BECA / Dr. Huson / IB Math SL
26 February 2018
Homework: Probability & review topics
Complete in space provided.   Name:
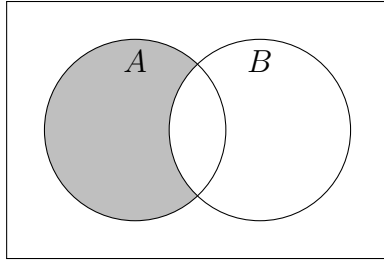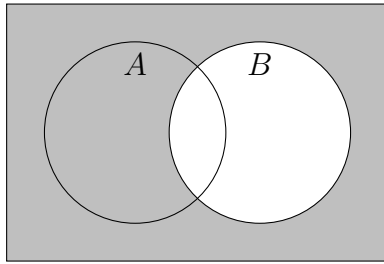
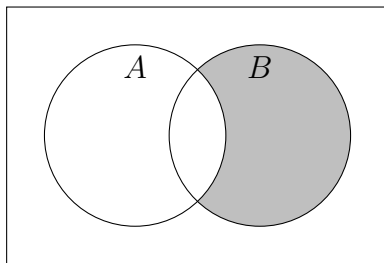1. For each Venn diagram, write an expression representing the shaded area.

   (a) For example, for this diagram

   Expression:

   (b)   Expression:

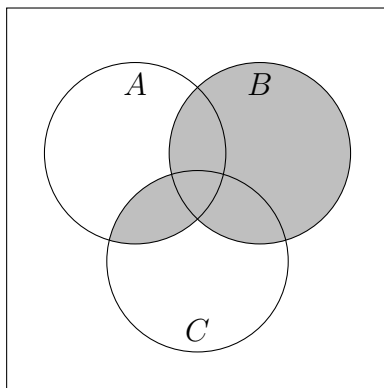   (c)   Expression:

   (d)   Expression:

2. Using a calculator, find how many sets of three elements can be selected from a set of 8, when order does not matter, i.e. $_8C_3$.

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3. Given:
   $U = \{$the letters in the alphabet$\}$
   $A = \{a, b, c, d, e, f, g, h, i, j\}$ $B = \{h, i, j, k, l, m, n, o, p, q\}$

   (a) What is $A \cap B$?

   (b) What is $(A \cup B)'$?

4. A survey question has three possible responses, A, B, and C. Among 100 surveys, the frequency of the answers collected were as follows: $n(A) = 10, n(B) = 35$, and $n(C) = 55$.

   (a) If a survey is selected at random, what this the probability the response was B or C?

   (b) What is the probability a survey selected at random was an answer other than B or C?

5. The events A and B are independent with $P(A) = 0.3$ and $P(B) = 0.2$.

   (a) What is $P(A \cap B)$?

   (b) What is $P(A \cup B)$?

6. The events A and B are mutually exclusive with $P(A) = 0.4$ and $P(B) = 0.3$.

   (a) What is $P(A \cap B)$?

   (b) What is $P(A' \cup B)$?

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7. The universal set U is defined as the set of positive integers less than 15. The subsets A and B are defined as follows:

   $A = \{\text{the even numbers}\}$

   $B = \{\text{prime numbers}\}$

   (note: Prime numbers have only themselves and one as factors. One is not considered a prime.)

   (a) List the members of A

   (b) List the members of B

   (c) Place the elements of A and B in the appropriate regions in the Venn diagram below.
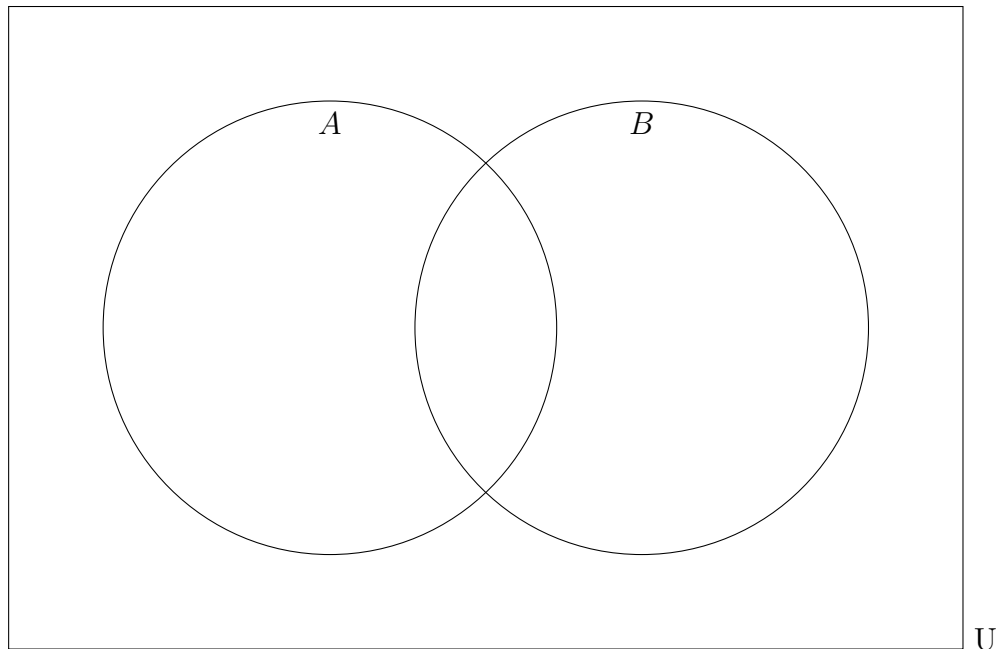
   (d) List the items in the set $(A \cup B)'$

   (e) If an element is selected at random, what is the probability that it is a member of the set $A \cap B$?

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8. Let $y = x^2 - 5x + 4$ and $2x + y = 4$

    (a) Rewrite quadratic in vertex form and state the vertex as an ordered pair.

    (b) Factor the quadratic function and write down its roots.

    (c) Graph the parabola, labeling it. Mark the intercepts and graph the axis of symmetry as a dotted line, labeling it with its equation.

    (d) Graph linear equation and label it with its name or equation.

    (e) Mark the intersections of the two equations as ordered pairs.