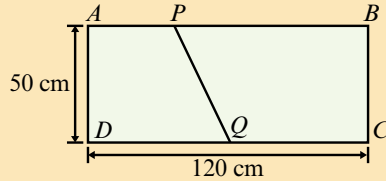


SUN 日	MON 一	TUE 二	WED 三	THU 四	FRI 五	SAT 六						
<div><div>JANUARY</div><div>一月 2009</div></div> <div></div> <div><h3>黃金比例 (Golden Ratio)</h3><p>我們如果把一條線段分成長短兩段，而且「全段長：長段長＝長段長：短段長」的話，這種分割方式叫做「黃金分割」，而分割出來的兩線段長的比，就叫做「黃金比例」。大約等於1.618。古希臘人將「黃金比例」廣泛運用在建築、美術、雕塑、音樂當中，而且隨著科學的發展，科學家發現，「黃金比例」其實普遍存在於自然界裡，像植物的葉片、花瓣，還有螺類的生長曲線等等，都找得到黃金比例的蹤跡！</p></div>				<p>In the figure, $ABCD$ is a square. Arcs AC and BD are drawn with centres D and C respectively, intersecting at O. Arc AO : Arc $OC = s : 2$, $s = ?$</p> <div></div> <p>元旦 初六</p>	<p>$R^0 + R^{-1} + R^{-2} + \dots = 2$, find R.</p> <p>2 初七</p>	<p>$x^2 + y^2 - 2x - 2y - 18 = 0$. A is (3,5) and B is $(-1, -p)$. If AB is a diameter of the circle, $p = ?$</p> <p>3 初八</p>						
<p>Given $f(x) = 2x^2 + ax + 2$ has a double root, where $a > 0$, find the value of a.</p> <p>4 初九</p>	<p>If $1234_x = 194$, find x.</p> <p>5 小寒</p>	<p>The rent of a flat is raised by 30% every two years beginning from a fixed date. Counting from that date, after how many years will the rent just exceed twice the original rent?</p> <p>6 十一</p>	<p>A straight line $y = p$ ($p > 0$) intersects the curve $y = x^2 - 4x + p + 21$ at $A(\alpha, p)$ and $B(\beta, p)$, find the value of $\frac{\alpha\beta}{3}$.</p> <p>7 十二</p>	<p>$ABCD$ is a semicircle, $AB : BD = 4 : 3$. Find AB correct to the nearest integer.</p> <div></div> <p>8 十三</p>	<p>If P is a positive interger less than 10, $12345678 \times P + P = \overline{AAAAAAAAA}$. Find P.</p> <p>9 十四</p>	<p>How many terms are there in “-5, -2, 1, 4, ... , 22”?</p> <p>10 十五</p>						
<p>$(1 + 2x)^4(1 - x)^7 = \dots - nx^2 + \dots$. Find the value of n.</p> <p>11 十六</p>	<p>If $y \propto x$, when $x = 32$, $y = 96$. When $x = 4$, $y = ?$</p> <p>12 十七</p>	<p>$P(A \cup B) = \frac{5}{8}$, $P(A) = \frac{1}{3}$, $P(B) = \frac{2}{5}$, $P(A \cap B) = \frac{K}{120}$, $K = ?$</p> <p>13 十八</p>	<p>Refer to the diagram, find the height of PO.</p> <div></div> <p>14 十九</p>	<p>巧算魚龜（古算題） 三足團魚六眼龜，共同山下一深池，九十三足亂浮水，一百二眼將人窺，或出沒，往東西，依欄觀看不能知，有人算得無差錯，好重斟贈數杯。</p> <p>15 二十</p>	<p>There are $(x - 3)$ \$2 coins and x \$5 coins in a bag, and the total value of coins $> \\$100$. AT LEAST how many \$5 coins are there?</p> <p>16 廿一</p>	<p>$\begin{cases} (C + B) \times A = 680 \\ (B + A) \times C = 756 \\ (A + C) \times B = 722 \end{cases}$ Find A.</p> <p>17 廿二</p>						
<p>If $\sqrt{x} + \frac{1}{\sqrt{x}} = 5$, find $(x + \frac{1}{x}) - (\sqrt{x} + \frac{1}{\sqrt{x}})$.</p> <p>18 廿三</p>	<p>The product of 4 prime numbers is 1254. Find the largest one.</p> <p>19 廿四</p>	<p>Point P is moving from A to B with speed 2 cm/s. Point Q is moving from C to D with speed 3 cm/s. P and Q start moving at the same time. Find the time that the ratio of the areas between $APQD$ and $BPQC$ is 5 : 7.</p> <div></div> <p>20 大寒</p>	<p>x, y, z are 3 consecutive positive odd numbers. If $x^2 + y^2 + z^2 = 155$, find $x + y + z$.</p> <p>21 廿六</p>	<p>To the nearest integer, $\frac{1}{2} \times (\frac{1}{\sqrt{1} + \sqrt{2}} + \frac{1}{\sqrt{2} + \sqrt{3}} + \frac{1}{\sqrt{3} + \sqrt{4}} + \dots + \frac{1}{\sqrt{2007} + \sqrt{2008}} + \frac{1}{\sqrt{2008} + \sqrt{2009}}) = ?$</p> <p>22 廿七</p>	<p>$ABCDEFGH$ is a cube of side 3 cm. A tetrahedron $DACH$ is cut away along the plane ACH. Find the volume of the remaining solid correct to the nearest integer.</p> <div></div> <p>23 廿八</p>	<p>《九章算術》勾股： 今有圓材徑二尺五寸，欲為方版，令厚七寸。問廣幾何？</p> <p>24 廿九</p>						
<p>If $3x - 2y = x + 3y$, then $x^2 : y^2 = k : 4$, $k = ?$</p> <p>25 三十 除夕</p>	<p>Seven equally spaced positive integers have a sum of 203. If n is the smallest number among them, determine the largest possible n.</p> <p>26 正月 農曆年初一</p>	<p>Karen is twice as old as Lori. Three years from now, the sum of their ages will be 42. How old is Karen in three years?</p> <p>27 初二 農曆年初二</p>	<p>Given $n^2 = 1 + 3 + 5 + \dots + 55$, find n.</p> <p>28 初三 農曆年初三</p>	<p>1st row: 1; 2nd row: 3 5; 3rd row: 7 9 11; ... k^{th} row: ... 853 ..., find k.</p> <p>29 初四</p>	<p>Four people A, B, C and D, in increasing order of their weight. The following table shows the weight of the two-person group. Find the weight of D correct to the nearest integer.</p> <table><tr><td>35</td><td>39</td><td>44</td><td>45</td><td>50</td><td>54</td></tr></table> <p>30 初五</p>	35	39	44	45	50	54	<p>If $\sum_{n=1}^k n = \overline{bac}$, where a, b and c are 3 consecutive digits that $a < b < c$. Find $k + a + b - c$.</p> <p>31 初六</p>
35	39	44	45	50	54							