



MathConcept

2017

G6

Question Booklet

問題簿

Name:

姓名:

Reg. No.:

考生編號:

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Time: 1 hour

Calculators are NOT permitted.

Instructions:

1. DO NOT open the contest booklet until you are told to do so.
2. You may use pencil to write your answer and scrap papers for rough work.
3. All questions MUST BE answered on the answer sheet that comes with the question booklet. Any writing on the question booklet would not be accepted as answer.
4. Diagrams are not drawn to scale. They are intended as aids only.

限時：1小時

不允許使用計算機。

考生須知：

1. 在考官宣佈開始前，請勿翻閱問題簿。
2. 以鉛筆作答題目。如有需要，可要求算草紙。
3. 全部題目均須作答在答題紙上。在問題簿上的任何內容均不予評閱。
4. 試卷的附圖不一定依比例繪成。

1. $144 \div 12 = ?$ [1%]

2. $3.59 + 4.1 = ?$ [1%]

3. $10.1 - 9.12 = ?$ [1%]

4. $2.8 \times 1.43 = ?$ [1%]

5. $4 \times 12.5 \times 0.2 = ?$ [1%]

6. $3.43 \div 4.9 = ?$ [1%]

7. $11 \div 3 \times 51 = ?$ [1%]

8. $13 \div 0.25 = ?$ [1%]

9. $8.2 - 1.1 \times 1.21 = ?$ [1%]

10. $6.09 \div 2.1 = ?$ [1%]

11. Evaluate $\frac{3}{16} \times \frac{7}{15} \times \frac{12}{5} \times \frac{25}{28}$. (Express the answer in fraction in its simplest form.) [1%]

計算 $\frac{3}{16} \times \frac{7}{15} \times \frac{12}{5} \times \frac{25}{28}$ 。(答案以最簡分數表示。)

12. Evaluate $\frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \frac{1}{16} + \frac{1}{16}$. (Express the answer in fraction in its simplest form.) [1%]

計算 $\frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \frac{1}{16} + \frac{1}{16}$ 。(答案以最簡分數表示。)

13. Evaluate $2\frac{1}{2} \times 2\frac{1}{2} \div 0.25\%$. (Express the answer in fraction in its simplest form.) [1%]

計算 $2\frac{1}{2} \times 2\frac{1}{2} \div 0.25\%$ 。(答案以最簡分數表示。)

14. Evaluate $\left(\frac{1}{4} - \frac{1}{5}\right) \div 20\%$. (Express the answer in fraction in its simplest form.) [1%]

計算 $\left(\frac{1}{4} - \frac{1}{5}\right) \div 20\%$ 。(答案以最簡分數表示。)

15. Evaluate $16\frac{2}{3}\% \times \left(2\frac{2}{5} + 3.6\right)$. (Express the answer in fraction in its simplest form.) [1%]

計算 $16\frac{2}{3}\% \times \left(2\frac{2}{5} + 3.6\right)$ 。(答案以最簡分數表示。)

16. There are 40 hats. 16 of them are blue. What percentage of the hats are blue? [2.0%]

有帽子 40 頂，其中藍色的有 16 頂，藍色帽子佔全部帽子的百分率是多少？

17. Each highlighter costs \$13.10. Evan has \$100. How many highlighters can he buy at most? [2.1%]

螢光筆每支 13.1 元，小文有 100 元，他最多可買多少支螢光筆？

18. Jason weighs 52.6 kg. His sister weighs 36 kg. Both of his parents together weigh 159.8 kg. Find their average weight in kilograms. [2.2%]

小傑重 52.6 公斤，妹妹重 36 公斤，爸爸和媽媽共重 159.8 公斤，問全家人的平均重量是多少公斤？

19. A tank is 25 cm long, 15 cm wide and 8 cm tall. How many milliliters of water are needed to fill up the tank? [2.3%]

一個水缸長 25 厘米，闊 15 厘米，高 8 厘米，要注入多少毫升的水才可把水缸盛滿？

20. There were 108 watermelons and 52 pineapples in a supermarket. 36 of each were sold today. What percentage of the watermelons was sold today? [2.4%]

超級市場有 108 個西瓜和 52 個菠蘿，今天賣出了西瓜和菠蘿各 36 個，今天賣出西瓜的百分率是多少？

21. Wayne spends \$41.5 on lunch every day. How much money does he spend on lunch in October? [2.5%]

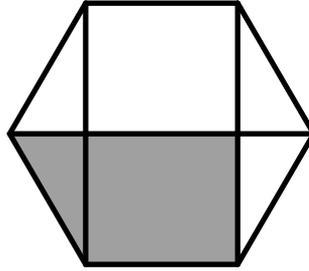
韋恩每天都會用 41.5 元買午飯。問他在十月會用多少元買午飯？

22. A supermarket is promoting a “Buy 2 get 1 free” campaign on the instant noodles. If the price of each bag of instant noodles is \$9.90, how much money does it cost to buy 10 bags of instant noodles? [2.6%]

