

**Solutions: §1.2. 2,8,10,15**

2.a

Let  $M(a) := a$  is a man, and  $T(a, b) := a$  is taller than  $b$ . Then the statement can be written  $M(x) \wedge M(y) \wedge (T(x, y) \vee T(y, x))$

b. Let  $B(a) := a$  has brown eyes and  $R(a) := a$  has red hair. Then, the statement can be written  $(B(x) \vee B(y)) \wedge (R(x) \vee R(y))$ .

c. Using the same notation as in b, we can rewrite the statement as  $(B(x) \wedge R(x)) \vee (B(y) \wedge R(y))$ .

4. a.  $\{x^2 | x \in \mathbb{Z}\}$ .

b.  $\{2^n | n \in \mathbb{N}\}$

c.  $\{x \in \mathbb{N} | x \geq 10\}$

8. a.  $\{3, 1\}$

b.  $\emptyset$

c.  $\{x \in \mathbb{R} | x^2 < 25\}$ .