

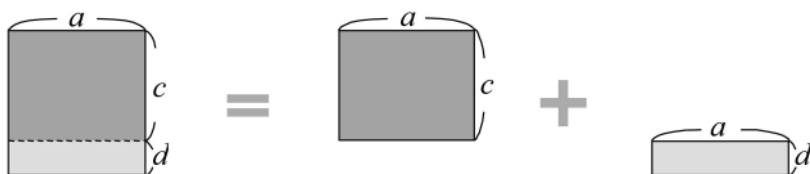


B3 1-1 乘法公式



概念 ① 分配律 $a(c+d)=ac+ad$

下圖的長方形中，長是 a 、寬是 $(c+d)$ ，面積表示成_____。



◎ $a(c+d)=$ _____ $+$ _____

〈例〉

$18 \times (100+2) =$ _____ $+$ _____ $=$ _____

☆筆記

① $\star \times (100+2) =$ _____

② $\square \times (100+2) =$ _____

③ $18 \times (100+2) =$ _____

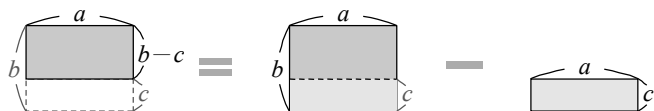
④ $\square \times (100+2) =$ _____



牛刀小試 1

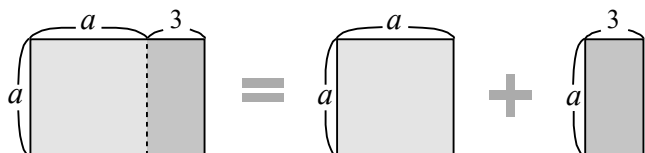
1. 利用分配律完成下列各式

(1)



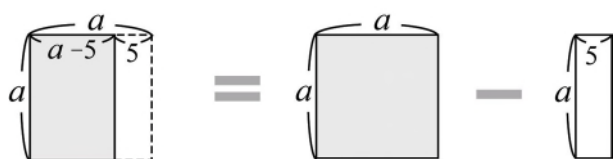
$a(b-c) =$ _____ $-$ _____

(2)



$a(a+3) =$ _____ $+$ _____

(3)



$a(a-5) =$ _____ $-$ _____

2. 利用分配律計算下列各題

(1) $a(b+5) =$ _____

(2) $a(b-7) =$ _____

(3) $a(a+2) =$ _____

(4) $a(a-9) =$ _____

(5) $12 \times (100+3)$
 $=$ _____ $+$ _____
 $=$ _____ $+$ _____
 $=$ _____

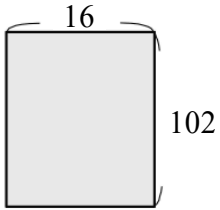
(6) $12 \times (100-3)$
 $=$ _____ $-$ _____
 $=$ _____ $-$ _____
 $=$ _____



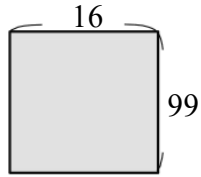
例題 ① 利用分配律求長方形面積



①



②



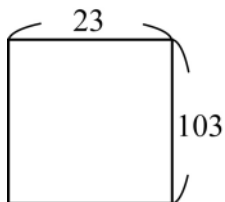
☆筆記



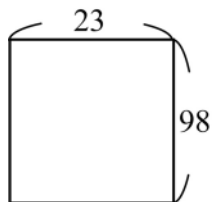
牛刀小試 2

1. 利用分配律求長方形面積（請寫出算式）

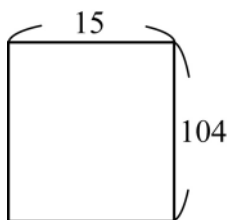
(1)



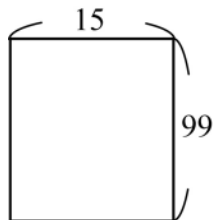
(2)



(3)



(4)



2. 求下列各值（請寫出算式）

(1) 12×106

$$= 12 \times (100 + \underline{\quad})$$

$$= \underline{\quad} + \underline{\quad}$$

$$= \underline{\quad} + \underline{\quad}$$

$$= \underline{\quad}$$

(2) 6×999

$$= 6 \times (1000 - \underline{\quad})$$

$$= \underline{\quad} - \underline{\quad}$$

$$= \underline{\quad} - \underline{\quad}$$

$$= \underline{\quad}$$

(3) $12 \times 98 = \underline{\quad}$ 。

(4) $18 \times 205 = \underline{\quad}$ 。

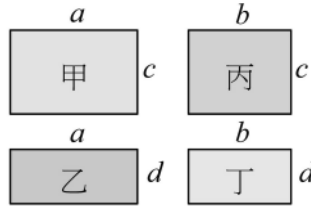
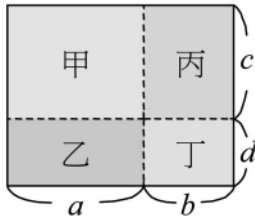


