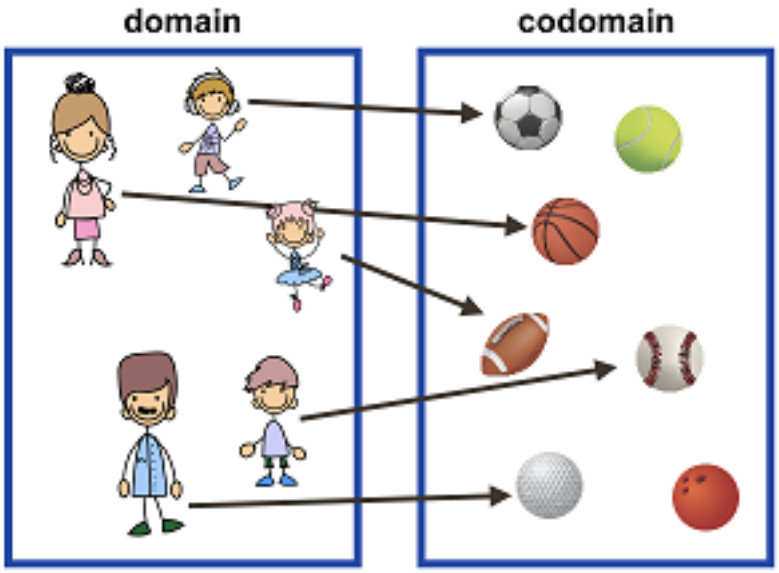
Definition 1. *The map below defines the* ***Ball*** *relation.*



The ***Ball*** *relation includes three sets:*

- *The domain consists of 5 family members identified in the map.*
- *The codomain consists of the 7 balls identified in the map.*
- *A set of ordered pairs. The pair (person, ball) is a member of the Ball relation if the person is connected to the ball with an arrow.*

Exercise 1 *How many items are in the domain of Ball?* $\boxed{5}$

Feedback (attempt): *5 family members.*

Exercise 2 *How many pairs are in Ball?* $\boxed{5}$

Feedback (attempt): *Each domain person is in a pair.*

Exercise 3 *Is Ball a well-defined function?*

Multiple Choice:

(a) *Yes* ✓

(b) *No*

Feedback (attempt): *Each domain person is associated with exactly one codomain ball.*

Exercise 4 *There are the same number of domain items as pairs in the Ball function.*

Multiple Choice:

(a) *True* ✓

(b) *False*

Feedback (attempt): *Each domain person is in exactly one pair.*

Definition 2. *A function is said to be* ***onto*** *if the range equals the codomain. In other words, if every item in the codomain appears as a partner in some pair.*

Exercise 5 *Is Ball an onto function?*

Multiple Choice:

(a) *Yes*

(b) *No* ✓

Feedback (attempt): *Some balls in the codomain are not included in function pairs, like the tennis ball.*
