1989 HG4

方程 $19x + 88y = 1988$ 的其中一組正整數解是 $(100, 1)$，求另一組正整數解。

One of the positive integral solutions of the equation $19x + 88y = 1988$ is given by $(100, 1)$. Find another positive integral solution.

1990 HG2

某班有學生 N 人。

若將學生分為每 4 人一組，有 1 人餘下，

若將學生分為每 5 人一組，有 3 人餘下，

若將學生分為每 7 人一組，有 3 人餘下。求 N 的最小值。

There are N pupils in a class.

When they are divided into groups of 4, 1 pupil is left behind.

When they are divided into groups of 5, 3 pupils are left behind.

When they are divided into groups of 7, 3 pupils are left behind.

Find the least value of N.

1991 HG3

$\frac{a}{3}$、$\frac{b}{4}$及$\frac{c}{6}$ 是三個化至最簡的真分數，其中 a 、b 及 c 是正整數。如果這三個分數的分子都加上 c，則所得三個分數的和是 6。求 $a+b+c$ 的值。

$\frac{a}{3}$, $\frac{b}{4}$ and $\frac{c}{6}$ are three proper fractions in their simplest form, where a, b and c are positive integers. If c is added to the numerator of each fraction, then the sum of the fractions formed will be equal to 6. Find the value of $a + b + c$.

1991 HG8

方程 $32a + 59b = 3259$ 的其中一組正整數解 為 $(x, y) = (100, 1)$。現知僅有另一組正整數 (a, b) $(a \neq 100, b \neq 1)$ 使得 $32a + 59b = 3259$，求 a 的值。

One of the solutions of the equation $32x + 59y = 3529$ in positive integers is given by $(x, y) = (100, 1)$. It is known that there is exactly one more pair of positive integers (a, b) ($a \neq 100$ and $b \neq 1$) such that $32a + 59b = 3259$.

Find the value of a.

1991 FG7.3-4

雞蛋每只\$0.50，鴨蛋每只\$0.60，鵝蛋每只\$0.90。某人賣出 x 只雞蛋，y 只鴨蛋，z 只鵝蛋，共得\$60。若 x、y、z 皆為正數，且 $x + y + z = 100$，及在 x、y、z 中有兩數相同，求 x 及 y 的值。

Chicken eggs cost \$0.50 each, duck eggs cost \$0.60 each and goose eggs cost \$0.90 each. A man sold x chicken eggs, y duck eggs, z goose eggs and received \$60. If x, y, z are all positive numbers with $x + y + z = 100$ and two of the values x, y, z are equal, find the value of x and y.

1992 HG4

當正整數 N 除以 4、7、9 時，其餘數分別為 3、2、2。求 N 的最小值。

When a positive integer N is divided by 4, 7, 9, the remainders are 3, 2, 2 respectively. Find the least value of N.

1995 HI7

x、y 為正整數，且 $3x + 5y = 123$。求 $|x - y|$ 的最小值。

x, y are positive integers and $3x + 5y = 123$. Find the least value of $|x - y|$.

1995 HG8

用一元、二元及五元硬幣，以湊合十七元，且每次均須使用各種硬幣，其方法有 n 種，求 n 的值。

The number of ways to pay a sum of \$17 by using \$1 coins, \$2 coins and \$5 coins is n. Find the value of n. (Assume that all types of coins must be used each time.)

1996 HI5

三個面值 \$0.1、\$3 和 \$5 和郵票共有 110 個，這組郵票共值 \$100。求 \$3 郵票的數目。

A set of 110 stamps of the denominations of \$0.1, \$3, \$5 worth \$100 in total. Find the number of \$3 stamps in the set of stamps.

1996 HG3

當一疊面值 7020 元的十元紙幣被等分給 x 人時，餘下 650 元。把剩下的 650 元換成 5 元硬幣再等分給 x 人時，餘下 195 元。求 x 的值。

When a sum of \$7020, in the form of ten-dollar notes, is divided equally among x persons, \$650 remains. When this sum \$650 is changed to five-dollar coins and then divided equally among the x persons, \$195 remains.

Find the value of x.