概念

②

分配律 $(a+b)(c+d) = ac + ad + bc + bd$ 下圖的長方形中，長是 $(a+b)$ 、寬是 $(c+d)$ ，

面積可表示成_____。

合起來的面積 拆開來的面積◎ $(a+b)(c+d)$ _____ + _____ + _____ + _____

〈例〉

$$(200+1) \times (100+2) = \underline{\hspace{2cm}} + \underline{\hspace{2cm}} + \underline{\hspace{2cm}} + \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

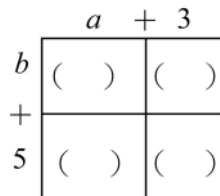
☆筆記



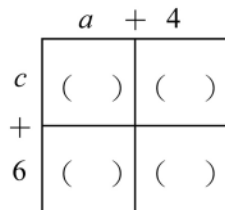
牛刀小試 3

1. 在空格中填入各長方形面積並計算總面積

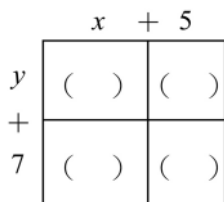
$$(1) (a+3)(b+5) = \underline{\hspace{2cm}}。$$



$$(2) (a+4)(c+6) = \underline{\hspace{2cm}}。$$



$$(3) (x+5)(y+7) = \underline{\hspace{2cm}}。$$



2. 利用分配律計算下列各題

$$(1) (x+8)(y+9) = \underline{\hspace{2cm}}。$$

$$(2) (x-1)(y+2) = \underline{\hspace{2cm}}。$$

$$(3) (a+2)(b-3) = \underline{\hspace{2cm}}。$$

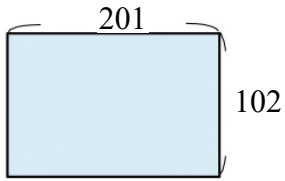
$$(4) (a-3)(b-4) = \underline{\hspace{2cm}}。$$



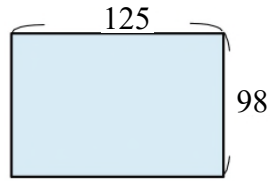
例題 ② 利用分配律求長方形面積



①



②

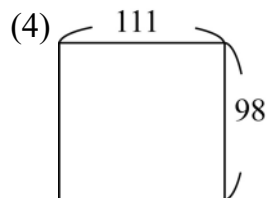
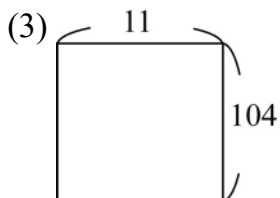
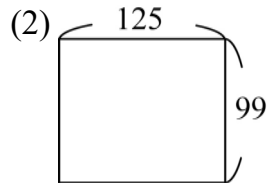
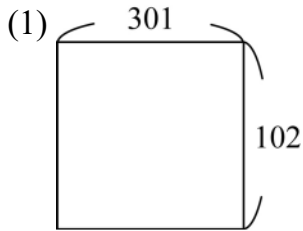


☆筆記



牛刀小試 4

1. 利用分配律求長方形面積（請寫出算式）



2. 利用分配律求長方形面積（請寫出算式）

(1)

$$15\frac{1}{4} \times 20\frac{1}{5}$$

$$= (15 + \underline{\quad}) \times (20 + \underline{\quad})$$

$$= \underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad}$$

$$= \underline{\quad}$$

(2)

$$10.7 \times 10.8$$

$$= (10 + \underline{\quad}) \times (10 + \underline{\quad})$$

$$= \underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad}$$

$$= \underline{\quad}$$

**例題****③****利用分配律計算**

(1) 103×107

(2) 99×97

☆筆記

利用分配律計算主要的目的

是_____

**牛刀小試 5**

1. 利用分配律計算下列各題（請寫出算式）

(1) $104 \times 106 =$ _____。

(2) $102 \times 101 =$ _____。

(3) $102 \times 99 =$ _____。

(4) $103 \times 98 =$ _____。

2. 利用分配律計算下列各題（請寫出算式）

(1) $99 \times 98 =$ _____。

(2) $99 \times 97 =$ _____。

(3) $98 \times 97 =$ _____。

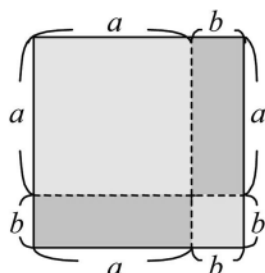
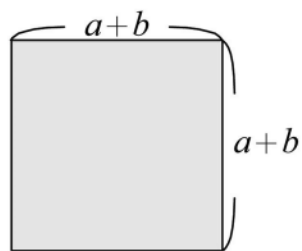
(4) $98 \times 96 =$ _____。



概念

③ 和的平方公式 $(a+b)^2 = a^2 + 2ab + b^2$ 

$(a+b)^2 =$



〈例〉

$908^2 = (900 + \underline{\quad\quad})^2$

☆筆記

$908^2 = 900^2 + 8^2$ 對嗎？



牛刀小試 6

1. 計算下列正方形面積

(1) $(x+y)^2$

	$x + y$	
x	()	()
+		
y	()	()

