

# 高校数 A

## 解答

p2

例1

集合, 要素

 $A = \{1, 2, 3, 6\}$ ,  $A = \{x/x \text{ は } 6 \text{ の正の約数}\}$ 

属する, /

有限集合, 無限集合

練習1	$\{2, 3, 5, 7, 11, 13\}$	$\{1, 2, 3, 6, 9, 18\}$
	$\{2, 3, 5, 7, 11, 13, 17, 19\}$	
	$\{1, 3, 5, 7, 9, 11\}$	$\{-3, 3\}$
	$\{0, 1, 2, 3, 4\}$	$\{2, 4, 6, 8, \dots, 90\}$
	$\{5, 10, 15, 20, \dots, 150\}$	
	$\{3, 6, 9, 12, \dots\}$	$\{2, 4, 6, 8, \dots\}$

練習2

p3

例2

部分集合, 含まれる, 含む

部分集合, 等しい, =

練習1	$\{1\}\{2\}\{1, 2\}$
	$\{3\}\{4\}\{5\}\{3, 4\}\{3, 5\}\{4, 5\}\{3, 4, 5\}$
	$\{6\}\{7\}\{6, 7\}$
	$\{7\}\{8\}\{9\}\{7, 8\}\{7, 9\}\{8, 9\}\{7, 8, 9\}$
	$\{a\}\{b\}\{a, b\}$
	$\{a\}\{b\}\{c\}\{a, b\}\{a, c\}\{b, c\}$
	$\{a, b, c\}$

練習2	$A \subset B$	$A \supset B$	$A = B$	$A \not\subset B$	$A \not\supset B$
	$A = B$	$A \subset B$	$A \supset B$	$A = B$	$A \not\subset B$
	$A \subset B$	$A \supset B$	$A = B$	$A \not\subset B$	$A \not\supset B$

p4

例3

共通部分, 和集合,

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

かつ, または

練習	$A \cap B = \{3, 5, 7\}$ , $A \cup B = \{1, 2, 3, 4, 5, 6, 7\}$
	$A \cap B = \{2, 4, 6\}$ , $A \cup B = \{1, 2, 3, 4, 6, 8\}$
	$A \cap B = \{1, 3, 5, 7\}$ , $A \cup B = \{1, 2, 3, 4, 6, 8\}$
	$A \cap B = \{2, 4\}$ , $A \cup B = \{1, 2, 4, 6, 8\}$
	$A \cap B = \{1, 2, 4\}$ , $A \cup B = \{1, 2, 3, 4, 6, 8, 12, 16\}$
	$A \cap B = \{7\}$ , $A \cup B = \{1, 2, 3, 5, 7, 9\}$
	$A \cap B = \{4, 6\}$ , $A \cup B = \{0, 2, 3, 4, 5, 6, 7, 8, 9\}$
	$A \cap B = \{0, 3\}$ , $A \cup B = \{0, 1, 2, 3, 6, 9\}$

p6

例4

 $U = \{1, 2, 3, 4, 5, 6, 7, 8, 9\}$ ,  $A = \{2, 4, 6, 8\}$ 全体集合, 補集合,  $\bar{A}$ ,  $\bar{A} = \{1, 3, 5, 7, 9\}$  $A \cap \bar{A} = \emptyset$ ,  $A \cup \bar{A} = U$ ,  $\bar{\bar{A}} = A$ 

練習1	$\{4, 5, 6\}$	$\{1, 2, 4, 6\}$	$\{3\}$
	$\{1, 2, 3, 5\}$	$\{1, 2\}$	$\{5\}$ , $\{4, 6\}$
	$\{1, 2, 4, 5, 6\}$	$\{4, 6\}$	$\{1, 2, 4, 5, 6\}$
練習2	$\{1, 3, 5, 7\}$	$\{1, 3, 4, 5, 8\}$	$\{2, 6\}$
	$\{2, 4, 6, 7, 8\}$	$\{4, 8\}$	$\{7\}$
	$\{1, 3, 5\}$	$\{1, 3, 4, 5, 7, 8\}$	
	$\{1, 3, 5\}$	$\{1, 3, 4, 5, 7, 8\}$	

