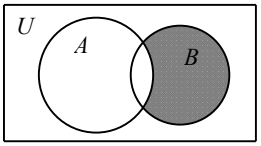
Hybleland L9-Lesson 19 Set II

Operation on Sets and Venn Diagram-Assignment

Practice 1.

If the complete set $U=\{1,2,3,4,5,6,7,8,9\}$, and $A=\{1,2,4,6\}, B=\{2,3,5\}$, then the shaded area in the Venn diagram shows the set of ( )



A．$\{3,5\}$　　B．$\{2\}$　　C．$\{1,4,6\}$　　D．$\{2,3,5,\}$

Practice 2.

If the set $A\bigcup B=B\bigcap C$, then the correct relation among sets A, B and C is ( )

A．$A\subseteq B\subseteq C$　　B．$C\subseteq B\subseteq A$

C．$B\subseteq C\subseteq A$　　D．$B\subseteq A\subseteq C$

Practice 3.

The number of elements in finite set S can be denoted as $card(S)$. If A and B are both finite sets, of the following statements:

① If $card(A\cup B)=card(A)+card(B)$, then $A\cap B=\varnothing$;

② If $A\subseteq B$, then $card(A)\leqslant card(B)$;

③ If $card(A)\leqslant card(B)$, then $A\subsetneq B$;

④ Only when $A=B$, $card(A)=card(B)$.

Which of the above is correct?

A．③④　　B．①②　　C．①④　　D．②③

Practice 4.

If A and B are 2 non-empty sets, define $A\times B=\{x|x\in A\cup B$ and $x\notin A\cap B\}$, given $A=\{x|0\le x\le 2\}$ and $B=\{y|y>1\}$, then $A\times B=$ ( )

A．$\{x|0\le x\le 1\}\cup\{x|x>2\}$　　B．$\varnothing$　　C．$\{x|0\le x\le 1\}$　　D．$\{x|0\le x\le 2\}$

Practice 5.

Given sets $A=\{y|y^2-1=0\}$ and $B=\{x|ax=1\}$, if $B\cap(\complement_R A)=\varnothing$, then the value set of real number a is ( )

A．$\varnothing$　　B．$\{-1,1\}$　　C．$\{0,-1,1\}$　　D．$\{1\}$

Practice 6.

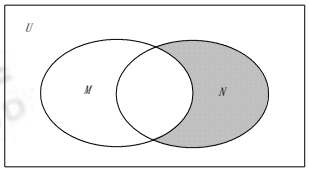
There are sets $A=\{x|x<-1$ or $x>5\}$，$B=\{x|a\le x<a+4\}$, if $A\supseteq B$, then the value range for real number a is _____.

Practice 7.

For any $x\in A$, if set A always satisfy $\frac{1}{x}\in A$, then A is called “harmonious set”. If $M=\left\{-1，0，\frac{1}{3}，\frac{1}{2}，2，3，4\right\}$, then among the non-empty subset of M, the number of “harmonious set” is _____.

Practice 8.

The shaded area in the *Venn* diagram below shows set _____. (write the answer with M 、 N 、 U and set operation signs.)



Practice 9.

Set $A=\{x|x^2-(a+3)x+3a=0\}$, and set $B=\{x|x^2-5x+4=0\}$. If the sum of all the elements in the set $A\cup B$ is 8, then the value set for real number a is _____.

A．3　　B．7　　C．8　　D．15

Practice 10.

Given complete set $U=\mathbf{R}$, $A=\{x\in\mathbf{R}|a\leqslant x\leqslant 2\}$, $B=\{x\in\mathbf{R}|2x+1\leqslant x+3$ and $3x\geqslant 2\}$

(1) If $a=1$, find $A\cup B$ and $(\complement_U A)\cap B$

(2) If $A\subseteq B$, find the value range of real number a.

Practice 11.

Given complete set $U=\mathbf{R}$, $A=\{x|x^2+ax-12=0\}$, and $B=\{x|x^2+bx+b^2-28=0\}$. If

$A\cap\complement_U B=\{2\}$, find the value of a and b.

Practice 12.

There are sets $A=\{x|x^2-3x+2=0\}$, $B=\{x|x^2-ax+a-1=0\}$ and $C=\{x|x^2-mx+2=0\}$. If $A\cup B=A$ and $A\cap C=C$, then find the value or value range of real numbers *a* and *m*.

Practice 13.

For non-empty sets *A* and *B*, define $A\oplus B=\{x\mid x\in A\bigcup B$, and $x\notin A\bigcap B\}$. Given $M=\{x\mid a<x<b\}$, $N=\{x\mid c<x<d\}$, among which a, b, c and d satisfy $a+b=c+d$, $ab<cd<0$, then $M\oplus N=$(　　)

A．$(a,\ d)\bigcup(b,\ c)$　　B．$(c,\ a]\bigcup[b,\ d)$

C．$(a,\ c]\bigcup[d,\ b)$　　D．$(c,\ a)\bigcup(d,\ b)$

Practice 14.

Use $\min\{x,\ y\}$ to represent the smaller one of the two numbers x,y, and $\max\{x,\ y\}$ to show the larger number of the two. If set $M=\{1,2,3,4,5,6,7,8,9,10\}$, and $S_1,\ S_2,\cdots S_k$ are subsets of *M* which contains exactly 2 elements. For any $S_i=\{a_i,\ b_i\}$, $S_j=\{a_j,\ b_j\}$ ($i\neq j,\ i,\ j\in\{1,2,\cdots k\}$), there is always $\min\left\{\frac{a_i}{b_i},\frac{b_i}{a_i}\right\}\cdot\max\left\{\frac{a_j}{b_j}\cdot\frac{b_j}{a_j}\right\}=1$, then the maximum value of *k* is (　)

A．2　　B．3　　C．4　　D．5

Practice 15.

At one hospital, there are 100 patients, all of whom have at least one of the following ailments: a cold, the flu, or an earache. 38 have a cold, 40 have the flu, and some number have earaches. If 17 have both colds and the flu, 10 have colds and earaches, 23 have the flu and earaches, and 7 have all three, how many have an earache?

Practice 16.

In one Berwyn high school, there are 75 students. If 30 students are studying Czech, 20 are studying Polish, 15 are studying German, 11 are studying Czech and Polish, 9 are studying Czech and German, 34 are not studying any language, and 4 are studying all three languages, then how many students are studying Polish and German?

Practice 17.

AMC10B 2005 / Problem 13

How many numbers between 1 and 2005 are integer multiples of 3 or 4 but not 12?

A. 501 B. 668 C. 835 D. 1002 E. 1169

Practice 18.

AMC10B 2017 / Problem 13

There are 20 students participating in an after-school program offering classes in yoga, bridge, and painting. Each student must take at least one of these three classes, but may take two or all three. There are 10 students taking yoga, 13 taking bridge, and 9 taking painting. There are 9 students taking at least two classes. How many students are taking all three classes?

A. 1 B. 2 C. 3 D. 4 E. 5

Practice 19.

AMC10A 2013 / Problem 17

Daphne is visited periodically by her three best friends: Alice, Beatrix, and Claire. Alice visits every third day, Beatrix visits every fourth day, and Claire visits every fifth day. All three friends visited Daphne yesterday. How many days of the next 365-day period will exactly two friends visit her?

A. 48 B. 54 C. 60 D. 66 E. 72

Practice 20.

Alex, Bob and Charlie are watering 100 flowerpots. Alex watered 76 pots, Bob watered 69 pots, and Charlie watered 85 pots. What is the maximum number of flowerpots have been watered three times?