(2) $(c+d)^2$

(3) $(x+3)^2$

	$x + 3$	
x	()	()
+		
3	()	()

(4) $(x+5)^2$

2. 計算下列正方形面積

(1) $(100+2)^2$

$= \underline{\quad\quad} + 2 \times \underline{\quad\quad} \times \underline{\quad\quad} + \underline{\quad\quad}$

$= \underline{\quad\quad} + \underline{\quad\quad} + \underline{\quad\quad}$

$= \underline{\quad\quad}$

	$100 + 2$	
100	()	()
+		
2	()	()

(2) $(20+1)^2$

$= \underline{\quad\quad} + 2 \times \underline{\quad\quad} \times \underline{\quad\quad} + \underline{\quad\quad}$

$= \underline{\quad\quad} + \underline{\quad\quad} + \underline{\quad\quad}$

$= \underline{\quad\quad}$

3. 判斷下列等式是否正確，若有錯誤請打✓並改正

☐ (A) $(10+2)^2 = 10^2 + 2^2$

更正：_____

☐ (B) $(10+3)^2 = 10^2 + 3 \times 10 + 3^2$

更正：_____

☐ (C) $(10+4)^2 = 10^2 + 2 \times 10 \times 4 + 4$

更正：_____

**例題****4****運用和的平方公式計算 1**

(1) 708^2

(2) 10.5^2

☆筆記

**牛刀小試****7****1. 運用和的平方公式計算各題（請寫出算式）**

(1) 302^2

(2) 405^2

(3) 104^2

(4) 502^2

2. 運用和的平方公式計算各題（請寫出算式）

(1) 10.7^2

(2) 10.6^2

(3) 100.8^2

(4) 100.5^2



例題 5 運用和的平方公式計算 2



$$(1) 87^2 + 2 \times 87 \times 13 + 13^2 =$$

$$(2) (8\frac{1}{4})^2 =$$

☆筆記

$$87^2 + 26 \times 87 + 13^2 =$$



牛刀小試 8

1. 運用和的平方公式計算各題

$$(1) 25^2 + 2 \times 25 \times 5 + 5^2 =$$

$$(2) 98^2 + 2 \times 98 \times 2 + 2^2 =$$

$$(3) 39^2 + 2 \times 39 \times 61 + 61^2 =$$

$$(4) 78^2 + \underline{24} \times 78 + 12^2 =$$

$$(5) 93^2 + \underline{14} \times 93 + 7^2 =$$

2. 運用和的平方公式計算各題（請寫出算式）

$$(1) (20\frac{1}{8})^2$$

$$(2) (300\frac{1}{2})^2$$

$$(3) (50\frac{1}{5})^2$$

$$(4) (60\frac{1}{3})^2$$



概念

④

差的平方公式 $(a-b)^2 = a^2 - 2ab + b^2$  $(a-b)^2$

☆筆記

 $(11-1)^2 = 11^2 - 1^2$ 對嗎？

〈例〉

$$499^2 = (500 - \underline{\quad\quad})^2$$



牛刀小試 9

1. 運用差的平方公式計算各題

(1) $(x-y)^2 =$

(2) $(c-d)^2$

(3) $(x-3)^2$

(4) $(y-4)^2$

2. 運用差的平方公式計算下列各題(請寫出算式)