1996 FG10.4

若正整數 d 除以 7，餘數是 1；除以 5 餘數是 2；除以 3 餘數是 2。求 d 的最小可能值。

A positive integer d when divided by 7 will have 1 as its remainder; when divided by 5 will have 2 as its remainder and when divided by 3 will have 2 as its remainder. Find the least possible value of d.

1997 HG4

設 x 為一正整數。

若 $\frac{2}{3}\left(\frac{2}{3}\left(\frac{2}{3}(x-1)-1\right)-1\right)$能被 3 整除，試求 x 之最小可能數值。

Let x be a positive integer. If $\frac{2}{3}\left(\frac{2}{3}\left(\frac{2}{3}(x-1)-1\right)-1\right)$ is divisible by 3, find the least possible value of x.

1997 FG5.1

若 a 是 5 的正倍數，且被 3 除時餘 1，求 a 之最小可能數值。

If a is a positive multiple of 5, which gives remainder 1 when divided by 3, find the smallest possible value of a .

1999 FI4.2

李先生有糖 $23 + b$ 粒，若平均分給 10 人，則餘下 5 粒。若平均分給 7 人，則欠 3 粒。求 b 之最小值。

Mr. Lee has $23 + b$ sweets. If he divides them equally among 10 persons, 5 sweets will be remained. If he divides them equally among 7 persons, 3 more sweets are needed. Find the minimum value of b .

2004 FGS.4

若直綫 $5x + 2y – 100 = 0$ 上有 d 個點，其 x 及 y 坐標的值都是正整數，求 d 的值。

If the line $5x + 2y – 100 = 0$ has d points whose x and y coordinates are both positive integers, find the value of d .

2005 FI4.2

已知 n 及 b 是整數，並滿足方程 $29n + 42b = 1$，若 $5 < b < 10$，求 b 的值。

Given that n and b are integers satisfying the equation $29n + 42b = 1$.
If $5 < b < 10$, find the value b .

2007 HG10

已知整數 x 及 y 滿足 $3x + 5y = 1$。

若 $S = x – y$ 及 $S > 2007$，求 S 可取的最小值。

Given that integers x and y satisfying the equation $3x + 5y = 1$.
If $S = x – y$ and $S > 2007$, find the least possible value of S .

2007 FG4.1

有糖果 x 粒及 $120 \le x \le 150$。將糖果分成小堆，若每堆 5 粒，則餘 2 粒；若每堆 6 粒，則餘 5 粒。求 x 的值。

Let x be the number of candies satisfies the inequalities $120 \le x \le 150$. 2 candies will be remained if they are divided into groups of 5 candies each; 5 candies will be remained if they are divided into groups of 6 candies each. Find the value of x .

2009 FI3.4

已知某校學生人數是 7 的倍數且不少於 1000。若學生人數被 3、4 及 5 除後的餘數均是 1。設學生人數的最小可能值為 q，求 q 的值。

The total number of students in a school is a multiple of 7 and not less than 1000. Given that the same remainder 1 will be obtained when the number of students is divided by 3, 4 and 5. Let q be the least of the possible numbers of students in the school, find the value of q .

2024 HI11

若 $1 + 2 + 3 + \cdots + k$ 的和為一完全平方 N，

其中 $N < 250\,000$，求 N 的最大可能值。

If $1 + 2 + 3 + \cdots + k$ is a perfect square N,

where $N < 250\,000$, find the largest possible value of N.

2024 FI2.2

已知 $(x + 20)^2 + (y – 24)^2$ 的最小值是 B，當中 x 和 y 是方程 $19x + 13y = 2$ 的整數解。求 B 的值。

B is the minimum value of $(x + 20)^2 + (y – 24)^2$, where x and y are integers that satisfy the equation $19x + 13y = 2$. Find the value of B .

Answers

1989 HG4 (12, 20)	1990 HG2 73	1991 HG3 10	1991 HG8 41	1991 FG7.3-4 $x = 60, y = 20$
1992 HG4 191	1995 HI7 1	1995 HG8 8	1996 HI5 29	1996 HG3 91
1996 FG10.4 92	1997 HG4 25	1997 FG5.1 10	1999 FI4.2 2	2004 FGS.4 9
2005 FI4.2 9	2007 HG10 2011	2007 FG4.1 137	2009 FI3.4 1141	2024 HI11 41616
2024 FI2.2 10				