BECA / Dr. Huson / Algebra 2
28 February 2018
Quiz: Probability & set theory Name:

1. Given: The universal set is $U = \{red, white, blue, green, yellow\}$
   $A = \{red, white, blue\}$ $B = \{red, white, green\}$

   (a) What is $n(U)$?

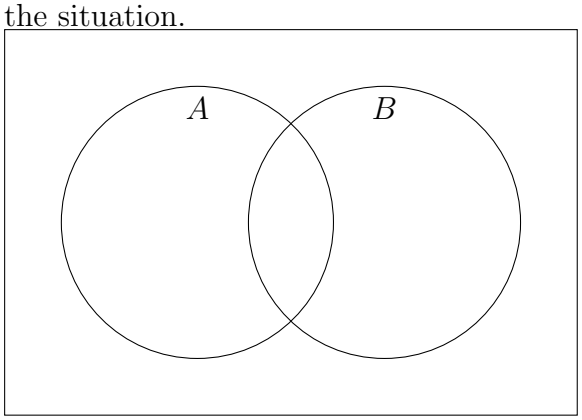
   (b) What is $A \cup B$?

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

2. The events A and B are mutually exclusive with $\mathrm{P}(A) = 0.4$ and $\mathrm{P}(B) = 0.5$. What is $\mathrm{P}(A \cap B)$?

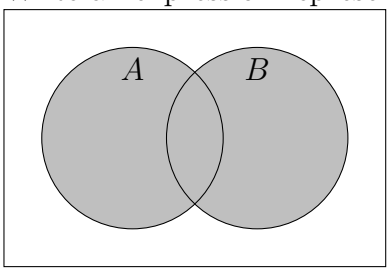
3. The events A and B are independent with $\mathrm{P}(A) = 0.4$ and $\mathrm{P}(B) = 0.25$.

   (a) Fill in the probability value for each area in the Venn diagram representing the situation.



   (b) What is $\mathrm{P}(A \cap B)$?

4. Write an expression representing the shaded area of the Venn diagram.



Expression:

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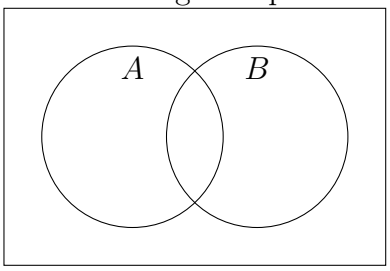
5. Shade the region representing $A \cap B$ in the Venn diagram.



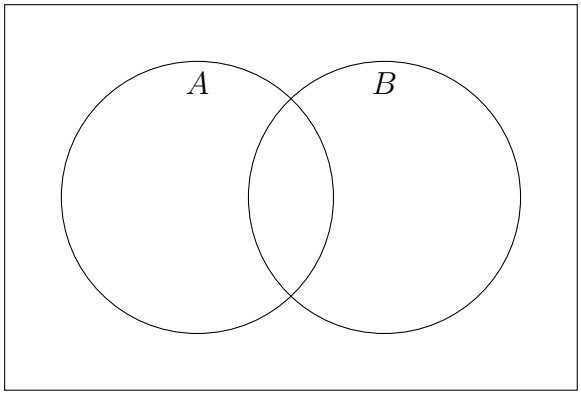
6. Using a calculator, find how many sets of 5 elements can be selected from a set of 22, when order does not matter, i.e. ${}_{22}\mathrm{C}_5$.

7. The universal set U is defined as the set of positive integers less than or equal to 9. The subsets A and B are defined as follows:
   $A = \{\text{integers that are multiples of 3}\}$
   $B = \{\text{prime numbers}\}$

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