(1) $(20-3)^2$

(2) $(100-1)^2$

3. 判斷下列各式是否正確，若有錯誤請更正

☐ (A) $(10-3)^2 = 10^2 - 3^2$

更正：_____

☐ (B) $(20-5)^2 = 20^2 - 2 \times 20 \times 5 - 5^2$

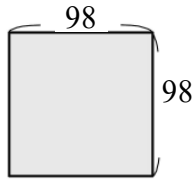
更正：_____

☐ (C) $(x-y)^2 = x^2 + 2xy - y^2$

更正：_____

**例題****⑥****運用差的平方公式計算 1**

(1) 求下列正方形面積

(2) $98^2 =$

☆筆記

**牛刀小試 10****1. 運用差的平方公式計算各題（請寫出算式）**

(1) $99^2 = (100 - \underline{\quad})^2$

$$= \underline{\hspace{2cm}}$$

$$= \underline{\hspace{2cm}}$$

(2) $96^2 = (100 - \underline{\quad})^2$

$$= \underline{\hspace{2cm}}$$

$$= \underline{\hspace{2cm}}$$

(3) $94^2 = (100 - \underline{\quad})^2$

$$= \underline{\hspace{2cm}}$$

$$= \underline{\hspace{2cm}}$$

2. 運用差的平方公式計算下列各題（請寫出算式）

(1) $199^2 = (200 - \underline{\quad})^2$

$$= \underline{\hspace{2cm}}$$

$$= \underline{\hspace{2cm}}$$

(2) $198^2 = (200 - \underline{\quad})^2$

$$= \underline{\hspace{2cm}}$$

$$= \underline{\hspace{2cm}}$$

(3) $195^2 = (200 - \underline{\quad})^2$

$$= \underline{\hspace{2cm}}$$

$$= \underline{\hspace{2cm}}$$

**例題****7****運用差的平方公式計算 2**

(1) 997^2

(2) 8.9^2

☆筆記

**牛刀小試 11****1. 運用差的平方公式計算下列各題**

(1) $999^2 = (1000 \square \text{ ______})^2$

(2) $998^2 = (1000 \square \text{ ______})^2$

(3) 996^2

(4) 995^2

2. 運用差的平方公式計算下列各題

(1) 9.7^2

(2) 9.2^2

(3) 9.1^2

(4) 8.8^2

**例題****⑧ 運用差的平方公式計算 3**

(1) $567^2 - 2 \times 567 \times 67 + 67^2 =$

(2) $(9\frac{1}{2})^2 =$

☆筆記

 $(9\frac{1}{2})^2$ 中的 $9\frac{1}{2}$ 可以改成 $(9 + \frac{1}{2})$

嗎？

**牛刀小試 12**

1. 運用差的平方公式計算下列各題

(1) $108^2 - 2 \times 108 \times 8 + 8^2 =$

(2) $123^2 - 2 \times 123 \times 23 + 23^2 =$

(3) $97^2 - 2 \times 97 \times 47 + 47^2 =$

(4) $53^2 - \underline{6} \times 53 + 3^2 =$

(5) $42^2 - \underline{4} \times 42 + 2^2 =$

2. 運用差的平方公式計算下列各題（請寫出算式）

(1) $(19\frac{3}{4})^2 = (20 - \underline{\hspace{2cm}})^2$
=

(2) $(9\frac{4}{5})^2 = (10 - \underline{\hspace{2cm}})^2$
=

(3) $(8\frac{8}{9})^2 = (9 - \underline{\hspace{2cm}})^2$
=

(4) $(5\frac{2}{3})^2 = (6 - \underline{\hspace{2cm}})^2$
=



概念

⑤ 平方差公式 $(a+b)(a-b)=a^2-b^2$  $(a+b)(a-b)$

☆筆記

〈例〉

$$88 \times 72 = (\underline{\quad} + \underline{\quad})(\underline{\quad} - \underline{\quad}) = \underline{\quad}$$



牛刀小試 13

1. 運用平方差公式計算下列各式

$$(1) (x+y)(x-y) =$$

$$(2) (c+d)(c-d) =$$

$$(3) (x+3)(x-3) =$$

$$(4) (y+4)(y-4) =$$

2. 運用平方差公式計算下列各式

$$\begin{aligned} (1) \quad & 52 \times 48 \\ & = (50 + \underline{\quad})(50 - \underline{\quad}) \\ & = \underline{\quad} - \underline{\quad} \\ & = \underline{\quad} \end{aligned}$$

$$\begin{aligned} (2) \quad & 108 \times 92 \\ & = (100 + \underline{\quad})(100 - \underline{\quad}) \\ & = \underline{\quad} - \underline{\quad} \\ & = \underline{\quad} \end{aligned}$$

$$\begin{aligned} (3) \quad & 65 \times 55 \\ & = (\underline{\quad} + \underline{\quad})(\underline{\quad} - \underline{\quad}) \\ & = \underline{\quad} - \underline{\quad} \\ & = \underline{\quad} \end{aligned}$$

$$\begin{aligned} (4) \quad & 401 \times 399 \\ & = (\underline{\quad} + \underline{\quad})(\underline{\quad} - \underline{\quad}) \\ & = \underline{\quad} - \underline{\quad} \\ & = \underline{\quad} \end{aligned}$$

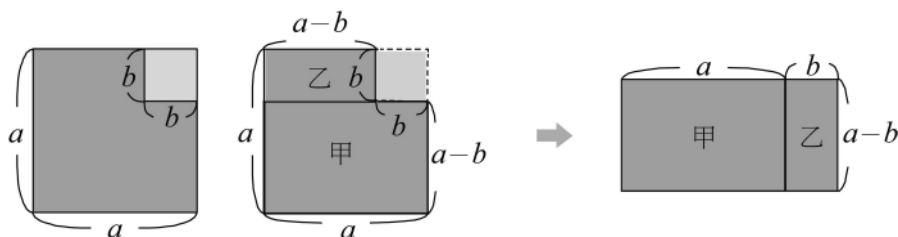


概念

⑥ 平方差公式 $a^2 - b^2 = (a+b)(a-b)$



$$a^2 - b^2 =$$



〈例〉

$$83^2 - 17^2 = \underline{\hspace{2cm}}$$

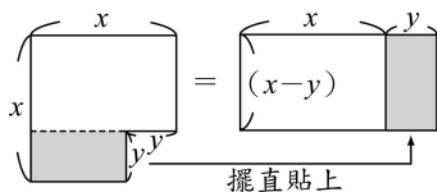
☆筆記



牛刀小試 14

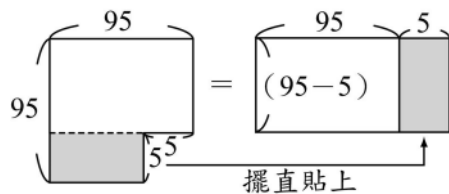
1. 運用平方差公式計算長方形面積

(1)



$$x^2 - y^2 = (\underline{\hspace{1cm}} + \underline{\hspace{1cm}}) \times (\underline{\hspace{1cm}} - \underline{\hspace{1cm}})$$

