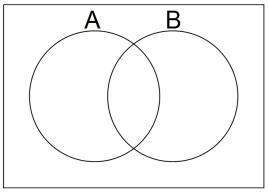
SM2H

Name:_____ Period:_____

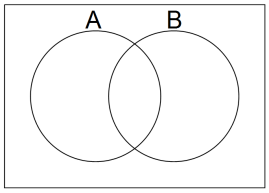
Unit 10 Review: Statistics and Probability

Shade the indicated regions on the Venn Diagram.

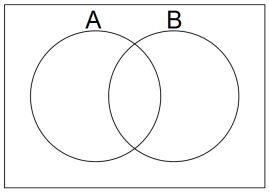
1. A



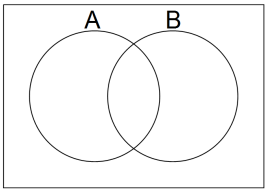
2. $A \cap B$



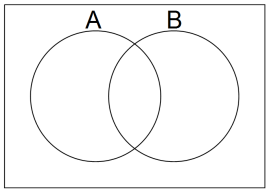
3. $A \cup B$



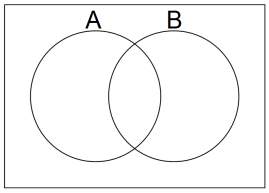
4. A^C



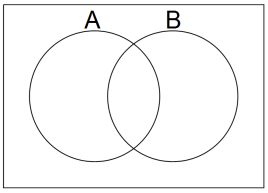
5. $(A \cap B)^C$



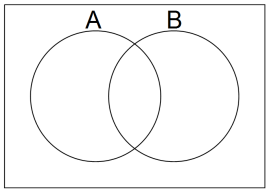
6. $(A \cup B)^C$



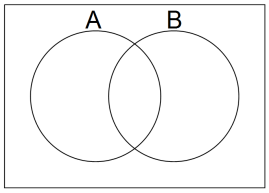
7. $A - B$



8. $A \cup B^C$

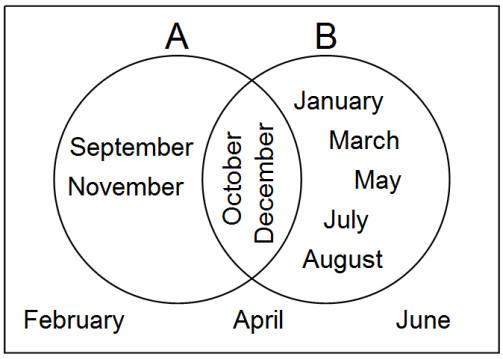


9. $B \cap A^C$



10. Use the Venn Diagram at the right to answer the following questions:

a. What is the sample space?



A = Months that end in "ber"
B = Months with 31 days

b. List the outcomes in A.

c. List the outcomes in B.

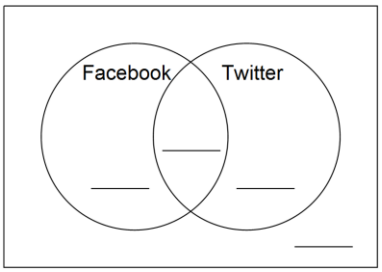
d. List the outcomes in A^C.

e. List the outcomes in $A \cup B$.

f. List the outcomes in $A \cap B$.

g. List the outcomes in $(A \cup B)^C$.

11. In a group of 100 students, 30 have Facebook accounts, 60 have Twitter accounts, and 20 have both Facebook and Twitter accounts.
    a. Fill in the Venn Diagram.



    b. What is the probability that a student chosen at random has a Facebook or Twitter account?

12. The table below shows the results of a survey that asked students whether they do chores and whether they receive an allowance. Fill in the table, then answer the questions. **Write each probability in symbols, then find the probability. Write the answers as simplified fractions.**

	Chores	**No Chores**	**Total**
Allowance	65	15	
No Allowance	20	30	
Total			

a. What is the probability that a student from the sample receives an allowance?

