**Lab for Section 2.3** Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*Use good notation and show appropriate work. Write explanations in* ***complete sentences***.

1. (a)  (b) 75.348 ÷ 2.8 (c)  of 72



2. The two circles represent sets *A* and *B*. The dots inside the circles are the elements of the sets.
Find the cardinal numbers of these sets.

 (a) *n*(*A* ∩ *B*) = (b) *n*(*A* ∪ *B*) *=*

 (c)  = (d) *n*(*B* – *A*) =

3. Let *U* = {Amy, Bob, Cam, Dot, Eve, Fred, Gabi}. Let *M* be the set of those taking mathematics and *S* be the set of those taking Spanish. Place each name in the appropriate region in the Venn Diagram.

*M* = {Cam, Dot, Fred}

*S* = {Bob, Cam}

4. Given *U* = { *x*: *x* is a letter in the alphabet}, *A* = {*x*: *x* is a letter in astronomy},
*B* = {*x*: *x* is a letter in biology}, and *C* = {*x*: *x* is a letter in chemistry}.

 (a) Example: *A* ∩ *B* = {a, s, t, r, o, n, m, y} ∩ {b, i, o, l, g, y} = {o, y}

 (b) *A* ∩ *C* (c) *A* ∪ *C* (d) *B* ∩ ∅

 (e) ∅∪ *B* (f) *A* – *B* (g) *A* ∪ *U*

 (h) *B*ʹ ∩ *C*ʹ (i) (*C* ∪ *B*)ʹ (j) *A* – (*B* ∪ *C*)

 (k) (*A* ∩ *B*) × (*A* ∩ *C*)

5. Name the shaded region using the letters *A* and *B*, and the set operations.

*U*

*A*

*B*

6. A student club has eight members listed below.

Name Class Major . (a) List the set of students that are juniors and

Abe Junior Music majoring in music.

Ben Sophomore Psychology

Cal Sophomore International Studies

Dot Junior Psychology

Eve Sophomore Music (b) List the set of students that are juniors or

Fred Junior International Studies majoring in psychology.

Gabi Junior Psychology

Hank Junior Music

(c) Let *J* = {*x: x* is a junior}. (d) Let *P =* {*x: x* is majoring in psychology}.
Write the set *J* in roster notation. Write the set *P* in roster notation.

(e) Let *M =* {*x: x* is majoring in music}. (f) Write the set from part (b) using an operation

 Write the set *M* in roster notation. on the sets *J* and *P*.

 (g) Find *n*(*J*), *n*(*P*), and *n*(*J* ∪ *P*). (h) Write the set from part (a) using an operation
 Why isn’t *n*(*J* ∪ *P*) = *n*(*J*) + *n*(*P*)? on the sets *J* and *M*.

(i) Write the set of students that are juniors and not music majors in roster notation. Write this set using an operation on the sets *J* and *M*.

(j) True or false: Abe ∈ *J* (k) True or false: {Abe} ∈ *J*

(l) True or false: {Abe, Dot} ⊆ *J*