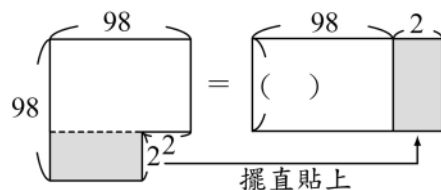
(2)



$$95^2 - 5^2 = (95 + \underline{\hspace{1cm}}) \times (95 - \underline{\hspace{1cm}})$$

$$= \underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{2cm}}$$

(3)



$$98^2 - 2^2 = (98 + \underline{\hspace{1cm}}) \times (98 - \underline{\hspace{1cm}})$$

$$= \underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{2cm}}$$

2. 運用平方差公式計算各題

$$(1) 85^2 - 15^2$$

$$= (85 + \underline{\hspace{1cm}}) \times (85 - \underline{\hspace{1cm}})$$

$$= \underline{\hspace{1cm}} \times \underline{\hspace{1cm}}$$

$$= \underline{\hspace{2cm}}$$

$$(2) 93^2 - 7^2$$

$$= (93 + \underline{\hspace{1cm}}) \times (93 - \underline{\hspace{1cm}})$$

$$= \underline{\hspace{1cm}} \times \underline{\hspace{1cm}}$$

$$= \underline{\hspace{2cm}}$$

$$(3) 66^2 - 34^2$$

$$= (\underline{\hspace{1cm}} + \underline{\hspace{1cm}}) \times (\underline{\hspace{1cm}} - \underline{\hspace{1cm}})$$

$$= \underline{\hspace{1cm}} \times \underline{\hspace{1cm}}$$

$$= \underline{\hspace{2cm}}$$

$$(4) 78^2 - 22^2$$

$$= (\underline{\hspace{1cm}} + \underline{\hspace{1cm}}) \times (\underline{\hspace{1cm}} - \underline{\hspace{1cm}})$$

$$= \underline{\hspace{1cm}} \times \underline{\hspace{1cm}}$$

$$= \underline{\hspace{2cm}}$$

**例題****9****運用平方差公式計算**

(1) $103 \times 97 =$

(2) $299^2 - 99^2 =$

(3) $2\frac{1}{3} \times 1\frac{2}{3} =$

☆筆記

**牛刀小試 15****1. 運用平方差公式計算下列各題（請寫出算式）**

(1) $102 \times 98 = (100 + \underline{\quad}) \times (100 - \underline{\quad})$

(2) 105×95

(3) 50.1×49.9

(4) $10\frac{2}{5} \times 9\frac{3}{5}$

(5) $20\frac{1}{4} \times 19\frac{3}{4}$

2. 運用平方差公式計算下列各式（請寫出算式）

(1) $19^2 - 1^2$

(2) $123^2 - 23^2$

(3) $(\frac{11}{19})^2 - (\frac{8}{19})^2$

(4) $(3\frac{1}{2})^2 - (2\frac{1}{2})^2$

(5) $1.45^2 - 0.45^2$



牛刀小試 1

- $(1) a(b-c) = ab - ac$
 $(2) a(a+3) = a^2 + 3a$
 $(3) a(a+5) = a^2 - 5a$
- $(1) a(b+5) = ab + 5a$
 $(2) a(b-7) = ab - 7a$
 $(3) a(a+2) = a^2 + 2a$
 $(4) a(a-9) = a^2 - 9a$
 $(5) 12 \times (100+3) = 12 \times 100 + 12 \times 3 = 1236$
 $(6) 12 \times (100-3) = 12 \times 100 - 12 \times 3 = 1164$

牛刀小試 2

- $(1) 23 \times 103 = 23 \times (100+3) = 23 \times 100 + 23 \times 3 = 2369$
 $(2) 23 \times 98 = 23 \times (100-2) = 23 \times 100 - 23 \times 2 = 2254$
 $(3) 15 \times 104 = 15 \times (100+4) = 15 \times 100 + 15 \times 4 = 1560$
 $(4) 15 \times 99 = 15 \times (100-1) = 15 \times 100 - 15 \times 1 = 1485$
- $(1) 12 \times 106 = 12 \times (100+6) = 12 \times 100 + 12 \times 6 = 1272$
 $(2) 6 \times 999 = 6 \times (1000-1) = 6 \times 1000 - 6 \times 1 = 5994$
 $(3) 12 \times 98 = 12 \times (100-2) = 12 \times 100 - 12 \times 2 = 1176$
 $(4) 18 \times 205 = 18 \times (200+5) = 18 \times 200 + 18 \times 5 = 3690$

