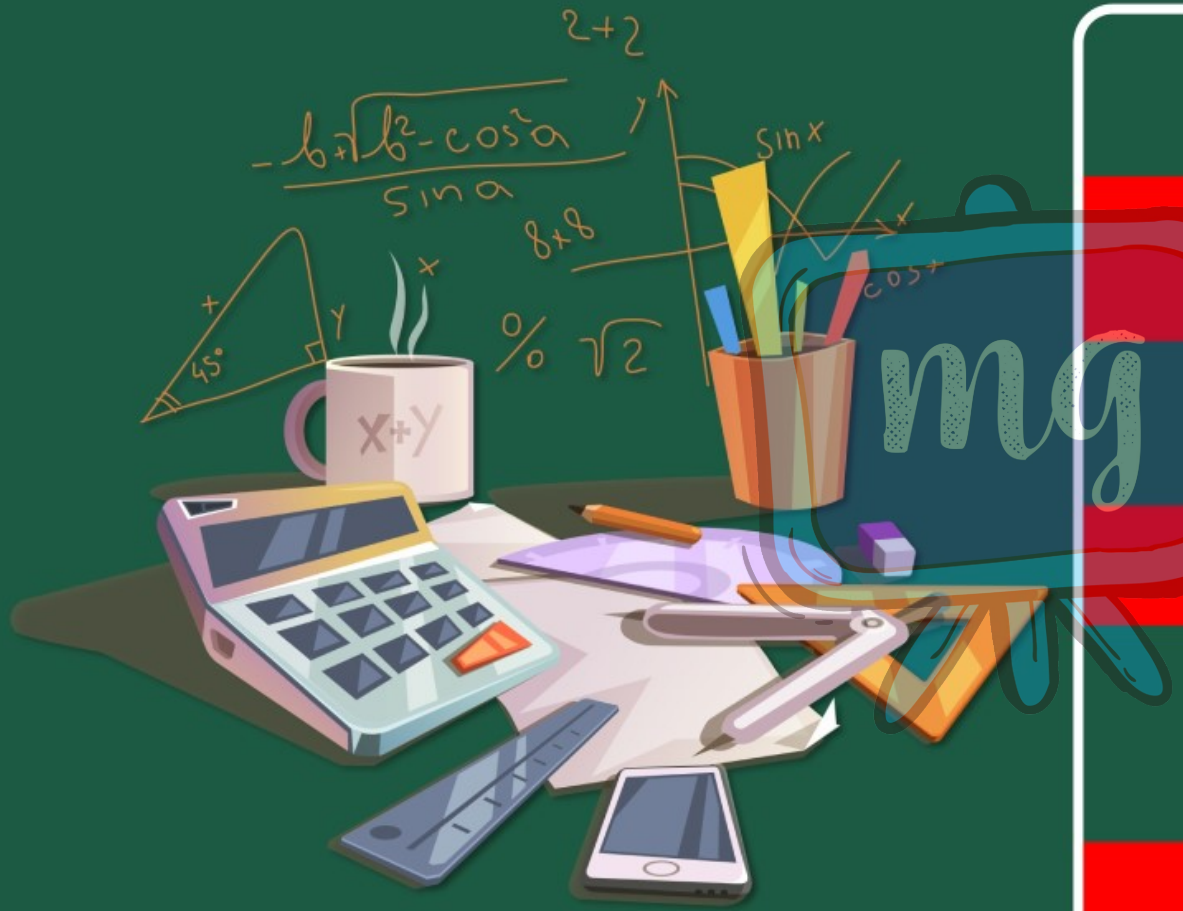
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कक्षा - 11

गणित

अध्याय – 1

समुच्चय

भाग – 9

प्रश्नावली 1.4 (1 से 6)

