1986 FG9.1

7 個橙和 5 個蘋果值\$13。3 個橙和 4 個蘋果值 \$8。37 個橙和 45 個蘋果值 \$$C$。 求 C 的值。

7 oranges and 5 apples cost \$13. 3 oranges and 4 apples cost \$8. 37 oranges and 45 apples cost \$$C$. Find the value of C .

1986 FG10.1

若 $b+c=3$，$c+a=6$，$a+b=7$，且 $P=abc$，求 P 的值。

If $b+c=3$, $c+a=6$, $a+b=7$ and $P=abc$, find the value of P.

1989 HI15

已知 $x+y=-4$ 、 $y+z=5$ 及 $z+x=7$，求 xyz 的值。

If $x+y=-4$, $y+z=5$ and $z+x=7$, find the value of xyz .

1990 HI7

若 $x+y=9$、$y+z=11$ 及 $z+x=10$，求 xyz 的值。

If $x+y=9$, $y+z=11$ and $z+x=10$, find the value of xyz .

1990 FG7.1

2 個蘋果和 3 個橙共值 6 元。4 個蘋果和 7 個橙共值 13 元。

16 個蘋果和 23 個橙共值 C 元，求 C 的值。

2 apples and 3 oranges cost 6 dollars.

4 apples and 7 oranges cost 13 dollars.

16 apples and 23 oranges cost C dollars. Find the value of C .

1992 HI2

若 $\begin{cases}28x+15y=19xy\\18x-21y=2xy\end{cases}$，且 $xy\neq 0$，求 x 的值。

If $\begin{cases}28x+15y=19xy\\18x-21y=2xy\end{cases}$ and $xy\neq 0$, find the value of x .

1992 HI6

果商把一堆橙分成 A、B、C、D 四個等級。A 級和 B 級橙的數目合起來是 C 級的兩倍；B 級和 D 級橙的數目合起來是 A 級的兩倍。若將 B 級橙中的 7 個升格為 A 級，則 A 級的橙數便是 B 級的兩倍。已知 A、B、C、D 四級橙中 ，其中某級有橙 54 個，問這是哪一級？

A fruit merchant divides a large lot of oranges into four classes: A, B, C, D. The number of oranges in class A and class B doubles that in class C while the number of oranges in class B and class D doubles that in class A. If 7 oranges from class B are upgraded to class A, class A will then contain twice as many oranges as class B. It is known that one of the four classes contains 54 oranges. Determine which one class it belongs to.

1994 HG8

某學生在 d 日假期中觀察得：

(i) 假期中，在上午或下午下雨者共有 7 次；

(ii) 當下午下雨時，上午必為晴天；

(iii) 假期中有 5 個晴朗的下午；

(iv) 假期中有 6 個晴朗的上午。

求 d 的值。

A student on a vacation of d days observed that:

(i) it rained 7 times, morning or afternoons;

(ii) when it rained in the afternoon, it was clear in the morning;

(iii) there were 5 clear afternoons;

(iv) there were 6 clear mornings.

What is the value of d ?

1994 FI3.3

瓶中有球 c 個，其中 9 個是黑色或紅色的，11 個是紅色或白色的，而黑色或白色的有 12 個。求 c 的值。

In an urn, there are c balls, 9 of them are either black or red, 11 of them are either red or white and 12 of them are either black or white. Find the value of c .

1995 FI3.2

已知 $\dfrac{x+y}{2}=\dfrac{z+x}{3}=\dfrac{y+z}{4}$ 且 $x+y+z=18$。求 b 之值，若 $b=x+y$ 。

It is given that $\dfrac{x+y}{2}=\dfrac{z+x}{3}=\dfrac{y+z}{4}$ and $x+y+z=18$.

Find the value of b, if $b=x+y$.