牛刀小試 3

- $(1) (a+3)(b+5) = ab + 5a + 3b + 15$

$$\begin{array}{r} b \\ + \\ 5 \end{array} \begin{array}{|c|c|} \hline a+3 \\ \hline \end{array} \begin{array}{|c|c|} \hline (ab) \quad (3b) \\ \hline (5a) \quad (15) \\ \hline \end{array}$$
- $(2) (a+4)(c+6) = ac + 6a + 4c + 24$

$$\begin{array}{r} c \\ + \\ 6 \end{array} \begin{array}{|c|c|} \hline a+4 \\ \hline \end{array} \begin{array}{|c|c|} \hline (ac) \quad (4c) \\ \hline (6a) \quad (24) \\ \hline \end{array}$$
- $(3) (x+5)(y+7) = xy + 7x + 5y + 35$

$$\begin{array}{r} y \\ + \\ 7 \end{array} \begin{array}{|c|c|} \hline x+5 \\ \hline \end{array} \begin{array}{|c|c|} \hline (xy) \quad (5y) \\ \hline (7x) \quad (35) \\ \hline \end{array}$$

牛刀小試 4

- $(1) 301 \times 102 = (300+1) \times (100+2) = 30000 + 600 + 100 + 2 = 30702$
 $(2) 125 \times 99 = (100+25) \times (100-1) = 10000 - 100 + 2500 - 25 = 12375$
 $(3) 11 \times 104 = (10+1) \times (100+4) = 1000 + 40 + 100 + 4 = 1144$
 $(4) 111 \times 98 = (100+11) \times (100-2) = 10000 - 200 + 1100 - 22 = 10878$
- $(1) (15 + \frac{1}{4})(20 + \frac{1}{5}) = 300 + 3 + 5 + \frac{1}{20} = 308\frac{1}{20}$
 $(2) (10+0.7)(10+0.8) = 100 + 8 + 7 + 0.56 = 115.56$

牛刀小試 5

- $(1) (100+4) \times (100+6) = 11024$
 $(2) (100+2) \times (100+1) = 10302$
 $(3) (100+2) \times (100-1) = 10098$
 $(4) (100+3) \times (100-2) = 10094$
- $(1) (100-1) \times (100-2) = 9702$
 $(2) (100-1) \times (100-3) = 9603$
 $(3) (100-2) \times (100-3) = 9506$
 $(4) (100-2) \times (100-4) = 9408$

牛刀小試 6

- $(1) (x+y)^2 = x^2 + 2xy + y^2$

$$\begin{array}{r} x \\ + \\ y \end{array} \begin{array}{|c|c|} \hline x+y \\ \hline \end{array} \begin{array}{|c|c|} \hline x^2 \quad xy \\ \hline xy \quad y^2 \\ \hline \end{array}$$
- $(2) (c+d)^2 = c^2 + 2cd + d^2$
 $(3) (x+3)^2 = x^2 + 6x + 9$

$$\begin{array}{r} x \\ + \\ 3 \end{array} \begin{array}{|c|c|} \hline x+3 \\ \hline \end{array} \begin{array}{|c|c|} \hline x^2 \quad 3x \\ \hline 3x \quad 3^2 \\ \hline \end{array}$$
- $(4) (x+5)^2 = x^2 + 10x + 25$

- $(1) (100+2)^2 = 100^2 + 2 \times 100 \times 2 + 2^2 = 10404$

$$\begin{array}{r} 100 \\ + \\ 2 \end{array} \begin{array}{|c|c|} \hline 100+2 \\ \hline \end{array} \begin{array}{|c|c|} \hline 100^2 \quad 100 \times 2 \\ \hline 2 \times 100 \quad 2^2 \\ \hline \end{array}$$
- $(2) (20+1)^2 = 20^2 + 2 \times 20 \times 1 + 1^2 = 441$
- (A) 錯，更正為 $(10+2)^2 = 10^2 + 2 \times 10 \times 2 + 2^2$
 (B) 錯，更正為 $(10+3)^2 = 10^2 + 2 \times 10 \times 3 + 3^2$
 (C) 錯，更正為 $(10+4)^2 = 10^2 + 2 \times 10 \times 4 + 4^2$

牛刀小試 7

1.

$$\begin{aligned}
 (1) 302^2 &= (300+2)^2 \\
 &= 90000 + 1200 + 4 \\
 &= 91204
 \end{aligned}$$

$$\begin{aligned}
 (2) 405^2 &= (400+5)^2 \\
 &= 160000 + 4000 + 25 \\
 &= 164025
 \end{aligned}$$

$$\begin{aligned}
 (3) 104^2 &= (100+4)^2 \\
 &= 10000 + 800 + 16 \\
 &= 10816
 \end{aligned}$$

$$\begin{aligned}
 (4) 502^2 &= (500+2)^2 \\
 &= 250000 + 2000 + 4 \\
 &= 252004
 \end{aligned}$$

2.

$$\begin{aligned}
 (1) 10.7^2 &= (10+0.7)^2 \\
 &= 100 + 14 + 0.49 \\
 &= 114.49
 \end{aligned}$$

$$\begin{aligned}
 (2) 10.6^2 &= (10+0.6)^2 \\
 &= 100 + 12 + 0.36 \\
 &= 112.36
 \end{aligned}$$

$$\begin{aligned}
 (3) 100.8^2 &= (100+0.8)^2 \\
 &= 10000 + 160 + 0.64 \\
 &= 10160.64
 \end{aligned}$$

$$\begin{aligned}
 (4) 100.5^2 &= (100+0.5)^2 \\
 &= 10000 + 100 + 0.25 \\
 &= 10100.25
 \end{aligned}$$

