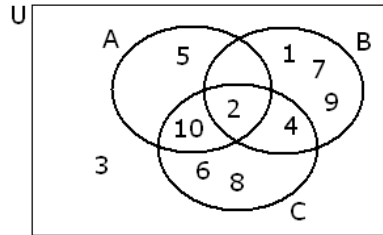


1. Let $U = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$, $A = \{2, 5, 10\}$, $B = \{1, 2, 4, 7, 9\}$, and $C = \{2, 4, 6, 8, 10\}$.

(a) (3 points) Draw a Venn diagram depicting these sets.



(b) (3 points) Find $(A \cup B) \setminus C = \{1, 5, 7, 9\}$

(c) (3 points) Find $(A \setminus C) \cup B = \{1, 2, 4, 5, 7, 9\}$

(d) (5 points) Find $(C \cap A')' \cap (A' \setminus C) = \{1, 3, 7, 9\}$

(e) (2 points) How many proper subsets does B have? 31

(f) (3 points) List all two-element subsets of C .

$\{2, 4\}$ $\{4, 6\}$ $\{6, 8\}$ $\{8, 10\}$
 $\{2, 6\}$ $\{4, 8\}$ $\{6, 10\}$
 $\{2, 8\}$ $\{4, 10\}$
 $\{2, 10\}$

(g) (1 point) Is it true that $A \cap B \subseteq A \cup B$? yes

2. (5 points) Suppose that X and Y are sets such that $n(X) = 11$, $n(Y) = 10$, and $n(X \cup Y) = 16$. Find $n(X \cap Y)$. 5

3. (5 points) Suppose that S is a set with $n(S) = 9$. Find the number of all subsets of S with

(a) 0 elements 1

(b) 1 elements 9

(c) 2 elements 36

(d) 3 elements 84

(e) 4 elements 126

(f) 5 elements 126

(g) 6 elements 84

(h) 7 elements 36

(i) 8 elements 9

(j) 9 elements 1

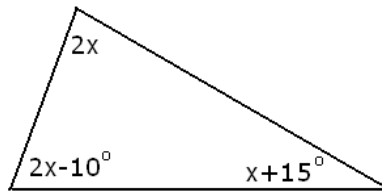
4. Consider a rectangle with sides 5 ft and 9 ft long.

(a) (2 points) Find the perimeter of the rectangle. Include units in your answer. $P = 28$ ft

(b) (3 points) Find the area of the rectangle. Include units in your answer. $A = 45$ ft²

5. Consider a right triangle with sides 8 ft, 15 ft, and 17 ft long.

- (a) (2 points) Find the perimeter of the triangle. Include units in your answer. $P = 40$ ft
- (b) (3 points) Find the area of the triangle. Include units in your answer. $A = 60$ ft²
6. (5 points) Find the measure of an inner angle in a regular polygon of 10 sides. 144°
7. (5 points) Find the value of x , based on the picture below. 35°



8. (4 points each)
- (a) Find 38% of 400. 152
- (b) 27% of a number is 81. Find this number. 300
- (c) 18 is what percent of 300? 6%
9. (4 points each) We borrowed \$ 2000, with a simple annual interest rate of 7%. How much do we have to pay back if we pay the full amount back
- (a) after one year? $\$ 2140$
- (b) after two years? $\$ 2280$
- (c) After six months? $\$ 2070$