

Name: .....

1. Write the following sentences using symbols.

- |  |  |
|--|--|
| (a) 6 is an element of set $A$           |  |
| (b) Set $P$ is a subset of set $Q$       |  |
| (c) The union of sets $X$ and $Y$        |  |
| (d) The intersection of sets $C$ and $D$ |  |
| (e) All elements not in set $L$          |  |
| (f) A set with no elements               |  |

2.  $A = \{1, 2, 3, 4, 5, 6\}$   
 $B = \{2, 4, 6, 8, 10\}$   
 $C = \{4, 5, 6, 7, 8, 9, 10\}$   
 $D = \{9, 10, 11\}$

Use these sets to find the following:

- |                |  |
|----------------|--|
| (a) $A \cap B$ |  |
| (b) $A \cup B$ |  |
| (c) $B \cap C$ |  |
| (d) $A \cap C$ |  |
| (e) $A \cup C$ |  |
| (f) $B \cap D$ |  |

3.  $\varepsilon = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12\}$   
 $P = \{2, 4, 6, 8, 10, 12\}$   
 $Q = \{1, 2, 3, 4, 5, 6\}$   
 $R = \{6, 7, 8, 9, 10, 11, 12\}$

Use these sets to find the following:

- |                  |  |
|------------------|--|
| (a) $P \cap R$   |  |
| (b) $P'$         |  |
| (c) $Q'$         |  |
| (d) $P' \cap Q'$ |  |
| (e) $Q' \cap R'$ |  |
| (f) $P' \cap R$  |  |

4. Find the following sets of numbers.

- (a) All even numbers between 0 and 20 that are factors of 36.
- (b) All odd numbers between 20 and 50 that are divisible by 3.
- (c) All numbers between 60 and 90 that are prime numbers or square numbers.

5. Write the symbol that represents each of the following sets of numbers.

- |                                   |  |
|-----------------------------------|--|
| (a) The set of real numbers       |  |
| (b) The set of rational numbers   |  |
| (c) The set of natural numbers    |  |
| (d) The set of whole numbers      |  |
| (e) The set of integers           |  |
| (f) The set of irrational numbers |  |

6. State if the following statements are true (T) or false (F).

- |  |  |  |
|--|--|--|
| (a) $Q \subset R$  | (b) $N \subset W$  | (c) $Z \subset I$  |
| <span style="border: 1px solid black; display: inline-block; width: 40px; height: 25px;"></span> | <span style="border: 1px solid black; display: inline-block; width: 40px; height: 25px;"></span> | <span style="border: 1px solid black; display: inline-block; width: 40px; height: 25px;"></span> |
| (d) $R \subset W$  | (e) $W \subset Z$  | (f) $N \subset Z$  |
| <span style="border: 1px solid black; display: inline-block; width: 40px; height: 25px;"></span> | <span style="border: 1px solid black; display: inline-block; width: 40px; height: 25px;"></span> | <span style="border: 1px solid black; display: inline-block; width: 40px; height: 25px;"></span> |
| (g) $6.5 \in Z$  | (h) $\sqrt{7} \in R$   | (i) $3\pi \in I$   |
| <span style="border: 1px solid black; display: inline-block; width: 40px; height: 25px;"></span> | <span style="border: 1px solid black; display: inline-block; width: 40px; height: 25px;"></span> | <span style="border: 1px solid black; display: inline-block; width: 40px; height: 25px;"></span> |
| (j) $-5.3 \in Q$   | (k) $-3.7 \in Z$   | (l) $8 \in W$  |
| <span style="border: 1px solid black; display: inline-block; width: 40px; height: 25px;"></span> | <span style="border: 1px solid black; display: inline-block; width: 40px; height: 25px;"></span> | <span style="border: 1px solid black; display: inline-block; width: 40px; height: 25px;"></span> |