हर्ष गोयल

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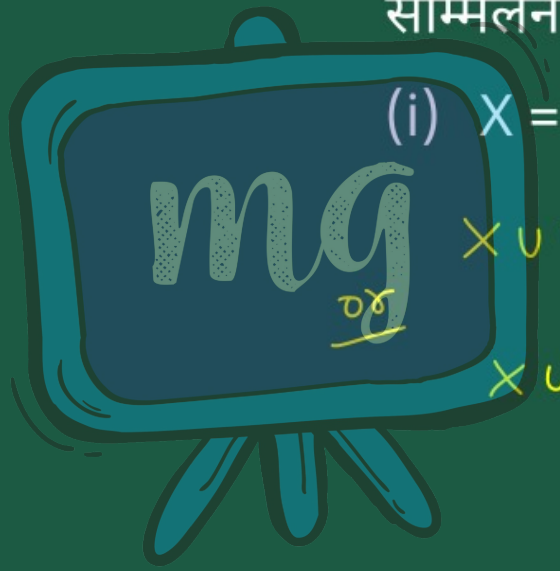
प्रश्नावली 1.4

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1. निम्नलिखित में से प्रत्येक समुच्चय युग्म का सम्मिलन ज्ञात कीजिए:

(i) $X = \{1, 3, 5\}, Y = \{1, 2, 3\}$



या

$X \cup Y = \{1, 3, 5, 2\}$

$X \cup Y = \{1, 2, 3, 5\}$

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(ii) A = {a, e, i, o, u}, B = {a, b, c}

$A \cup B = \{a, e, i, o, u, b, c\}$



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(iii) A = {x : x एक प्राकृत संख्या है और 3 का गुणज है}

B = {x : x संख्या 6 से कम एक प्राकृत संख्या है}



$A = \{3, 6, 9, 12, 15, \ldots\}$

$B = \{1, 2, 3, 4, 5\}$

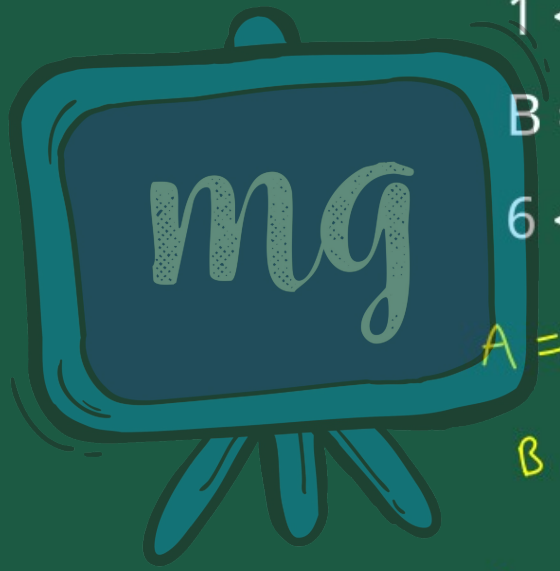
$A \cup B = \{1, 2, 3, 4, 5, 6, 9, 12, 15, 18 \ldots\ldots\}$

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(iv) $A = \{x : x$ एक प्राकृत संख्या है और $1 < x \leq 6\}$

$B = \{x : x$ एक प्राकृत संख्या है और $6 < x < 10\}$



$A = \{2, 3, 4, 5, 6\}$

$B = \{7, 8, 9\}$

$A \cup B = \{2, 3, 4, 5, 6, 7, 8, 9\}$

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(v) $A = \{1, 2, 3\}, B = \phi$

$A \cup B = \{1, 2, 3\}$



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2. मान लीजिए कि A = {a, b}, B = {a, b, c}. क्या $A \subset B$? $A \cup B$ ज्ञात कीजिए।