一間超級市場正推出即食麵「買 2 送 1」的推廣優惠。每包即食麵的售價是 9 元 9 角。買 10 包即食麵要付多少錢？

23. What fraction of the regular hexagon is shaded? [2.7%]

陰影部份佔正六邊形的幾分之幾？



24. 1080 cups of water are needed to fill up a water tank that is 1.2 m long, 0.9 m wide, and 0.8 m tall. Find the capacity of the cup in mL. [2.8%]

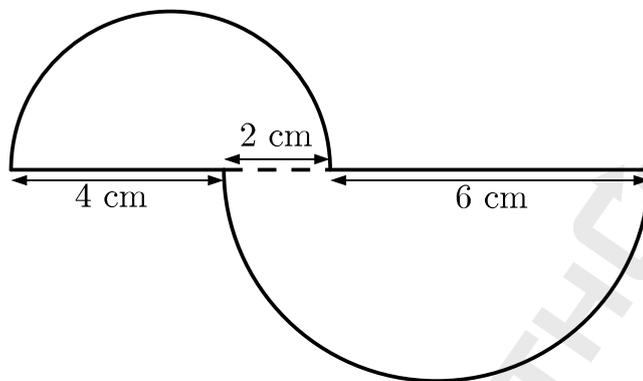
把一個長 1.2 米、闊 0.9 米和高 0.8 米的水缸注滿需要用 1080 杯水，問水杯的容量是多少毫升？

25. A rectangle has a perimeter of 170 cm. Its length is 5 cm shorter than twice the width. What is the length of the rectangle in centimeters? [2.9%]

一個長方形的周界是 170 厘米，而它的長比闊的兩倍短 5 厘米。這個長方形的長是多少厘米？

26. The figure is made up of 2 semi-circles. Find the perimeter of the whole figure in centimeters. (Take $\pi = \frac{22}{7}$) [3.0%]

下圖是由 2 個半圓形拼成的，問圖形的周界是多少厘米？（取 $\pi = \frac{22}{7}$ ）



27. John and Terry are sharing a drawer. 65% of the 60 pairs of socks in the drawer [3.1%] belong to John and one-third of John's socks are black. Two-third of Terry's socks are black. How many pairs of black socks are there in the drawer?

有一對兄弟共同用一個抽屜。抽屜裡的 60 對襪子有 65% 是哥哥的，哥哥的襪子有三分之一是黑色的，而弟弟的襪子有三分之二是黑色的。問抽屜裡有多少對黑色襪子？

28. Solve the equation for y . [3.2%]

求 y 的值。

$$\left(33\frac{1}{3}\% - \frac{1}{4}\right)y = 100\%$$

29. The radius of a car wheel is 35 cm. If the car wheel rotates 1000 times in a minute, [3.3%] how many kilometers will the car travel on a highway in half an hour? (Take $\pi = \frac{22}{7}$)

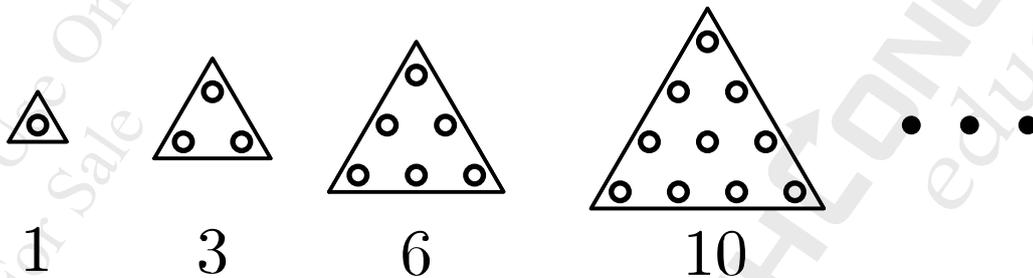
車輪的半徑是 35 厘米。如果車輪一分鐘轉動 1000 次，那麼半小時車子走了多少公里？（取 $\pi = \frac{22}{7}$ ）

30. Which triangular number is nearest to 100? [3.4%]

哪一個三角形數最接近 100？

First 4 examples of triangular numbers:

首 4 個三角形數的例子：



31. If Tom runs from point A to point B at the speed of 20 km/h and then runs back [4.0%]
from point B to point A at the speed of 12 km/h. What is his average speed in km/h?

如果湯姆用每小時 20 公里的速度由地點 A 跑到地點 B，再用每小時 12 公里的速
度由地點 B 回到地點 A，那麼全程他的平均速度是每小時多少公里？

32. If 5 painters can paint 10 houses in 3 days, how many days do 3 painters need to [4.1%]
paint 30 houses?

如果 5 個裝修工人為 10 間屋塗油需要 3 天，那麼 3 個裝修工人為 30 間屋塗油需
要多少天？

33. Jenny needs to fold 2017 paper cranes. She made 5 paper cranes on the first day, 9 [4.2%]
on the second day, 13 on the third day, etc. Basically, every day she would make 4
more paper cranes than the previous day. After she had done folding all the paper
cranes on the 30th day, how many more paper cranes does she need to fold to meet
her target?

