

**A.A.31: Set Theory 1: Find the intersection of sets (no more than three sets) and/or union of sets (no more than three sets)**

- 1 Given:  $M = \{\text{green, red, yellow, black}\}$   
 $N = \{\text{blue, green, yellow}\}$   
Which set represents  $M \cup N$ ?
  - 1)  $\{\text{yellow}\}$
  - 2)  $\{\text{green, yellow}\}$
  - 3)  $\{\text{blue, red, black}\}$
  - 4)  $\{\text{green, red, yellow, blue, black}\}$
- 2 Given:  $A = \{2, 4, 5, 7, 8\}$   
 $B = \{3, 5, 8, 9\}$   
What is  $A \cup B$ ?
  - 1)  $\{5\}$
  - 2)  $\{5, 8\}$
  - 3)  $\{2, 3, 4, 7, 9\}$
  - 4)  $\{2, 3, 4, 5, 7, 8, 9\}$
- 3 Given:  $A = \{3, 6, 9, 12, 15\}$   
 $B = \{2, 4, 6, 8, 10, 12\}$   
What is the union of sets  $A$  and  $B$ ?
  - 1)  $\{6\}$
  - 2)  $\{6, 12\}$
  - 3)  $\{2, 3, 4, 8, 9, 10, 15\}$
  - 4)  $\{2, 3, 4, 6, 8, 9, 10, 12, 15\}$
- 4 If  $A = \{1, 2, 3, 4, 5, 6, 7, 8\}$  and  
 $B = \{2, 4, 6, 8, 10, 12\}$ , the intersection of sets  $A$  and  $B$  is
  - 1)  $\{10, 12\}$
  - 2)  $\{2, 4, 6, 8\}$
  - 3)  $\{1, 3, 5, 7\}$
  - 4)  $\{1, 2, 3, 4, 5, 6, 7, 8, 10, 12\}$
- 5 If  $A = \{1, 2, 3, 4, 5, 6, 7, 8\}$  and  
 $B = \{2, 4, 6, 8, 10, 12\}$ , then the intersection of these two sets is
  - 1)  $\{10, 12\}$
  - 2)  $\{1, 3, 5, 7\}$
  - 3)  $\{2, 4, 6, 8\}$
  - 4)  $\{1, 2, 3, 4, 5, 6, 7, 8, 10, 12\}$
- 6 Given:  
Set  $A = \{(-2, -1), (-1, 0), (1, 8)\}$   
Set  $B = \{(-3, -4), (-2, -1), (-1, 2), (1, 8)\}$ .  
What is the intersection of sets  $A$  and  $B$ ?
  - 1)  $\{(1, 8)\}$
  - 2)  $\{(-2, -1)\}$
  - 3)  $\{(-2, -1), (1, 8)\}$
  - 4)  $\{(-3, -4), (-2, -1), (-1, 2), (-1, 0), (1, 8)\}$
- 7 Given:  $R = \{1, 2, 3, 4\}$   
 $A = \{0, 2, 4, 6\}$   
 $P = \{1, 3, 5, 7\}$   
What is  $R \cap P$ ?
  - 1)  $\{0, 1, 2, 3, 4, 5, 6, 7\}$
  - 2)  $\{1, 2, 3, 4, 5, 7\}$
  - 3)  $\{1, 3\}$
  - 4)  $\{2, 4\}$
- 8 Given:  $Q = \{0, 2, 4, 6\}$   
 $W = \{0, 1, 2, 3\}$   
 $Z = \{1, 2, 3, 4\}$   
What is the intersection of sets  $Q$ ,  $W$ , and  $Z$ ?
  - 1)  $\{2\}$
  - 2)  $\{0, 2\}$
  - 3)  $\{1, 2, 3\}$
  - 4)  $\{0, 1, 2, 3, 4, 6\}$

9 Given:  $X = \{1, 2, 3, 4\}$

$Y = \{2, 3, 4, 5\}$

$Z = \{3, 4, 5, 6\}$

What is the intersection of sets  $X$ ,  $Y$ , and  $Z$ ?