$A = \{a, b\}$

$B = \{a, b, c\}$

A का प्रत्येक अवयव B में है।

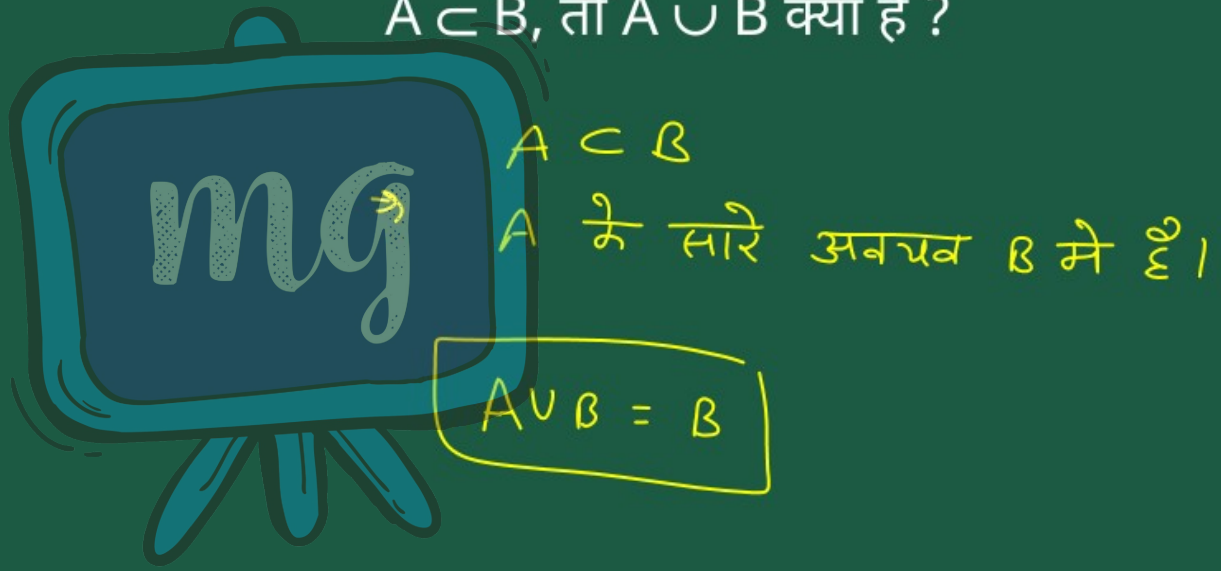
अतः $A \subset B$

$A \cup B = \{a, b, c\}$

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3. यदि A और B दो ऐसे समुच्चय हैं कि $A \subset B$, तो $A \cup B$ क्या है ?



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4. यदि A = {1, 2, 3, 4}, B = {3, 4, 5, 6},
C = {5, 6, 7, 8} और D = {7, 8, 9, 10}
तो निम्नलिखित ज्ञात कीजिए।

(i) $A \cup B$

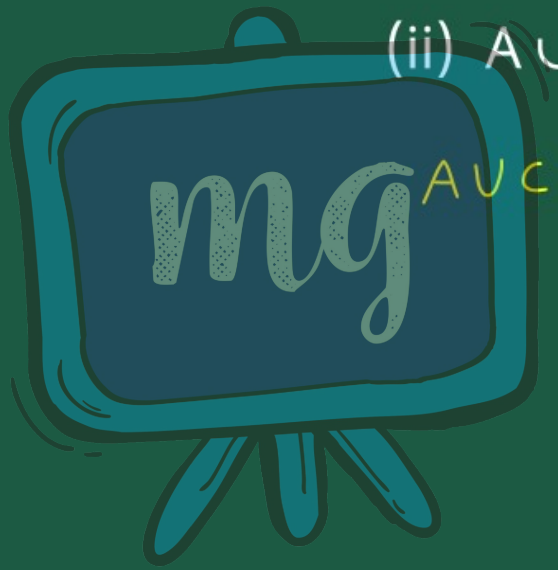
$A \cup B = \{1, 2, 3, 4, 5, 6\}$

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$A = \{1, 2, 3, 4\}, C = \{5, 6, 7, 8\}$

