

# MATHCOUNTS<sup>®</sup> Problem of the Week Archive

**Memorial Day – May 29, 2023**

## ***Problems & Solutions***

The distinct letters from the word MEMORIAL are used to create set Z, such that  $Z = \{M, E, O, R, I, A, L\}$ . The letters from the word DAY are used to create set Y, such that  $Y = \{D, A, Y\}$ . If set X is the intersection of sets Z and Y, what are the letters in set X?

*The intersection of two sets includes all the elements (or members) that are in both sets. So set  $X = \{A\}$ .*

If set V is the union of sets Z and Y from the previous problem, what letters are in set V?

*The union of two sets contains all the elements in both sets combined, thus set  $V = \{M, E, O, R, I, A, L, D, Y\}$ .*

If set S is the intersection of sets X and V from the previous problems and set T is the union of sets X and V, what letters are in sets S and T?

*Based on the definitions of intersection and union previously given, we see that  $S = \{A\}$  and  $T = \{M, E, O, R, I, A, L, D, Y\}$ .*

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If set V is the union of sets Z and Y from the previous problem, what letters are in set V?

If set S is the intersection of sets X and V from the previous problems and set T is the union of sets X and V, what letters are in sets S and T?