1997 FI1.1

已知 $\dfrac{3}{a}+\dfrac{1}{u}=\dfrac{7}{2}$ 及 $\dfrac{2}{a}-\dfrac{3}{u}=6$ 為 a 與 u 的聯立方程。求 a 的解。

Given that $\dfrac{3}{a}+\dfrac{1}{u}=\dfrac{7}{2}$ and $\dfrac{2}{a}-\dfrac{3}{u}=6$ are simultaneous equations in a and u .

Solve for a .

1997 FI1.2

方程 $px+qy+bz=1$ 的根分別為(0, 3a, 1)、(9a, –1, 2)和(0, 3a, 0)。

求係數 b 的值。

Three solutions of the equation $px+qy+bz=1$ are (0, 2, 1), (6, –1, 2) and (0, 2, 0). Find the value of the coefficient b .

1999 HI8

某兩位數其值等於它的位值的和的 4 倍。若將該數的個位和十位數字相調，這個新兩位數的值比其位值的和的 5 倍多出 18。求該數。

A two-digit number is equal to 4 times the sum of the digits, and the number formed by reversing the digits exceeds 5 times the sum of the digits by 18.
What is the number?

2003 HI4

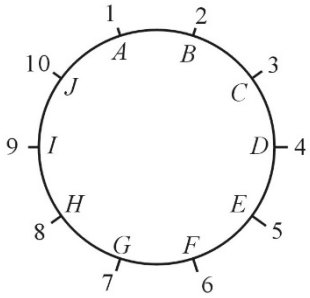
已知 0 及 1 是二次方程 $a(x+1)(x+2)+b(x+2)(x+3)+c(x+3)(x+1)=0$ 的根。若 $k=\frac{a}{b}$，求 k 的值。

Given that a quadratic equation $a(x+1)(x+2)+b(x+2)(x+3)+c(x+3)(x+1)=0$ has roots 0 and 1, and $k=\frac{a}{b}$, find the value of k.

2005 HG10

如圖，十人圍成一圈，並依座號 $1, 2, 3, \ldots, 10$ 而坐。每人選擇一個整數，分別是 $A, B, C, \ldots, J$，並將這個數字告訴他左右兩個鄰座的人。每人跟着算出他左右兩個鄰座所選的數的算術平均數。若各人所算出的平均數與其座號相等，求 F 的值。

In the figure, ten people are sitting in a round table with sitting numbers 1, 2, 3, ... , 10 respectively. Each of them chooses an integer A, B, C, ... , J respectively and tells the people on his left and right about his chosen number. Then each of them calculates the average number of the chosen numbers of his two neighborhoods and announces this average numbers are the same as the corresponding sitting numbers, find the value of F.



2005 FI1.1

一個動物園內有 a 頭駱駝，單峯的比雙峯的多 10 頭。若牠們共有 55 個峯，求 a 的值。

There are a camels in a zoo. The number of one-hump camels exceeds that of two-hump camels by 10. If there have 55 humps altogether, find the value of a.

2006 HG8

已知 x 和 y 是實數且滿足方程組 $\begin{cases}\frac{100}{x+y}+\frac{64}{x-y}=9\\ \frac{80}{x+y}+\frac{80}{x-y}=9\end{cases}$，

若 $V=x^2+y^2$，求 V 的值。

Given that x and y are real numbers and satisfy the system of the equations $\begin{cases}\frac{100}{x+y}+\frac{64}{x-y}=9\\ \frac{80}{x+y}+\frac{80}{x-y}=9\end{cases}$. If $V=x^2+y^2$, find the value of V.

2006 FG1.2

已知 $x=x_0$ 及 $y=y_0$ 滿足方程組 $\begin{cases}\frac{x}{3}+\frac{y}{5}=1\\ \frac{x}{5}+\frac{y}{3}=1\end{cases}$。若 $B=\frac{1}{x_0}+\frac{1}{y_0}$，求 B 的值。

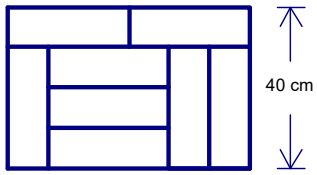
Given that $x = x_0$ and $y = y_0$ satisfy the system of equations $\begin{cases}\frac{x}{3}+\frac{y}{5}=1\\ \frac{x}{5}+\frac{y}{3}=1\end{cases}$.