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練習3	$\{1, 4\}$	$\{3, 4\}$	$\{2\}$	
	$\{1, 2, 3\}$	$\{3\}$	$\{1\}$	$\{4\}$
	$\{1, 3, 4\}$	$\{4\}$	$\{1, 3, 4\}$	
練習4	$\{3, 6, 7\}$	$\{2, 3, 5, 6\}$	$\{1, 4\}$	
	$\{1, 2, 4, 5, 7\}$	$\{2, 5\}$	$\{7\}$	
	$\{3, 6\}$	$\{2, 3, 5, 6, 7\}$	$\{3, 6\}$	
	$\{2, 3, 5, 6, 7\}$			
練習5	$\{1, 4, 6, 7\}$	$\{1, 3, 5, 6\}$	$\{2\}$	
	$\{2, 3, 4, 5, 7\}$	$\{3, 5\}$	$\{4, 7\}$	
	$\{1, 6\}$	$\{1, 3, 4, 5, 6, 7\}$		
	$\{1, 6\}$	$\{1, 3, 4, 5, 6, 7\}$		

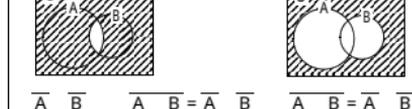
p7

例5

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

練習

例6



練習1	$\{1, 2, 3, 5, 6\}$	$\{1, 3\}$	$\{1, 3\}$
	$\{1, 2, 3, 5, 6\}$		

練習2	$\frac{A \cap B}{P \cap Q}$	$\frac{A \cap B}{A \cap B}$	$\frac{P \cap Q}{P \cap Q}$	$\frac{A \cap B}{P \cap Q}$
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p8

1	$\{2, 3, 5, 7\}$	$\{1, 2, 3, 4, 6, 12\}$
	$\{2, 3, 5, 7, 11, 13\}$	$\{1, 3, 5, 7, 9\}$
	$\{-4, 4\}$	$\{-1, 0, 1, 2, 3, 4, 5\}$
	$\{2, 4, 6, 8, \dots, 100\}$	$\{4, 8, 12, 16, \dots, 80\}$
	$\{2, 4, 6, 8, \dots\}$	$\{5, 10, 15, 20, \dots\}$
2	/	/
3	$\{2\}\{4\}\{2, 4\}$	
	$\{1\}\{3\}\{5\}\{1, 3\}\{1, 5\}\{3, 5\}\{1, 3, 5\}$	
	$\{3\}\{8\}\{3, 8\}$	
	$\{0\}\{4\}\{6\}\{0, 4\}\{0, 6\}\{4, 6\}\{0, 4, 6\}$	
	$\{x\}\{y\}\{x, y\}$	
	$\{x\}\{y\}\{z\}\{x, y\}\{x, z\}\{y, z\}\{x, y, z\}$	
4	$A \cap B$	
	$A \cap B$ $A \cap B$ $A \cap B$	

p9

5	$A \cap B = \{5, 7\}$	$A \cap B = \{1, 3, 4, 5, 6, 7, 8, 9\}$		
	$\{2, 4\}$ , $\{1, 2, 3, 4, 6, 8\}$	$\{1\}$ , $\{1, 2, 3, 5, 6\}$		
	$\{1, 3, 5\}$ , $\{1, 3, 5, 7, 15\}$			
	$\{3, 6\}$ , $\{2, 3, 4, 5, 6, 7, 9\}$			
6	$\{3, 4, 6\}$	$\{1, 2, 4, 7\}$	$\{5\}$	
	$\{1, 2, 3, 5, 6, 7\}$	$\{1, 2, 7\}$	$\{3, 6\}$	
	$\{4\}$	$\{1, 2, 3, 4, 6, 7\}$	$\{4\}$	
	$\{1, 2, 3, 4, 6, 7\}$			
7	$\{2, 3, 5\}$	$\{1, 2, 3, 6\}$	$\{4\}$	
	$\{1, 4, 5, 6\}$	$\{1, 6\}$	$\{5\}$	
	$\{2, 3\}$	$\{1, 2, 3, 5, 6\}$	$\{2, 3\}$	
	$\{1, 2, 3, 5, 6\}$			
8	$\frac{A \cap B}{P \cap Q}$	$\frac{A \cap B}{A \cap B}$	$\frac{P \cap Q}{P \cap Q}$	$\frac{A \cap B}{P \cap Q}$

p10

例1

$$\begin{aligned} 5 \quad n(A \cup B) &= 4 \\ n(A \cup B) &= n(A) + n(B) - n(A \cap B) \\ n(A \cap B) &= n(A) + n(B) \\ n(\bar{A}) &= n(U) - n(A) \end{aligned}$$

練習1	$\frac{A}{A} \frac{B}{B}$	$\frac{A}{A} \frac{B}{B}$	$\frac{A}{A} \frac{B}{B}$	$\frac{A}{A} \frac{B}{B}$
練習2	$\frac{P}{P} \frac{Q}{Q}$	$\frac{P}{P} \frac{Q}{Q}$	$\frac{P}{P} \frac{Q}{Q}$	$\frac{P}{P} \frac{Q}{Q}$

p11

練習3  $n(A) = 8$ 練習4  $22 - 3 = 19$ 個練習5  $9 + 7 - 3 = 13$      $18 - 9 = 9$      $18 - 13 = 5$ 

