

MAY

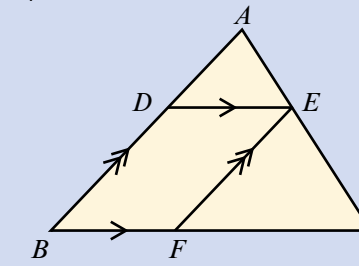
五月 2009



精算

精算師透過一些數學、統計學、經濟學、或然率、金融財務學來分析和管理的財務計劃、風險評估，為金融決策提供依據。因此，精算師的職業範疇非常廣泛，可於政府部門或商業機構（如保險公司、退休基金公司、銀行、金融財務機構），從事金融財務顧問、股票經紀、基金經紀等，以評估風險及作出金融財務上的決策。

In the figure, $DE \parallel BC$ and $AB \parallel EF$.
If $AE : EC = 1 : 2$, then area of $\triangle ADE$:
area of parallelogram $BFED = s : 4$,
 $s = ?$



勞動節

1
初七

Given $5^{2x} - 24(5^x) = 25$, find x .

佛誕

2
初八

If $3x^3 - 8x^2 + 2x - 15$ is divisible by $(x - a)$, then $a = ?$

3
初九

If the lengths of the diagonals of a rhombus are 2 cm and 4 cm, what is the area of the rhombus?

4
初十

A man walks from place A to place B at a speed of 3 km/h and cycles immediately back to place A along the same road at a speed of 15 km/h. Find the average speed for the whole trip.

5
立夏

If $k(x^2 - x) + m(x^2 + x) = 4x^2 + 8x$, find the value of m .

6
十二

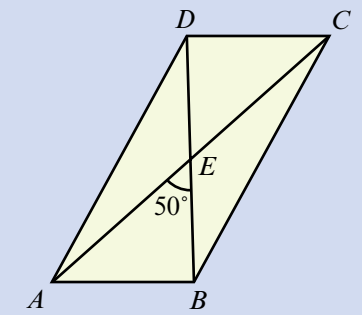
Find the last digit of $1^1 + 2^2 + \dots + 2009^{2009}$.

7
十三

Find the sum of roots of $x^4 - 8x^3 + 6x^2 + 40x + 25 = 0$ if the equation has 2 pairs of double roots.

8
十四

The diagram shows a parallelogram $ABCD$. If $AE = 3$ cm and $BE = 2$ cm, find the area of the parallelogram correct to the nearest integer.



9
十五

Two numbers are drawn randomly from 3, 4, 5, 6 and 7. The probability that the product of the numbers is even = $\frac{7}{k}$.
 $k = ?$

10
十六

There are 187 apples and 36 oranges. The apples are shared among m children. Each child has got n apples. Two oranges are remained when all oranges are shared among the same group of children. Find n .

11
十七

Given ${}_n C_3 = 220$. Find n .

12
十八

With the same radius 3.25, volume of a cone = volume of a sphere, find the height of the cone.

13
十九

Given $x + x^{-1} = 4$, $x^2 + x^{-2} = ?$

14
二十

Given $n, 45, 48, 144, 147, 441, 444, 1332$, is a sequence, find n .

15
廿一

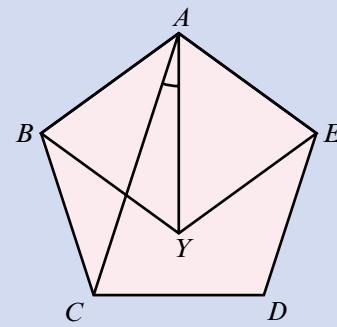
Find the total number of ways to write 96 as a product of three distinct positive integers and 1056 as a product of five distinct positive integers.

16
廿二

Given $\frac{1}{1 \cdot 2} + \frac{1}{2 \cdot 3} + \frac{1}{3 \cdot 4} + \dots + \frac{1}{16 \cdot 17} = \frac{y-1}{y}$, find y .

17
廿三

In the figure, $ABCDE$ is a regular pentagon and $ABYE$ is a rhombus. Find the value of $\angle CAE$.



18
廿四

The sum of the first n terms of an arithmetic sequence is n^2 . Find the 10th term of the sequence.

19
廿五

Given $f(x) = 5x^2 + cx - 60$ and $f(x) = f(-x)$, find $f(4)$.

20
廿六

Given $(\sqrt{2} + \sqrt{1})^{-1} + (\sqrt{3} + \sqrt{2})^{-1} + \dots + (K + \sqrt{K^2 - 1})^{-1} = 20$, find K .

21
小滿

Given $1^3 + 2^3 + \dots + A^3 = 253^2$, find A .

22
廿八

Solve for R : $1 + 2 + \dots + 22 + 23 + 22 + \dots + 2 + 1 = R^2$.

23
廿九

24 If item A and item B cost respectively \$140 and \$145 each, find the number of item B bought if exactly \$6000 is spent.

Given $1 \times 1! + 2 \times 2! + \dots + 30 \times 30! = k! - 1$. Find the value of k .

31
初八

修改自百僧問題《古算題》
一百饅頭一百僧，大僧三個更無爭；
小僧三人分一個，問大和尚有幾丁？

25
初二

The cost price of a book is \$100 and the marked price is \$140. If the book is sold at 10% discount of the marked price, find the profit.

26
初三

If two dice are thrown, find the number of ways for their product being even.

27
初四

40% of the students in the class missed to view film A. They had to view another film but 70% of them missed again. Find the percentage of students who missed in both films.

端午節

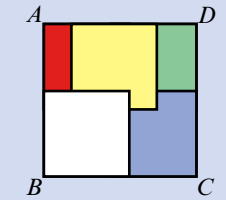
28
初五

Given $\begin{matrix} B & C & A \\ \times & B & A \\ \hline F & A & E & B \\ G & B & D & A \\ \hline G & H & F & H & B \end{matrix}$

Find $G + H + F + H + B$.

29
初六

Five squares with the same size build the square $ABCD$ as shown in the diagram by layering in the following order: red, green, blue, yellow and white. If the visible area of the blue, yellow and white are 80, 100 and 120 respectively, find the visible area of the red.



30
初七