- 1)  $\{3, 4\}$
- 2)  $\{2, 3, 4\}$
- 3)  $\{3, 4, 5\}$
- 4)  $\{1, 2, 3, 4, 5, 6\}$

10 Given the following:

$A = \{\text{Charles, Kyle, Nakim, Jade}\}$

$B = \{\text{Charles, Jade, Alicia, Kyle}\}$

$C = \{\text{Kyle, Nakim, Jade, Dylan}\}$

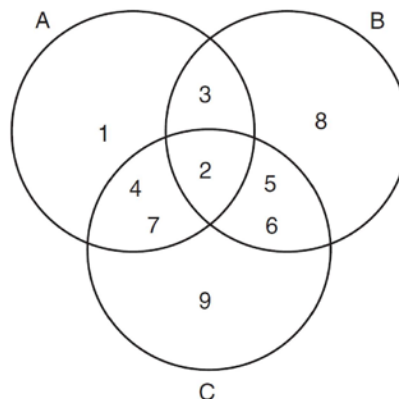
What is the intersection of sets  $A$ ,  $B$ , and  $C$ ?

- 1)  $\{\text{Kyle, Nakim}\}$
- 2)  $\{\text{Charles, Kyle}\}$
- 3)  $\{\text{Jade, Nakim}\}$
- 4)  $\{\text{Jade, Kyle}\}$

11 If  $A = \{0, 1, 3, 4, 6, 7\}$ ,  $B = \{0, 2, 3, 5, 6\}$ , and  $C = \{0, 1, 4, 6, 7\}$ , then  $A \cap B \cap C$  is

- 1)  $\{0, 1, 2, 3, 4, 5, 6, 7\}$
- 2)  $\{0, 3, 6\}$
- 3)  $\{0, 6\}$
- 4)  $\{0\}$

12 Which set represents the intersection of sets  $A$ ,  $B$ , and  $C$  shown in the diagram below?



- 1)  $\{3, 4, 5, 6, 7\}$
- 2)  $\{2\}$
- 3)  $\{2, 3, 4, 5, 6, 7\}$
- 4)  $\{1, 2, 3, 4, 5, 6, 7, 8, 9\}$

13 Given:  $A = \{1, 3, 5, 7, 9\}$

$B = \{2, 4, 6, 8, 10\}$

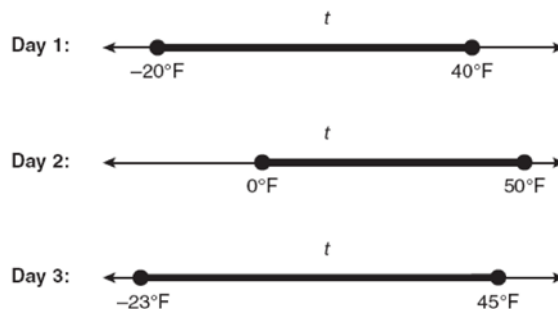
$C = \{2, 3, 5, 7\}$

$D = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$

What statement is *false*?

- 1)  $A \cup B \cup C = D$
- 2)  $A \cap B \cap C = \{\}$
- 3)  $A \cup C = \{1, 2, 3, 5, 7\}$
- 4)  $A \cap C = \{3, 5, 7\}$

14 Maureen tracks the range of outdoor temperatures over three days. She records the following information.



Express the intersection of the three sets as an inequality in terms of temperature,  $t$ .

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**Answer Section**

- |    |        |                 |
|----|--------|-----------------|
| 1  | ANS: 4 | REF: 061426ia   |
| 2  | ANS: 4 | REF: 011225ia   |
| 3  | ANS: 4 | REF: 061123ia   |
| 4  | ANS: 2 | REF: 011501ia   |
| 5  | ANS: 3 | REF: 061501ia   |
| 6  | ANS: 3 | REF: fall0710ia |
| 7  | ANS: 3 | REF: 061324ia   |
| 8  | ANS: 1 | REF: 011004ia   |
| 9  | ANS: 1 | REF: 011101ia   |
| 10 | ANS: 4 | REF: 081408ia   |
| 11 | ANS: 3 | REF: 061208ia   |
| 12 | ANS: 2 | REF: 081003ia   |

- 13 ANS: 3  
 $A \cup C = \{1, 2, 3, 5, 7, 9\}$

REF: 081221ia

- 14 ANS:  
 $0 \leq t \leq 40$

REF: 060833ia