例2

$$\begin{aligned} 5 \quad & 7 \\ & 40 \div 8 = 5 \\ & 1 \text{から} 39 \text{までの中には} 39 \div 8 = 4 \dots 7 \text{で} 4 \text{個} \\ & 1 \text{から} 90 \text{までの中には} 90 \div 8 = 11 \dots 2 \text{で} 11 \text{個} \\ & \text{よって} 40 \text{から} 90 \text{までの中には} 11 - 4 = 7 \text{個} \end{aligned}$$

練習1  $100 \div 4 = 25$      $100 \div 5 = 20$      $100 \div 20 = 5$ 練習2  $70 \div 2 = 35$      $70 \div 3 = 23 \dots 1$ より23個 $70 \div 6 = 11 \dots 4$ より11個練習3  $60 \div 4 = 15$      $60 \div 6 = 10$      $60 \div 12 = 5$ 練習4  $90 \div 6 = 15$      $90 \div 8 = 11 \dots 2$ より11個 $90 \div 24 = 3 \dots 18$ より3個

p12

練習5  $59 \div 4 = 14 \dots 3$ ,  $90 \div 4 = 22 \dots 2$ ,  $22 - 14 = 8$  $59 \div 5 = 11 \dots 4$ ,  $90 \div 5 = 18$ ,  $18 - 11 = 7$  $59 \div 20 = 2 \dots 19$ ,  $90 \div 20 = 4 \dots 10$ ,  $4 - 2 = 2$ 練習6  $79 \div 6 = 13 \dots 1$ ,  $110 \div 6 = 18 \dots 2$ ,  $18 - 13 = 5$  $79 \div 4 = 19 \dots 3$ ,  $110 \div 4 = 27 \dots 2$ ,  $27 - 19 = 8$  $79 \div 12 = 6 \dots 7$ ,  $110 \div 12 = 9 \dots 2$ ,  $9 - 6 = 3$ 練習7  $49 \div 2 = 24 \dots 1$ ,  $60 \div 2 = 30$ ,  $30 - 24 = 6$  $49 \div 3 = 16 \dots 1$ ,  $60 \div 3 = 20$ ,  $20 - 16 = 4$  $49 \div 6 = 8 \dots 1$ ,  $60 \div 6 = 10$ ,  $10 - 8 = 2$ 練習8  $19 \div 6 = 3 \dots 1$ ,  $70 \div 6 = 11 \dots 4$ ,  $11 - 3 = 8$  $19 \div 8 = 2 \dots 3$ ,  $70 \div 8 = 8 \dots 6$ ,  $8 - 2 = 6$  $19 \div 24 = 0 \dots 19$ ,  $70 \div 24 = 2 \dots 22$ ,  $2 - 0 = 2$ 練習9  $29 \div 6 = 4 \dots 5$ ,  $100 \div 6 = 16 \dots 4$ ,  $16 - 4 = 12$  $29 \div 10 = 2 \dots 9$ ,  $100 \div 10 = 10$ ,  $10 - 2 = 8$  $29 \div 30 = 0 \dots 29$ ,  $100 \div 30 = 3 \dots 10$ ,  $3 - 0 = 3$ 

p13

例3

20	15	5	30	30	15
$60 \div 3 = 20$			$60 \div 4 = 15$		$60 \div 12 = 5$
$20 + 15 - 5 = 30$			$60 - 30 = 30$		$20 - 5 = 15$

練習1  $100 \div 4 = 25$      $100 \div 6 = 16 \dots 4$ より16 $100 \div 12 = 8 \dots 4$ より8 $100 - 33 = 67$      $25 + 16 - 8 = 33$  $100 - 33 = 67$      $25 - 8 = 17$ 練習2  $80 \div 2 = 40$      $80 \div 3 = 26 \dots 2$ より26 $80 \div 6 = 13 \dots 2$ より13 $80 - 53 = 27$      $40 + 26 - 13 = 53$  $80 - 53 = 27$      $40 - 13 = 27$ 練習3  $70 \div 4 = 17 \dots 2$ より17 $70 \div 20 = 3 \dots 10$ より3 $70 - 28 = 42$      $70 \div 5 = 14$  $70 - 28 = 42$      $17 + 14 - 3 = 28$  $70 - 28 = 42$      $17 - 3 = 14$ 