If $B=\frac{1}{x_0}+\frac{1}{y_0}$, find the value of B.

2008 HI5

如圖二，利用 8 個相同的小長方形能拼出一個大的長方形。已知在大長方形中較短的邊長為 40 cm。若小長方形的面積是 A cm^2，求 A 的值。

In Figure 2, the large rectangle is formed by eight identical small rectangles. Given that the length of the shorter side of the large rectangle is 40 cm and the area of the small rectangle is A cm^2, find the value of A.



2011 FG2.4

已知 $\frac{1}{x}+\frac{2}{y}+\frac{3}{z}=0$ 及 $\frac{1}{x}-\frac{6}{y}-\frac{5}{z}=0$。若 $P=\frac{x}{y}+\frac{y}{z}+\frac{z}{x}$，求 P 的值。

Given that $\frac{1}{x}+\frac{2}{y}+\frac{3}{z}=0$ and $\frac{1}{x}-\frac{6}{y}-\frac{5}{z}=0$.

If $P=\frac{x}{y}+\frac{y}{z}+\frac{z}{x}$, find the value of P.

2014 HI1

已知 a、b、$c>0$ 且 $\begin{cases}\frac{\sqrt{ab}}{\sqrt{a}+\sqrt{b}}=2\\ \frac{\sqrt{bc}}{\sqrt{b}+\sqrt{c}}=3\\ \frac{\sqrt{ca}}{\sqrt{c}+\sqrt{a}}=5\end{cases}$，求 $\frac{a}{\sqrt{bc}}$ 的值。

Given that a, b, $c>0$ and $\begin{cases}\frac{\sqrt{ab}}{\sqrt{a}+\sqrt{b}}=2\\ \frac{\sqrt{bc}}{\sqrt{b}+\sqrt{c}}=3\\ \frac{\sqrt{ca}}{\sqrt{c}+\sqrt{a}}=5\end{cases}$. Find the value of $\frac{a}{\sqrt{bc}}$.

2015 FI2.1

若 x_0，y_0，z_0 為以下方程組的解，求 $\alpha=x_0+y_0+z_0$ 的值。

If x_0，y_0，z_0 is a solution to the simultaneous equations below, $\begin{cases}x-y-z=-1\\ y-x-z=-2\\ z-x-y=-4\end{cases}$

determine the value of $\alpha=x_0+y_0+z_0$.

2016 HI2

已知方程 $\begin{cases}x_1+x_2=x_2+x_3=x_3+x_4=\cdots=x_{2014}+x_{2015}=x_{2015}+x_{2016}=1\\ x_1+x_2+x_3+\cdots+x_{2015}+x_{2016}=x_{2016}\end{cases}$，

求 x_1 的值。

Given the equations $\begin{cases}x_1+x_2=x_2+x_3=x_3+x_4=\cdots=x_{2014}+x_{2015}=x_{2015}+x_{2016}=1\\ x_1+x_2+x_3+\cdots+x_{2015}+x_{2016}=x_{2016}\end{cases}$,

find the value of x_1.