(ii) $A \cup C$



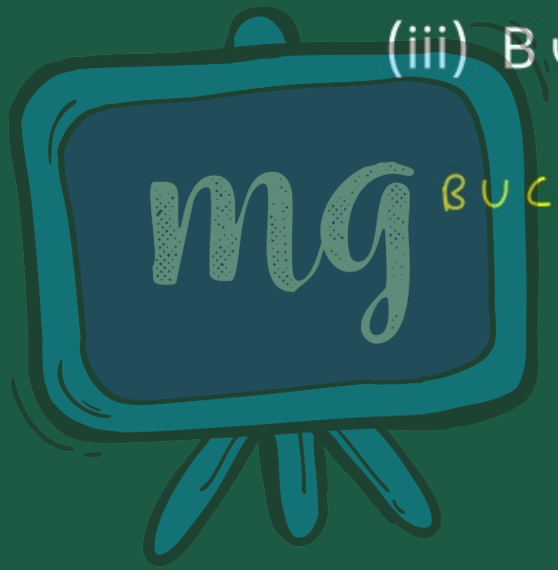
$A \cup C = \{1, 2, 3, 4, 5, 6, 7, 8\}$

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$B = \{3, 4, 5, 6\}, C = \{5, 6, 7, 8\}$

(iii) $B \cup C$



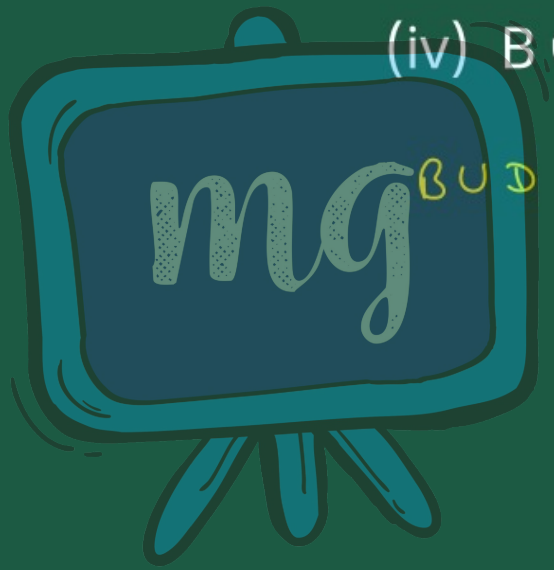
$B \cup C = \{3, 4, 5, 6, 7, 8\}$

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B = {3, 4, 5, 6}, D = {7, 8, 9, 10}

(iv) B ∪ D



B ∪ D = { 3, 4, 5, 6, 7, 8, 9, 10 }

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$A = \{1, 2, 3, 4\}, B = \{3, 4, 5, 6\},$

$C = \{5, 6, 7, 8\}$

(v) $A \cup B \cup C$

$B \cup C = \{3, 4, 5, 6, 7, 8\}$

$A \cup B \cup C = \{1, 2, 3, 4, 5, 6, 7, 8\}$

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$A = \{1, 2, 3, 4\}$, $B = \{3, 4, 5, 6\}$,

$D = \{7, 8, 9, 10\}$

(vi) $A \cup B \cup D$

$B \cup D = \{3, 4, 5, 6, 7, 8, 9, 10\}$

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

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B = {3, 4, 5, 6}, C = {5, 6, 7, 8}

D = {7, 8, 9, 10}

(vii) B ∪ C ∪ D



$C \cup D = \{5, 6, 7, 8, 9, 10\}$

$B \cup C \cup D = \{3, 4, 5, 6, 7, 8, 9, 10\}$

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A ∪ B

A ∩ B

5. प्रश्न 1 में दिए प्रत्येक समुच्चय युग्म का सर्वनिष्ठ समुच्चय ज्ञात कीजिए।

(i) X = {1, 3, 5}, Y = {1, 2, 3}

X ∩ Y = { 1 , 3 }

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(ii) A = {a, e, i, o, u}, B = {a, b, c}

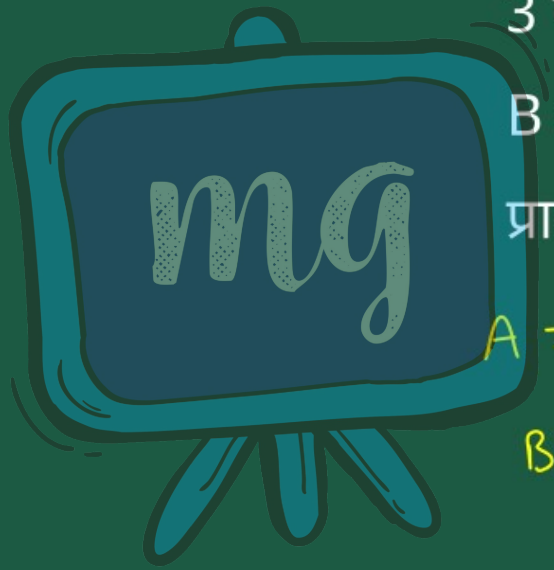


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(iii) A = {x : x एक प्राकृत संख्या है और 3 का गुणज है}