牛刀小試 8

1.

$$\begin{aligned}
 (1) (25+5)^2 &= 900 \\
 (2) (98+2)^2 &= 10000 \\
 (3) (39+61)^2 &= 10000 \\
 (4) (78+12)^2 &= 8100 \\
 (5) (93+7)^2 &= 10000
 \end{aligned}$$

2.

$$\begin{aligned}
 (1) (20 + \frac{1}{8})^2 &= 20^2 + 2 \times 20 \times \frac{1}{8} + (\frac{1}{8})^2 \\
 &= 405\frac{1}{64}
 \end{aligned}$$

$$\begin{aligned}
 (2) (300 + \frac{1}{2})^2 &= 300^2 + 2 \times 300 \times \frac{1}{2} + (\frac{1}{2})^2 \\
 &= 90300\frac{1}{4}
 \end{aligned}$$

$$\begin{aligned}
 (3) (50 + \frac{1}{5})^2 &= 50^2 + 2 \times 50 \times \frac{1}{5} + (\frac{1}{5})^2 \\
 &= 2520\frac{1}{25}
 \end{aligned}$$

$$\begin{aligned}
 (4) (60 + \frac{1}{3})^2 &= 60^2 + 2 \times 60 \times \frac{1}{3} + (\frac{1}{3})^2 \\
 &= 3640\frac{1}{9}
 \end{aligned}$$

牛刀小試 9

1.

$$(1) (x-y)^2 = x^2 - 2xy + y^2$$

$$(2) (c-d)^2 = c^2 - 2cd + d^2$$

$$(3) (x-3)^2 = x^2 - 6x + 9$$

$$(4) (y-4)^2 = y^2 - 8y + 16$$

2.

$$\begin{aligned}
 (1) (20-3)^2 &= 20^2 - 2 \times 20 \times 3 + 3^2 \\
 &= 289
 \end{aligned}$$

$$\begin{aligned}
 (2) (100-1)^2 &= 100^2 - 2 \times 100 \times 1 + 1^2 \\
 &= 9801
 \end{aligned}$$

3. (A) 錯，

$$\begin{aligned}
 \text{更正：} (10-3)^2 &= 10^2 - 2 \times 10 \times 3 + 3^2
 \end{aligned}$$

(B) 錯，

$$\begin{aligned}
 \text{更正：} (20-5)^2 &= 20^2 - 2 \times 20 \times 5 + 5^2
 \end{aligned}$$

(C) 錯，

$$\begin{aligned}
 \text{更正：} (x-y)^2 &= x^2 - 2xy + y^2
 \end{aligned}$$

牛刀小試 10

1.

$$\begin{aligned}
 (1) 99^2 &= (100-1)^2 \\
 &= 10000 - 200 + 1 \\
 &= 9801
 \end{aligned}$$

$$\begin{aligned}
 (2) 96^2 &= (100-4)^2 \\
 &= 10000 - 800 + 16 \\
 &= 9216
 \end{aligned}$$

$$\begin{aligned}
 (3) 94^2 &= (100-6)^2 \\
 &= 10000 - 1200 + 36 \\
 &= 8836
 \end{aligned}$$

2.

$$\begin{aligned}
 (1) 199^2 &= (200-1)^2 \\
 &= 40000 - 400 + 1 \\
 &= 39601
 \end{aligned}$$

$$\begin{aligned}
 (2) 198^2 &= (200-2)^2 \\
 &= 40000 - 800 + 4 \\
 &= 39204
 \end{aligned}$$

$$\begin{aligned}
 (3) 195^2 &= (200-5)^2 \\
 &= 40000 - 2000 + 25 \\
 &= 38025
 \end{aligned}$$

牛刀小試 11

1.

$$(1) 999^2 = (1000-1)^2 = 998001$$

$$(2) 998^2 = (1000-2)^2 = 996004$$

$$(3) 996^2 = (1000-4)^2 = 992016$$

$$(4) 995^2 = (1000-5)^2 = 990025$$

2.

$$(1) 9.7^2 = (10-0.3)^2 = 94.09$$

$$(2) 9.2^2 = (10-0.8)^2 = 84.64$$

$$(3) 9.1^2 = (10-0.9)^2 = 82.81$$

$$(4) 8.8^2 = (9-0.2)^2 = 77.44$$

牛刀小試 12

1.

$$(1) (108-8)^2 = 10000$$

$$(2) (123-23)^2 = 10000$$

$$(3) (97-47)^2 = 2500$$

$$(4) (53-3)^2 = 2500$$

$$(5) (42-2)^2 = 1600$$

2.

$$(1) (20 - \frac{1}{4})^2 = 390\frac{1}{16}$$

$$(2) (10 - \frac{1}{5})^2 = 96\frac{1}{25}$$

$$(3) (9 - \frac{1}{9})^2 = 79\frac{1}{81}$$

$$(4) (6 - \frac{1}{3})^2 = 32\frac{1}{9}$$

牛刀小試 13

1.

