SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
			1 廿六 $\frac{35}{70}+\frac{148}{296}=1$	**2** 廿七 $\sqrt{2}$ is the first known irrational number.	**3** 廿八 Consider the matrix $\begin{pmatrix} 1 & \cos 60^\circ & \cos 50^\circ \\ \cos 60^\circ & 1 & \cos 10^\circ \\ \cos 50^\circ & \cos 10^\circ & 5 \end{pmatrix}$. Find its determinant.	**4** 廿九 Charlotte is blowing the candles on her birthday cake. There are 24 different orders of her blowing the candles. How old is she?
5 芒種 Do you know that 5 is the first good prime?	**6** 初二 There is a fair coin on a table. Find the expected number of throws to obtain the consecutive pattern TT.	**7** 初三 7 is the only dimension, besides the familiar 3, in which a vector cross product can be defined.	**8** 初四 8 is the only cube in Fibonacci sequence, other than 1.	**9** 端午節 Number of lives of a cat.	**10** 初六 The smallest number whose status as a possible friendly number is unknown.	**11** 初七 Number of players of each team on the pitch in a soccer game.
12 初八 There are 12 pentagonal faces of a "football".	**13** 初九 Find the area bounded by $2x-y+1=0$, $x+6y-6=0$ and $5x+4y-30=0$.	**14** 初十 There are 14 powerful numbers not greater than 100.	**15** 十一 $2^{4n}-1$ is divisible by 15 for all positive integers n.	**16** 十二 16 is a commonly used number base.	**17** 十三 17 is the "Feller number".	**18** 十四 18 is a semi-perfect number, a number equal to the sum of some of its divisors.
19 十五 The game of Go is played on a grid of 19×19 lines.	**20** 十六 There are 20 hexagonal faces of a "football".	**21** 夏至 The smallest number of differently sized squares needed to square the square is 21.	**22** 十八 The number of yards in a chain.	**23** 十九 There are n objects. If I put them into groups of 3, 5 and 7, there would be 2, 3 and 2 objects left respectively. Find the smallest possible n.	**24** 二十 24! is an approximation (by 3%) of the Avogadro constant.	**25** 廿一 The number of points needed to win a set in volleyball is 25.
26 廿二 Five planes in a space divide the space into at most 26 regions.	**27** 廿三 $2+3+4+5+6+7=?$	**28** 廿四 28 is the 7^{th} happy number.	**29** 廿五 All digits of 2^{29} are distinct.	**30** 廿六 $1^1+2^2+3^3+\cdots+28^{28}+29^{29}+30^{30}$ is prime.		

57th IMO HONG KONG 2016

第五十七屆國際數學奧林匹克

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