B = {x : x संख्या 6 से कम एक प्राकृत संख्या है}



$A = \{3, 6, 9, 12, 15 \ldots\ldots\}$

$B = \{1, 2, 3, 4, 5\}$

$A \cap B = \{3\}$

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(iv) $A = \{x : x$ एक प्राकृत संख्या है और $1 < x \leq 6\}$

$B = \{x : x$ एक प्राकृत संख्या है और $6 < x < 10\}$



$A = \{2, 3, 4, 5, 6\}$

$B = \{7, 8, 9\}$

$A \cap B = \{\} = \phi$

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(v) $A = \{1, 2, 3\}, B = \phi$

$A \cap B = \{\} = \phi$



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6. यदि A = {3, 5, 7, 9, 11 }, B = {7, 9, 11, 13},
C = {11, 13, 15} और
D = {15, 17}; तो निम्नलिखित ज्ञात कीजिए:

(i) $A \cap B$

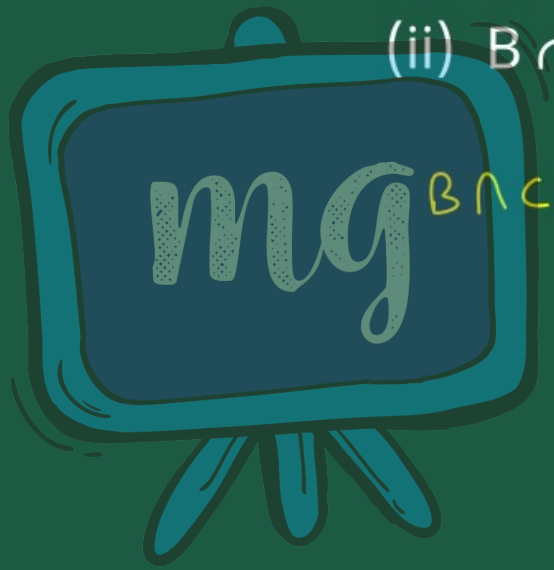
$A \cap B = \{7, 9, 11\}$

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$B = \{7, 9, 11, 13\}$, $C = \{11, 13, 15\}$

(ii) $B \cap C$



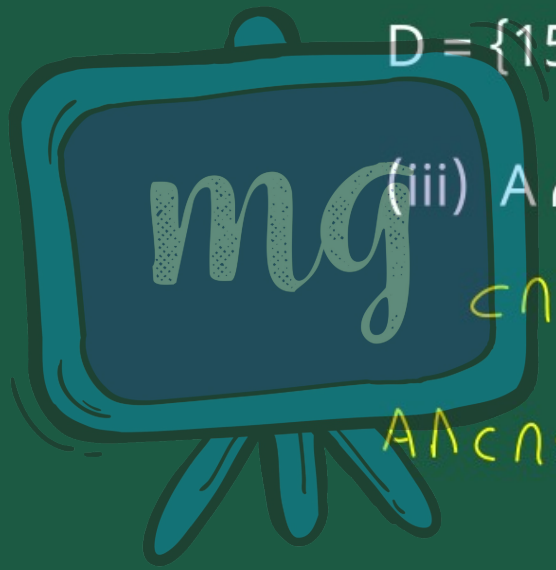
$B \cap C = \{11, 13\}$

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A = {3,5,7, 9, 11 }, C = {11, 13, 15},

