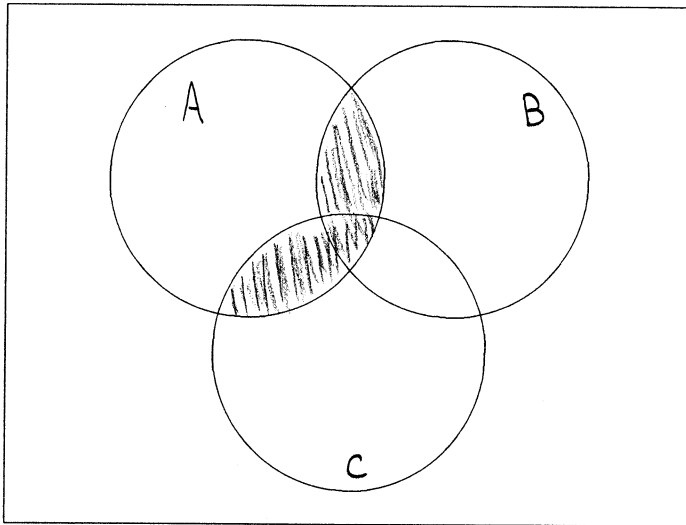   21 5 12
   50
   Y
   13

   (b) How many people surveyed do none of these fitness activities?

   $N(A \cup P \cup Y) = 32 + 6 + 19 + 21 + 5 + 12 + 50 = 145$
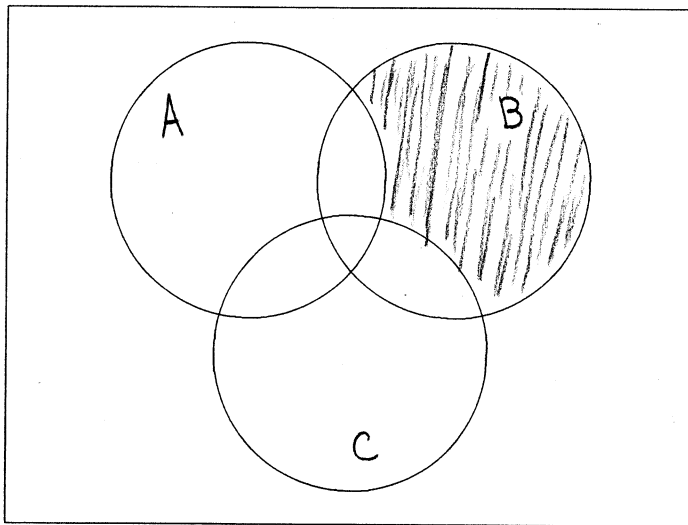
   $158 - 145 = \boxed{13}$

   13 DO NONE OF THESE.

#1a

$(A \cap C) \cup (A \cap B)$

#1b

$(\bar{A} \cap B) - C$