SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
		1 廿三	**2** 廿四 2 is the only integer greater than 1 with $\varphi(n)$ odd, where $\varphi(n)$ is the number of positive integer from 1 to n that are relatively prime to n.	**3** 廿五 Today is the 171st birthday of Georg Cantor.	**4** 廿六 $2+\sqrt{2+\sqrt{2+\sqrt{2+\cdots}}}=?$	**5** 驚蟄 Do you know that 5 is the smallest positive integer whose square is the sum of two nonzero squares!
6 廿八 $\sqrt{1^3+2^3+3^3}=?$	**7** 廿九 7 is the largest prime followed by a cube.	**8** 三十 Fact: 1 byte = 8 bits.	**9** 初一 The sum $9^0+9^1+9^2+\cdots+9^n$ is always a triangular number.	**10** 初二 In the overlapping triangles $\triangle ABC$ and $\triangle ABE$ sharing common side AB, $\angle EAB$ and $\angle ABC$ are right angles, $AB=$ 5, $BC=$ 3, $AE=7$, and AC and BE intersect at D. What is the difference between the areas of $\triangle ADE$ and $\triangle BDC$?	**11** 初三 How many ways can we tessellate a 3 × 4 rectangle with 2 × 1 rectangles?	**12** 初四 12 is the smallest sublime number.
13 初五 A triangle has side lengths n, $n+1$ and $n+2$ and its area is 84. Find n.	**14** 初六 i eight sum pi and it was delicious. Happy pi day!	**15** 初七 15 is the 4th Bell number.	**16** 初八 Find the number of positive integers which is not greater than 48 and are coprime with 48.	**17** 初九 17^2 can be written as the sum of 1, 2, 3, 4, 5, 6, 7, 8 distinct squares. Try them out!	**18** 初十 Fact: 18 is the legal age in many countries.	**19** 十一 An integer $n \geq 2$ is said to be "good" if n divides $(n-1)!+1$. Find the 8th "good" integer.
20 春分 Find the integer part of $(1+0.001)^{3000}+(1-0.001)^{3000}$.	**21** 十三 Four rectangles arranged as 田 shape. Their areas (left to right, top to bottom) are 6, 10, x and 35 respectively. Find x.	**22** 十四 Let I be the incentre of ABC, D be a point on the circumcircle of ABC so that A, I, D are collinear (draw it out). If $\angle IBD = 79°$ and $\angle BDA = x°$, find x.	**23** 十五 Today is the 134th birthday of Emmy Noether.	**24** 十六 Find the number of zeros at the end of 100! .	**25** 耶穌受難節 Find the maximum integer n such that $n+2$ divides n^3+35.	**26** 耶穌受難節翌日 Today is the 103rd birthday of Paul Erdős, after whom "Erdős numbers" are named.
27 復活節 The product of divisors of 3^{53} is $\left(3^{53}\right)^k$. Find k.	**28** 復活節星期一 Today is the 88th Birthday of Alexander Grothendieck.	**29** 廿一 Do you know that 29 is the 7th Lucas number!	**30** 廿二 30 is the Coxeter number in the Lie Group E_8 .	**31** 廿三 Today is the 420th birthday of René Descartes.		

57th IMO
HONG KONG 2016
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