D = {15, 17}



(iii) $A \cap C \cap D$

$C \cap D = \{15\}$

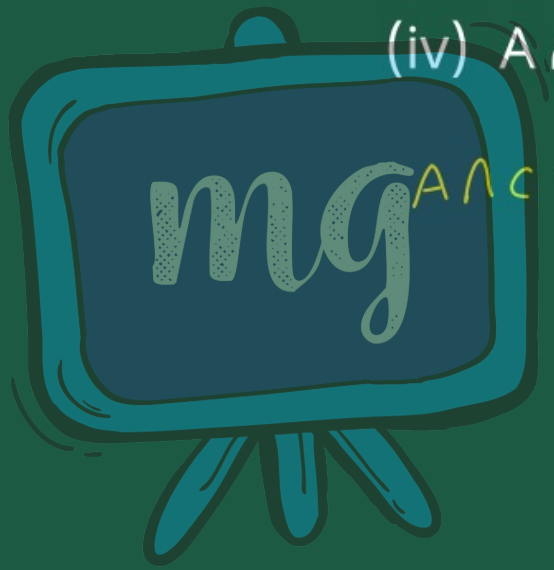
$A \cap C \cap D = \{\} = \phi$

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A = {3,5,7, 9, 11 }, C = {11, 13, 15}

(iv) $A \cap C$



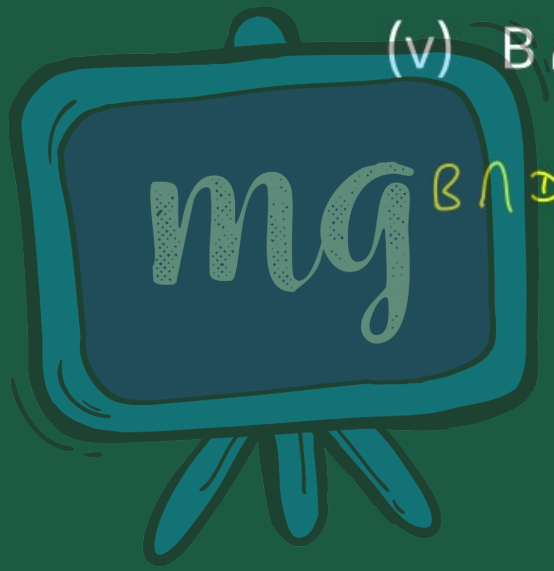
$A \cap C = \{11\}$

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B = {7, 9, 11, 13}, D = {15, 17}

(v) B ∩ D



B ∩ D = { } = ϕ

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$A = \{3,5,7,9,11\}$, $B = \{7, 9, 11, 13\}$,

$C = \{11, 13, 15\}$

(vi) $A \cap (B \cup C)$

$B \cup C = \{7, 9, 11, 13, 15\}$

$A \cap (B \cup C) = \{7, 9, 11\}$

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$A = \{3,5,7,9,11\}$, $D = \{15, 17\}$

(vii) $A \cap D$

$A \cap D = \{\} = \phi$



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$A = \{3,5,7, 9, 11\}$, $B = \{7, 9, 11, 13\}$,

$D = \{15, 17\}$

(viii) $A \cap (B \cup D)$

$B \cup D = \{7, 9, 11, 13, 15, 17\}$

$A \cap (B \cup D) = \{7, 9, 11\}$

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$A = \{3,5,7,9,11\}$, $B = \{7,9,11,13\}$,

$C = \{11, 13, 15\}$

(ix) $(A \cap B) \cap (B \cup C)$

$A \cap B = \{7, 9, 11\}$

$B \cup C = \{7, 9, 11, 13, 15\}$

$(A \cap B) \cap (B \cup C) = \{7, 9, 11\}$

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$A = \{3,5,7, 9, 11\}$, $B = \{7, 9, 11, 13\}$,

$C = \{11, 13, 15\}$, $D = \{15, 17\}$

(x) $(A \cup D) \cap (B \cup C)$

$A \cup D = \{3, 5, 7, 9, 11, 15, 17\}$

$B \cup C = \{7, 9, 11, 13, 15\}$

$(A \cup D) \cap (B \cup C) = \{7, 9, 11, 15\}$