

Given the following sets, determine whether each statement is true or false. Write out the word.

$U = \{a,b,c,d,e,f,g,h\}$ $A = \{a,c,d,e,g\}$ $B = \{b,e,f,g,h\}$ $C = \{a,e,g\}$

1. $A \subseteq B$ False 3. $f \in B$ True 5. $A = C$ False
 2. $C \subseteq A$ True 4. $g \notin A$ False 6. $\emptyset \subseteq B$ True

\uparrow empty set is a subset of all sets

Using the sets above, find...

7. $n(A \cup C) = \boxed{5}$ 8. $n(A \cap C) = \boxed{3}$ 9. $n(A^c) = \boxed{3}$

Given the following sets:

$U = \{1,2,3,4,5,6,7,8,9\}$ $A = \{1,2,3,4,5,6\}$ $B = \{2,4,6,8\}$

Find:

10. $A \cup B = \boxed{\{1,2,3,4,5,6,8\}}$ 12. $A \cap B^c = \boxed{\{1,3,5\}}$
 11. $A \cap B = \boxed{\{2,4,6\}}$ 13. $A^c \cap B = \boxed{\{8\}}$

$B^c = \{1,3,5,7,9\}$

$A^c = \{7,8,9\}$

14. How many 7 digit phone numbers are possible if the first and second digits cannot be a zero or one?

$\underline{8} \cdot \underline{8} \cdot \underline{10} \cdot \underline{10} \cdot \underline{10} \cdot \underline{10} \cdot \underline{10} = \boxed{6,400,000}$

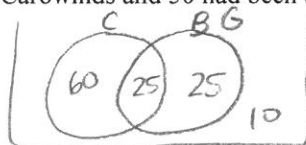
15. In a 52 card deck, are drawing an ace and drawing a red card mutually exclusive?

No! you can have an ace that is red.

16. Suppose you roll a pair of dice. Find the probability that:

Both dice show different numbers, and neither is a 3. $= \frac{20}{36} = \boxed{\frac{5}{9}}$
30 - 11

17. Out of a group of 120 students, 85 had been to Carowinds and 50 had been to Busch Gardens. 25 had been to both parks. Make a Venn Diagram for this.



- a. How many students have been to Carowinds, but not Busch Gardens? 60
 b. How many students have been to neither park? 10

18. How many possible ways are there to arrange all the letters in the word SENIORS? 2520

$\frac{7!}{2!}$

19. I am trying to recall my friend's 7 digit cell phone number and I know the first digit is a 4, and the last three digits are 123. How many phone numbers are there that meet these requirements? 1,000

$\underline{1} \cdot \underline{10} \cdot \underline{10} \cdot \underline{10} \cdot \underline{1} \cdot \underline{1} \cdot \underline{1} = 1,000$

20. A bank plans to assign an identification code to each account. Each code will have 2 digits that can't be the same and then 2 letters. How many different account numbers can be formed? 60,840

21. Draw a Venn Diagram and shade the appropriate area for $A \cap B \cap C^c$. $10 \cdot 9 \cdot 26 \cdot 26 = 60,840$