2017 FI3.1

若 $\{x_0, y_0, z_0\}$ 為以下方程組的解，求 $a=x_0+y_0+z_0$ 的值。

If $\{x_0, y_0, z_0\}$ is a solution to the set of simultaneous equations below, determine the value of $a=x_0+y_0+z_0$.

$$\begin{cases}2x-2y+z=-15\\ x+2y+2z=18\\ 2x-y+2z=-5\end{cases}$$

2018 FG1.1

瑪莉和小明在中文科、英文科及數學科獲得的分數為 s 或 t，及 $s>t>0$。若瑪莉於中文科的分數比小明的高以及小明於英文的分數比瑪莉的高，而瑪莉和小明的總分分別為 12 分和 9 分。求 s 的值。

Suppose that Mary and Ming obtained a score of either s or t in each of the subjects: Chinese, English and Mathematics, where $s > t > 0$. It is known that Mary did better in Chinese but Ming did better in English. Mary's and Ming's total scores are 12 and 9 respectively. Determine the value of s.

2019 FI4.4

已知 a、b 和 c 是 45 的正因數，而且 $a<b<c<45$ 及 $ab=c$。

若 $x+y=a$，$x+2y+z=b$，$y+2z+t=c$ 及 $\delta=x+y+z+t$，求 δ 的值。

Given that a, b and c are positive factors of 45 with $a<b<c<45$ and $ab=c$.

If $x+y=a$, $x+2y+z=b$, $y+2z+t=c$ and $\delta=x+y+z+t$,

determine the value of δ.

2019 FG3.3

在以下的 3×3 幻方中，每行、列和兩斜行(對角綫)的和相等。如下圖所示，部份數值已經填上。求 c 的值。

A 3×3 magic square is filled with a number in each square such that the sum of the three numbers in each row, column and the two main diagonals are equal. The partially completed grid is shown below. Determine the value of c.

c	16	20
2		

2022 P1Q6

小馬參加數學比賽，解其中一條題目 $\begin{cases} ax+by=-16 \\ cx+20y=-224 \end{cases}$，其中$a$，$b$及$c$是實數。

題目的正確答案為 $x=8$ 及 $y=-10$。怎料小馬抄錯 c 的數值，得出答案 $x=12$ 及 $y=-13$。求原題中 $a^2+b^2+c^2$ 的值。

John participated in a mathematics competition, in which one of the questions was

to solve $\begin{cases} ax+by=-16 \\ cx+20y=-224 \end{cases}$, where a, b and c are real numbers.

The correct answer to the question was $x=8$ and $y=-10$. However, John copied a wrong value for c and then gave an answer of $x=12$ and $y=-13$.

Find the value of $a^2+b^2+c^2$ in the original question.

2023 FI1.3

下圖是一個未完成的九宮格，每一格須填入一個正整數使得每一行、每一列和每一對角綫上的三個數字總和相等。求 C 的值。

C	16	20
4		

A 3×3 grid is partially completed as shown below. Fill each square of the grid with a positive integer such that the sum of the three numbers in each row, column and each diagonal are equal. Find the value of C.

2024 HI9

設 a 為正實數。若方程組 $\begin{cases} (a+3)x+(a+2)y=1 \\ (a-1)x-ay=1 \end{cases}$ 無解，求 a 的值。

Let a be a positive real number. If the system of equations $\begin{cases} (a+3)x+(a+2)y=1 \\ (a-1)x-ay=1 \end{cases}$ has no solution, find the value of a.

Answers

1986 FG9.1 93	1986 FG10.1 10	1989 HI15 24	1990 HI7 120	1990 FG7.1 47
1992 HI2 3	1992 HI6 C	1994 HG8 9	1994 FI3.3 16	1995 FI3.2 8
1997 FI1.1 $\frac{2}{3}$	1997 FI1.2 0	1999 HI8 36	2003 HI4 6	2005 HG10 1
2005 FI1.1 40	2006 HG8 328	2006 FG1.2 $\frac{16}{15}$	2008 HI5 300	2011 FG2.4 -1
2014 HI1 $\frac{19}{121}$	2015 FI2.1 7	2016 HI2 -1007	2017 FI3.1 8	2018 FG1.1 5
2019 FI4.4 16	2019 FG3.3 45	2022 P1Q6 34	2023 FI1.3 42	2024 HI9 $-1+\sqrt{2}$