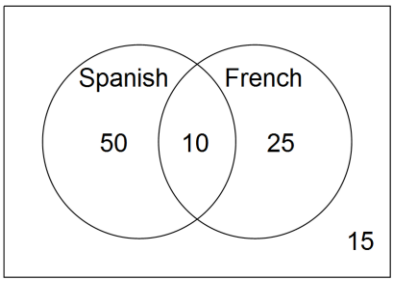
b. What is the probability that a student from the sample has chores *and* does not receive an allowance?

c. What is the probability that a student from the sample has no chores *or* receives an allowance?

d. What is the probability that a student who has chores receives an allowance?

e. What is the probability that a student has no chores *given that* the student does not receive an allowance?

13. The Venn Diagram below deals shows how many members of a foreign-language club speak Spanish and/or French. **Express all probabilities as percentages.**



a. $P(\text{Spanish})$ b. $P(\text{French})$ c. $P(\text{Spanish} \cap \text{French})$

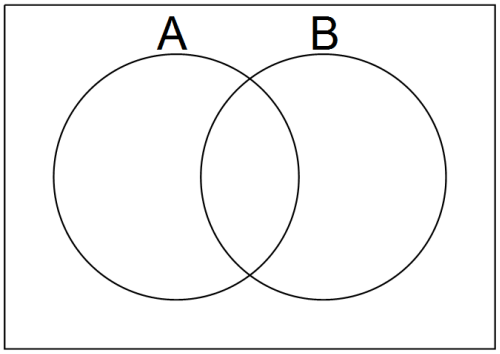
d. $P(\text{Spanish} \cup \text{French})$ e. $P(\text{Spanish} \mid \text{French})$ f. $P(\text{French} \mid \text{Spanish})$

g. $P(\text{not Spanish} \mid \text{not French})$ h. $P(\text{not French} \mid \text{Spanish})$ i. $P(\text{French} \mid \text{not Spanish})$

14. Sample Space: $S = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$

Subset $A = \{2, 4, 6, 8, 10\}$
Subset $B = \{3, 4, 5, 6, 7\}$

a) Fill in the Venn Diagram.



b) List the outcomes in $A \cup B$.

c) List the outcomes in $A \cap B$.

d) List the outcomes in $A - B$.

e) List the outcomes in B^c.

15. A sample of students were asked whether or not they have their own car. The results are summarized below.

	Car	**No Car**	**Total**
Female	32	80	112
Male	38	95	133
Total	70	175	245

a) Find $P(\text{car})$

b) Find $P(\text{female} \cap \text{car})$

c) Find $P(\text{male} \cup \text{car})$

d) Find $P(\text{no car} \mid \text{female})$

e) Find $P(\text{male} \mid \text{no car})$

f) Find $P(\text{no car} \mid \text{male})$

Solve each problem. Show your work!

16. $5!$

17. $\frac{10!}{7!}$

18. $\frac{16!}{3!13!}$

19. $\frac{47!}{45!}$

20. ${}_8C_4$

21. ${}_{10}P_4$

22. $P(12, 7)$

23. $C(5, 5)$

24. How many different ways can the letters in the word GOALS be arranged?

25. How many different ways can the letters in the word CALCULATOR be arranged?

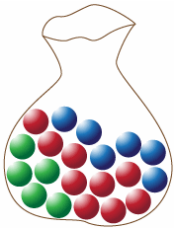
26. How many different ways can a 15 person soccer team be selected from a group of 25 students?

27. Ten students have taken a test in which the top three will get a prize. How many possible ways are there to get the prize winners?

28. Sarah needs to choose a password containing 5 numbers. How many possible passwords are there?

29. For a combo meal, you have a choice of 5 sandwiches, 4 soups and 8 drinks. How many different combo meals are possible?

30. A bag contains 5 green marbles, 9 red marbles, and 6 blue marbles. If a marble is chosen at random, what is the probability that the marble is:



a) red

b) blue

c) not green

d) green or blue

31. A card is drawn at random from a standard 52-card deck. What is the probability that the card drawn is:

a) a diamond

b) a 9

c) black

d) a 3 or a heart

e) a 3 and a heart

f) not a spade