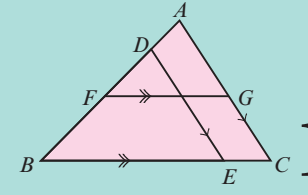




SUN 日	MON 一	TUE 二	WED 三	THU 四	FRI 五	SAT 六
<div></div> <div>船夫過河 過河問題是數學上頗具趣味的題目，有夫妻過河、商人過河、農夫過河等問題。 假設船夫要把一匹狼、一隻羊和一棵白菜運過河。附帶條件是船夫必須在場，否則羊就會吃白菜、狼就會吃羊；而船夫的船每次亦只能運送一種東西。怎樣才能把所有東西都運過河呢？這類的數學模型稱為狀態轉移模型。</div>			Find the unit digit of $6'' - 5''$. <div>香港特別行政區 成立紀念日</div> <div>1 初九</div>	Given a 3-digit number $\overline{PQR} = x^3$ and $P + Q + R = y^3$, find y . <div>2 初十</div>	A solid consisting of a cylinder of height h and a hemisphere of radius r . The area of the curved surface of the cylinder is twice that of the hemisphere. Volume of the cylinder : volume of the hemisphere is $k : 1$, $k = ?$ <div></div> <div>3 十一</div>	Given that $(z + 1) \propto x^3$. When $x = 3$, $z = 53$. When $z = 127$, what is the value of x ? <div>4 十二</div>
Find the maximum value of $-3x^2 + 12x - 7$. <div>5 十三</div>	Given x is a less-than-10 positive integer, $468 + xx + xx + xx = xxx$, $x = ?$ <div>6 十四</div>	For any 3-digit prime number \overline{ABC} , find the smallest prime factor of \overline{ABCABC} . <div>7 小暑</div>	The ratio of the internal base radii of containers P and Q is $1 : 3$. A and B are two cubes with side lengths in the ratio $1 : 2$. A and B are put into P and Q respectively. If the rise in the water level in P is 1 cm, the rise in the water level in Q is $\frac{k}{9}$ cm. $k = ?$ <div></div> <div>8 十六</div>	$A(a, 4)$, $B(5, 5)$ and $C(1, 6)$ are 3 collinear points. Find a . <div>9 十七</div>	In the figure, $AC \parallel DE$, $FG \parallel BC$ and $AD : DF : FB = 1 : 2 : 3$. If $BE = \frac{50}{3}$, find FG . <div></div> <div>10 十八</div>	If a, b satisfy $3^{x^2+1} = 9^{11x-30}$, find $\frac{a+b}{2}$. <div>11 十九</div>
If an equilateral triangle of side length k cm consists of exactly 144 equilateral triangles of side lengths 1 cm inside, find k . <div>12 二十</div>	修改自《九章算術》方程 今有麻九斗、麥七斗、菽三斗、答二斗、黍五斗、直錢一百四十；麻七斗、麥六斗、菽四斗、答五斗、黍三斗、直錢一百二十八；麻三斗、麥五斗、菽七斗、答六斗、黍四斗、直錢一百一十六；麻二斗、麥五斗、菽三斗、答九斗、黍四斗、直錢一百一十二；麻一斗、麥三斗、菽二斗、答八斗、黍五斗、直錢九十五。 問麥、菽及黍各一斗共幾何？ <div>13 廿一</div>	If a and b are distinct real numbers such that $a^2 + 4a + 1 = 0$ and $b^2 + 4b + 1 = 0$, find $a^2 + b^2$. <div>14 廿二</div>	If $x^2 + y^2 = 285$, $x^3y^2 = 900$, $x > 0$, $y > 0$, $x - y = ?$ <div>15 廿三</div>	$\sqrt{1 + 3 + 5 + \dots + 31} = ?$ <div>16 廿四</div>	Given $1^3 + 2^3 + \dots + X^3 = 153^2$, find X . <div>17 廿五</div>	Find the last 2 digits of $7^{123} - 5^{123}$. <div>18 廿六</div>
Find the maximum value of $12 - 4 \sin \theta - 3 \cos 2\theta$. <div>19 廿七</div>	Find the value of $\cos^{-1}(\sin 70^\circ)$. <div>20 廿八</div>	轉錄自《九章算術》盈不足 今有共買羊，人出五，不足四十五；人出七，不足三。問人數幾何？ <div>21 廿九</div>	Given $y^2 = \overline{PP}^2 = \overline{AMA}$, with $M = 2A = 4P$, find y . <div>22 六月</div>	Given $n^2 = 1 + 3 + 5 + \dots + 45$, find n . <div>23 大暑</div>	If $AC = 27$, $BC = 36$, $AB = 45$ and $AD : DE : EC = 3 : 4 : 2$, find the area of the smallest shaded region. <div></div> <div>24 初三</div>	A 5-digit number $\overline{80AB9}$ has the same remainder 2 when it is divided by 13 or 37. Find $(A + B)^2$. <div>25 初四</div>
$\begin{bmatrix} x & -4 \\ 13 & -2 \end{bmatrix} = \begin{bmatrix} y & 2 \\ -4 & 3 \end{bmatrix} = \begin{bmatrix} z & 3 \\ 2 & -2 \end{bmatrix}$ If $x = 31t$, $y = -pt$, $z = -19t$, find p . <div>26 初五</div>	Given $\sqrt{x\sqrt{x\sqrt{x\sqrt{x\dots}}}} = 27$. Find x . <div>27 初六</div>	Find the coefficient of y^{-4} in the expansion of $(y + y^{-1})^8$. <div>28 初七</div>	Find the largest prime factor of 2001. <div>29 初八</div>	修改自百人搬磚《古算題》 百人搬百磚，男子一搬八，婦女一搬三，小孩三搬一，請問小孩先搬幾塊磚？ <div>30 初九</div>	If $3 \times a \times b \times c \times 37 = 111\,111$, where a, b, c are consecutive prime numbers, find $a + b + c$. <div>31 初十</div>	<div>JULY 七月 2009</div>

Produced by:

Mathematics Education Section
EDUCATION BUREAU

Contents from Maths Calendar 2009. Department of Applied Mathematics, The Hong Kong Polytechnic University