$$(1) x^2 - y^2$$

$$(2) c^2 - d^2$$

$$(3) x^2 - 9$$

$$(4) y^2 - 16$$

2.

$$\begin{aligned}
 (1) 52 \times 48 &= (50+2)(50-2) \\
 &= 50^2 - 2^2 \\
 &= 2496
 \end{aligned}$$

$$\begin{aligned}
 (2) 108 \times 92 &= (100+8)(100-8) \\
 &= 100^2 - 8^2 \\
 &= 9936
 \end{aligned}$$

$$\begin{aligned}
 (3) 65 \times 55 &= (60+5)(60-5) \\
 &= 60^2 - 5^2 \\
 &= 3575
 \end{aligned}$$

$$\begin{aligned}
 (4) 401 \times 399 &= (400+1)(400-1) \\
 &= 400^2 - 1^2 \\
 &= 159999
 \end{aligned}$$

牛刀小試 14

1.

(1) $x^2 - y^2 = (x+y)(x-y)$

$$\begin{aligned}
 (2) \quad & 95^2 - 5^2 \\
 &= (95+5) \times (95-5) \\
 &= 100 \times 90 \\
 &= 9000
 \end{aligned}$$

$$\begin{aligned}
 (3) \quad & 98 - 2, \\
 & 98^2 - 2^2 \\
 &= (98+2) \times (98-2) \\
 &= 100 \times 96 \\
 &= 9600
 \end{aligned}$$

2.

$$\begin{aligned}
 (1) \quad & 85^2 - 15^2 \\
 &= (85+15) \times (85-15) \\
 &= 100 \times 70 \\
 &= 7000
 \end{aligned}$$

$$\begin{aligned}
 (2) \quad & 93^2 - 7^2 \\
 &= (93+7) \times (93-7) \\
 &= 100 \times 86 \\
 &= 8600
 \end{aligned}$$

$$\begin{aligned}
 (3) \quad & 66^2 - 34^2 \\
 &= (66+34) \times (66-34) \\
 &= 100 \times 32 \\
 &= 3200
 \end{aligned}$$

$$\begin{aligned}
 (4) \quad & 78^2 - 22^2 \\
 &= (78+22) \times (78-22) \\
 &= 100 \times 56 \\
 &= 5600
 \end{aligned}$$

牛刀小試 15

1.

$$\begin{aligned}
 (1) \quad & 102 \times 98 \\
 &= (100+2) \times (100-2) \\
 &= 10000 - 4 \\
 &= 9996
 \end{aligned}$$

$$\begin{aligned}
 (2) \quad & 105 \times 95 \\
 &= (100+5) \times (100-5) \\
 &= 10000 - 25 \\
 &= 9975
 \end{aligned}$$

$$\begin{aligned}
 (3) \quad & 50.1 \times 49.9 \\
 &= (50+0.1) \times (50-0.1) \\
 &= 2500 - 0.01 \\
 &= 2499.99
 \end{aligned}$$

$$\begin{aligned}
 (4) \quad & 10\frac{2}{5} \times 9\frac{3}{5} \\
 &= (10 + \frac{2}{5}) \times (10 - \frac{2}{5}) \\
 &= 100 - \frac{4}{25} \\
 &= 99\frac{21}{25}
 \end{aligned}$$

$$\begin{aligned}
 (5) \quad & 20\frac{1}{4} \times 19\frac{3}{4} \\
 &= (20 + \frac{1}{4}) \times (20 - \frac{1}{4}) \\
 &= 400 - \frac{1}{16} \\
 &= 399\frac{15}{16}
 \end{aligned}$$

2.

$$\begin{aligned}
 (1) \quad & 19^2 - 1^2 \\
 &= (19+1) \times (19-1) \\
 &= 20 \times 18 \\
 &= 360
 \end{aligned}$$

$$\begin{aligned}
 (2) \quad & 123^2 - 23^2 \\
 &= (123+23) \times (123-23) \\
 &= 146 \times 100 \\
 &= 14600
 \end{aligned}$$

$$\begin{aligned}
 (3) \quad & (\frac{11}{19})^2 - (\frac{8}{19})^2 \\
 &= (\frac{11}{19} + \frac{8}{19}) \times (\frac{11}{19} - \frac{8}{19}) \\
 &= 1 \times \frac{3}{19} \\
 &= \frac{3}{19}
 \end{aligned}$$

$$\begin{aligned}
 (4) \quad & (3\frac{1}{2})^2 - (2\frac{1}{2})^2 \\
 &= (3\frac{1}{2} + 2\frac{1}{2}) \times (3\frac{1}{2} - 2\frac{1}{2}) \\
 &= 6 \times 1 \\
 &= 6
 \end{aligned}$$

$$\begin{aligned}
 (5) \quad & 1.45^2 - 0.45^2 \\
 &= (1.45 + 0.45) \times (1.45 - 0.45) \\
 &= 1.9 \times 1 \\
 &= 1.9
 \end{aligned}$$