

**EXAMPLE 1** Let  $U = \{\text{letters in the alphabet}\}$

$$M = \{q, r, s, t, z\}, \quad N = \{s, p, o, t\}$$

Find  $M \cap N$ .

What members are common to both sets? Or another way of asking, which letters are in both set  $M$  and set  $N$ ? The intersection is  $\{s, t\}$ , so  $M \cap N = \{s, t\}$

**Example 2** Find  $A \cap B$ , if  $A = \{d, e, f, g\}$  and  $B = \{d, o, g\}$

Since we want to find the intersection, we are looking for elements common to both. So looking at the sets, which elements, if any, belong to both sets  $A$  and  $B$ ?

Hopefully, you noticed  $d$  and  $g$  are in both sets, therefore

$$A \cap B = \{d, g\}$$

**Example 3** Let  $U = \{\text{Adam, Bob, Carl, Diane, Elie, Flower, Gail, Helen, Irene}\}$

Glee Club =  $G = \{\text{Adam, Carl, Diane, Gail, Helen, Irene}\}$

Honor Society =  $HS = \{\text{Adam, Bob, Flower, Elie, Gail, Irene}\}$

Who belongs to both Honor Society and Glee Club?

**Example 4** Let  $U = \{a, b, c, d, e, f, g\}$

$A = \{d, e, f\}$     $B = \{a, b, c, d, e\}$    Find  $A \cap B$ ,