

7) Determine if the given rule is a function, and if not, explain why.

a) People assigned to their biological fathers

function

b) Numbers assigned to the sums of their digits

function

c) Biological mothers assigned to their children

not a function

Biological Mothers may have more than one child.

8) A rental company charges a fee for \$50 for a high-power paint sprayer plus \$6 per hour. Let x be the number of hours the sprayer is rented and $c(x)$ be the total cost.

a) Write an equation for the cost $c(x)$ of renting the sprayer for x hours.

$$c(x) = 6x + 50$$

b) What is the cost of renting the sprayer for 14 hours.

$$c(14) = 6(14) + 50 = 84 + 50 = 134$$

9) For the universal set $U = \{0, 2, 4, 6, 8, 10, 12, 14, 16\}$ and the sets $A = \{8, 10, 12\}$, $B = \{2, 4, 6, 8, 10\}$, and $C = \{4, 6, 8\}$, list the elements in the following sets.

a) $A \cap B =$

$$\{8, 10\}$$

$$A' = \{0, 2, 4, 6, 14, 16\}$$

b) $A \cup B =$

$$\{2, 4, 6, 8, 10, 12\}$$

$$B' = \{0, 12, 14, 16\}$$

c) $A' \cap B' =$

$$\{0, 14, 16\}$$

$$(B \cap A)' = \{0, 2, 4, 6, 12, 14, 16\}$$

d) $C \cap (B \cap A)' =$

$$\{4, 6\}$$

10) Determine if each statement is true or false.

A) If set A is a subset of set B , then set A is never equal to set B .

False

B) A sequence may not be both arithmetic and geometric.

False

C) If A is a subset of B , then A is not a proper subset of B .

False

D) If sets A and B are disjoint, then $A \cap B = \{\emptyset\}$.

False