p14

練習4  $99 \div 6 = 16 \dots 3$ ,  $200 \div 6 = 33 \dots 2$ ,  $33 - 16 = 17$  $99 \div 8 = 12 \dots 3$ ,  $200 \div 8 = 25$ ,  $25 - 12 = 13$  $99 \div 24 = 4 \dots 3$ ,  $200 \div 24 = 8 \dots 8$ ,  $8 - 4 = 4$  $17 + 13 - 4 = 26$  $200 - 99 = 101$ ,  $101 - 26 = 75$  $17 - 4 = 13$ 練習5  $39 \div 3 = 13$ ,  $90 \div 3 = 30$ ,  $30 - 13 = 17$  $39 \div 4 = 9 \dots 3$ ,  $90 \div 4 = 22 \dots 2$ ,  $22 - 9 = 13$  $39 \div 12 = 3 \dots 3$ ,  $90 \div 12 = 7 \dots 6$ ,  $7 - 3 = 4$  $17 + 13 - 4 = 26$  $90 - 39 = 51$ ,  $51 - 26 = 25$  $17 - 4 = 13$ 練習6  $49 \div 6 = 8 \dots 1$ ,  $120 \div 6 = 20$ ,  $20 - 8 = 12$  $49 \div 9 = 5 \dots 4$ ,  $120 \div 9 = 13 \dots 3$ ,  $13 - 5 = 8$  $49 \div 18 = 2 \dots 13$ ,  $120 \div 18 = 6 \dots 12$ ,  $6 - 2 = 4$  $12 + 8 - 4 = 16$  $120 - 49 = 71$ ,  $71 - 16 = 55$  $12 - 4 = 8$ 

p15

練習7  $22 + 19 - 8 = 33$ 人     $40 - 33 = 7$ 人 $22 - 8 = 14$ 人練習8  $28 + 46 - 15 = 59$ 人     $80 - 59 = 21$ 人 $46 - 15 = 31$ 人練習9  $24 + 18 - 6 = 36$ 人     $50 - 36 = 14$ 人 $24 - 6 = 18$ 人練習10  $85 + 54 - 24 = 115$ 人     $200 - 115 = 85$ 人 $54 - 24 = 30$ 人

p16

$$1 \quad \frac{A}{A} \frac{B}{B} \quad \frac{A}{A} \frac{B}{B} \quad \frac{A}{A} \frac{B}{B} \quad \frac{A}{A} \frac{B}{B}$$

2  $80 \div 3 = 26 \dots 2$ より26     $80 \div 5 = 16$  $80 \div 15 = 5 \dots 5$ より53  $39 \div 4 = 9 \dots 3$ ,  $80 \div 4 = 20$ ,  $20 - 9 = 11$  $39 \div 10 = 3 \dots 9$ ,  $80 \div 10 = 8$ ,  $8 - 3 = 5$  $39 \div 20 = 1 \dots 19$ ,  $80 \div 20 = 4$ ,  $4 - 1 = 3$ 4  $90 \div 6 = 15$      $90 \div 8 = 11 \dots 2$ より11 $90 \div 24 = 3 \dots 18$ より3     $15 + 11 - 3 = 23$  $90 - 23 = 67$      $15 - 3 = 12$ 

p17

5  $29 \div 2 = 14 \dots 1$ ,  $70 \div 2 = 35$ ,  $35 - 14 = 21$  $29 \div 3 = 9 \dots 2$ ,  $70 \div 3 = 23 \dots 1$ ,  $23 - 9 = 14$  $29 \div 6 = 4 \dots 5$ ,  $70 \div 6 = 11 \dots 4$ ,  $11 - 4 = 7$  $21 + 14 - 7 = 28$  $70 - 29 = 41$ ,  $41 - 28 = 13$  $21 - 7 = 14$ 6  $59 \div 4 = 14 \dots 3$ ,  $110 \div 4 = 27 \dots 2$ ,  $27 - 14 = 13$  $59 \div 6 = 9 \dots 5$ ,  $110 \div 6 = 18 \dots 2$ ,  $18 - 9 = 9$  $59 \div 12 = 4 \dots 11$ ,  $110 \div 12 = 9 \dots 2$ ,  $9 - 4 = 5$  $13 + 9 - 5 = 17$  $110 - 59 = 51$ ,  $51 - 17 = 34$  $13 - 5 = 8$ 7  $78 + 56 - 40 = 94$      $100 - 94 = 6$      $56 - 40 = 16$ 

p18

例1

$$\begin{aligned} 4 \quad & 8 \quad 16 \\ & 2 \times 2 = 4 \quad 2 \times 2 \times 2 = 8 \quad 2 \times 2 \times 2 \times 2 = 16 \end{aligned}$$