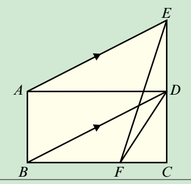
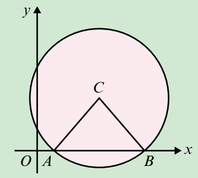
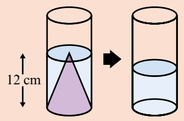
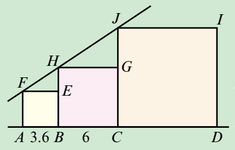
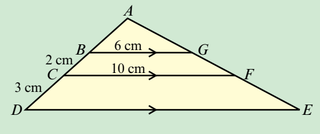
SUN 日	MON 一	TUE 二	WED 三	THU 四	FRI 五	SAT 六
$\log x - \log y = 1$, $-3x + 10y + 20 = 0$, find the value of y. **1** 初五	If $1 + 6 + 7 + 23 + 24 + 30 + 38 + 47 + 54 + 55 = 2 + 3 + 10 + 19 + 27 + 33 + 34 + 50 + 51 + 56$, then $1^x + 6^x + 7^x + 23^x + 24^x + 30^x + 38^x + 47^x + 54^x + 55^x = 2^x + 3^x + 10^x + 19^x + 27^x + 33^x + 34^x + 50^x + 51^x + 56^x$. Find x if $x \neq 0$ or 1. **2** 初六	$ABCD$ is a rectangle and CDE is a straight line. If the area of $ABCD$ is 24 and F is a point lies on BC, find the area of triangle DFE given $BF : FC = 3 : 1$.  **3** 初七	$\sqrt[256]{(2^1+1)(2^2+1)(2^4+1)(2^8+1)\ldots(2^{256}+1)+1} = ?$ **4** 初八	Last digit of $1^2 + 2^2 + \ldots + 2009^2$. **5** 驚蟄	A, B, C and D are positive integers. $AB = 72$, $BC = 54$ and $BD = 90$. Find the number of all possible combinations of A, B, C and D. **6** 初十	In the figure, C is the centre of the circle $x^2 + y^2 - 8x - 7y + 12 = 0$. If the circle cuts the x-axis at A and B, find the area of $\triangle CAB$.  **7** 十一
A solid right circular cone of height 12 cm is put into a cylinder which has the same internal radius as the base radius of the cone. Water is added into the cylinder until the water level reaches the tip of the cone. If the cone is removed, what is the height of the water in the cylinder.  **8** 十二	Given a 3-digit number $\overline{PQR} = P^1 + Q^2 + R^3$ and $P < Q < R$. Find $P + Q + R$. **9** 十三	In the figure, $ABEF$, $BCGH$ and $CDIJ$ are three squares. If $AB = 3.6$ and $BC = 6$ and F, H, J lie on a straight line, then $CD = ?$  **10** 十四	Given ${}_nC_3 = 15n$. Find n. **11** 十五	輯錄自蔑生池中《九章算術》 今有池方一丈，葭生其中央，出水一尺， 引葭赴岸，適與岸齊，問水深幾何？ **12** 十六	Given ${}_nC_3 = 22n$. Find n. **13** 十七	How many roots has the equation $\sin\theta + \sin^2\theta = \cos^2\theta$ where $0° \leq \theta \leq 1620°$? **14** 十八
Find R for $R^5 = 759375$ without using a calculator. **15** 十九	 In the figure, $ABCD$ and $AGFE$ are straight lines. If $BC = 2$ cm, $CD = 3$ cm, $BG = 6$ cm and $CF = 10$ cm, $DE = ?$ **16** 二十	$1 + 2 + \ldots + (n-1) + n + (n-1) + \ldots + 2 + 1 = 17^2$, find n. **17** 廿一	How many rectangles? **18** 廿二	Find n if $\frac{\sin^2 A}{1 + 2\cos^2 A} = \frac{3}{n}$ when $\frac{\sin A}{1 + 2\cos A} = -1$ where $\cos A \neq 0$. **19** 廿三	$a - b = 7$, $ab = -1$, $-\frac{1}{2}\left(\frac{1}{a} - \frac{1}{b} + \frac{a}{b} + \frac{b}{a}\right) = ?$ **20** 春分	The radius of the circle is 8 cm, a new circle is formed by increasing the radius by 10%, find the percentage increase in the area of the circle. **21** 廿五
Find n if $\sqrt{(\sqrt{3}+i)^{22}(\sqrt{3}-i)^{22}} = 2^n$. **22** 廿六	The product of 3 prime numbers is 759. Find the largest one. **23** 廿七	$(\log_2 49) \times (\log_3 16) \times (\log_7 27) = ?$ **24** 廿八	五官分金《古算題》 公侯伯子男，五四三二一， 有金七十五，依率要分明。 **25** 廿九	The remainder of $(7^{2008} + 5^{2009}) \div 100$. **26** 三十	In a 2-digit number, if the sum of 2 digits is 12, where the tenth-digit is 3 times of the unit-digit. Find the product of tenth-digit and unit-digit. **27** 三月	Eight students in the classroom "greet" each other. How many "greet" in total? **28** 初二
The remainder of $(2x + 2)(x + 3)(x^2 + 2) - 19$ when it is divided by $x - 1$. **29** 初三	Mr Wong bought a flat at \$2,400,000 in 2006, and then sold it to Mr Lee at \$3,120,000. Find the profit percentage. **30** 初四	The sum of 2 different angles is 30°. One of the angles is X°. The other angle is X minutes. If X is a mixed fraction in minutes, find the numerator of the fraction part. **31** 初五	**國際標準書號（ISBN）** 到書店裡買書時，我們會在每本書書底及版權頁面上，看到「ISBN」(International Standard Book Number)。這些編號的最後一碼均是「檢查碼」，利用各種不同的代數換算公式，求得編號的最後一碼，使每一個編號均符合其代數換算公式。			

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