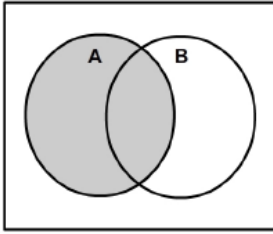


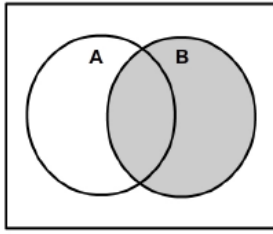
SM2 10.1: Events & Sample Spaces

Problems: Shade the area on the Venn Diagram that represents the given events.

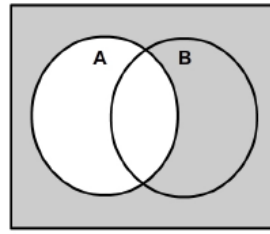
1) Event: A



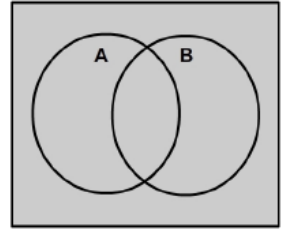
2) Event: B



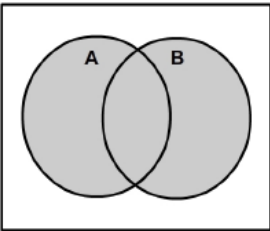
3) Event: A^c



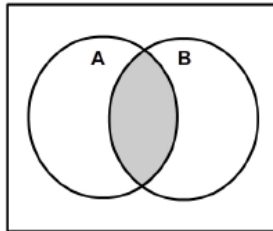
4) Event: S



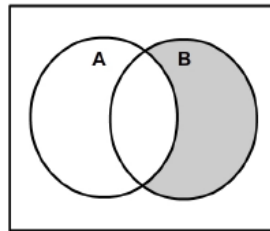
5) Event: $A \cup B$



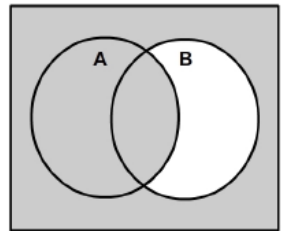
6) Event: $A \cap B$



7) Event: $A^c \cap B$

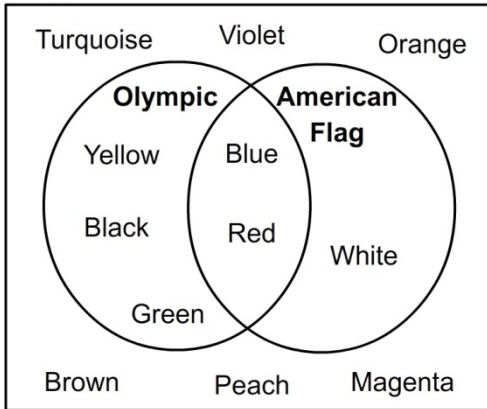


8) Event: $A \cup B^c$



Use the Venn Diagram to the right to answer questions 9-17:

Crayola Washable Paints



9) What is the sample space S ?

$S = \{\text{Turquoise, Violet, Orange, Yellow, Black, Green, Blue, Red, White, Brown, Peach, Magenta}\}$

10) What is the subset of Olympic colors? Call it Event O .

$O = \{\text{Yellow, Black, Green, Blue, Red}\}$

11) What is the subset of American Flag Colors? Call it Event A .

$A = \{\text{Blue, Red, White}\}$

12) What colors make up the event: $O \cup A$?

$\{\text{Yellow, Black, Green, Blue, Red, White}\}$

13) What colors make up the event: $O \cap A$?

$\{\text{Blue, Red}\}$

14) What colors make up the event: A^c ?

$\{\text{Turquoise, Violet, Orange, Yellow, Black, Green, Brown, Peach, Magenta}\}$

15) What colors make up the event: $O^c \cup A$?

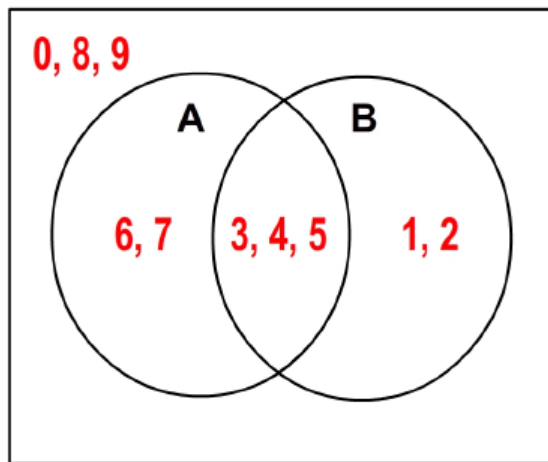
$\{\text{Turquoise, Violet, Orange, Blue, Red, White, Brown, Peach, Magenta}\}$

16) What colors make up the event: $O^c \cap A^c$?

$\{\text{Turquoise, Violet, Orange, Brown, Peach, Magenta}\}$

17) What colors make up the event: $\sim(O \cap A)$?

$\{\text{Turquoise, Violet, Orange, Yellow, Black, Green, White, Brown, Peach, Magenta}\}$



The Sample Space $S = \{0, 1, 2, 3, 4, 5, 6, 7, 8, 9\}$

Event $A = \{3, 4, 5, 6, 7\}$

Event $B = \{1, 2, 3, 4, 5\}$

18) Represent the sample space and events A and B in the Venn Diagram to the right. (Write the numbers where they belong)

19) List all the outcomes for $A \cup B$.

$\{1, 2, 3, 4, 5, 6, 7\}$

20) List all the outcomes for $A \cap B$.

$\{3, 4, 5\}$

21) List all the outcomes for A^c .

$\{0, 1, 2, 8, 9\}$

Choosing a single card from a typical deck of 52 cards made up of 4 suits (spades, clubs, hearts and diamonds) with 13 black spades, 13 black clubs, 13 red hearts and 13 red diamonds. Each suit has 3 face cards, a Jack, Queen and King. If you play cards you already know all this, if not, now you do.

Let $A = \{\text{draw a red card}\}$ Let $B = \{\text{draw a diamond}\}$ Let $C = \{\text{draw a face card}\}$

22) What cards would make up the event $A \cup B$?

A card that is red (Or a diamond or a heart)

23) What cards would make up the event $A \cap B$?

A card that is a diamond

24) What cards would make up the event $\sim A$?

A card that is black (Or a spade or a club)

25) What cards would make up the event $B \cap C$?

The King, Queen & Jack of Diamonds

26) What cards would make up the event $A^c \cap C$?

The King, Queen & Jack of Clubs and the King, Queen & Jack of Spades

27) What cards would make up the event $A^c \cap B$?

There are no cards that are both black and diamond

28) What cards would make up the event $A \cap B^c$?

A card that is a heart

29) What cards would make up the event $A^c \cap B^c$?

A card that is black (Or a spade or club)

30) What cards would make up the event $A^c \cup B^c$?

Any card that is not a diamond (Or a heart, a spade or a club)

BONUS: Draw a Venn Diagram of the 3 Events.