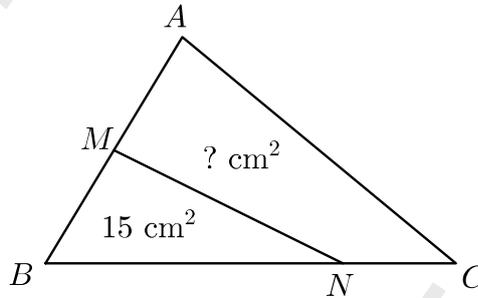
欣欣要摺 2017 隻紙鶴，第一天摺了 5 隻，第二天摺了 9 隻，第三天摺了 13 隻，
依此類推，每天都比前一天多摺 4 隻紙鶴。直至第三十天摺了紙鶴後，未摺的還
有多少隻？

34. Every person will drink a fixed amount of water every day and so as each dog. There [4.3%]
is a tank full of water. A person and 6 dogs will finish drinking all the water in 15
days. A person and 8 dogs will finish drinking all the water in 12 days. How many
dogs and a person can finish drinking all the water in 2 days?

一個人每天喝一定份量的水，每隻狗每天亦喝一定份量的水。有一個水缸，一個人
和 6 隻狗喝 15 天便喝光，一個人和 8 隻狗喝 12 天便喝光。一個人和幾隻狗喝 2
天會喝光水？

35. If $AM = BM$, $BN = 4CN$, and area of $\triangle BMN = 15 \text{ cm}^2$, then what is the area of quadrilateral $AMNC$ in square centimeters? [4.4%]

如果 $AM = BM$ 、 $BN = 4CN$ 及 $\triangle BMN$ 的面積 = 15 cm^2 ，那麼四邊形 $AMNC$ 的面積是多少平方厘米？

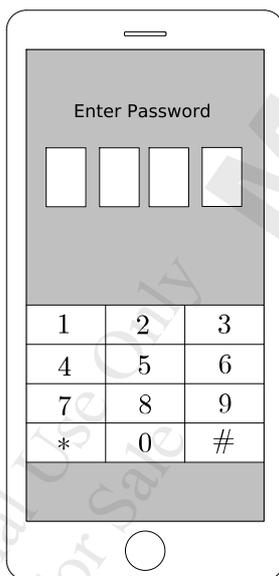


36. How many natural numbers less than 999 are relatively prime with 999? [4.5%]

請問有多少個少於 999 的自然數跟 999 互質？

37. Alan had completely forgotten his cell phone password. He tried to guess the number. [4.6%]

艾倫完全忘記了他的手機密碼，他嘗試猜密碼。



1st attempt 第 1 次：

6	1	9	4
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2nd attempt 第 2 次：

9	4	6	2
---	---	---	---

3rd attempt 第 3 次：

4	2	7	6
---	---	---	---

4th attempt 第 4 次：

3	0	1	7
---	---	---	---

5th attempt 第 5 次：

2	6	4	1
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After missing out all 5 attempts, he finally got it in the 6th try. He found out that every guess he made included 2 correct digits but not in the correct places. What is the 4-digit password needed to unlock the cell phone?

經過了五次的嘗試後，終於在第六次成功登入。然後他發現頭五次他每次都猜中兩個數字，但是位置都不對。

問艾倫的手機密碼是什麼？

38. What is the 64th number in the first row below? [4.7%]

以下的第一行的第 64 個數字是什麼？

1st row 第一行: 1, 2, 6, 7, 15, 16, ...

2nd row 第二行: 3, 5, 8, 14, 17, ...

3rd row 第三行: 4, 9, 13, 18, ...

4th row 第四行: 10, 12, 19, ...

5th row 第五行: 11, 20, ...

6th row 第六行: 21, ...

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39. In the following diagram, different letters represent different digits. Which 5-digit number does "SIXTY" represent? [4.8%]

以下算式中，每個英文字母都代表不同的數字。問「SIXTY」代表哪一個五位數字？

$$\begin{array}{r}
 \text{F O R T Y} \\
 \text{T E N} \\
 + \text{T E N} \\
 \hline
 \text{S I X T Y}
 \end{array}$$

40. Suppose that $x = \frac{1}{\frac{1}{2017} + \frac{1}{2018} + \frac{1}{2019} + \cdots + \frac{1}{2025}}$. Find the integer part of x . [4.9%]

已知 $x = \frac{1}{\frac{1}{2017} + \frac{1}{2018} + \frac{1}{2019} + \cdots + \frac{1}{2025}}$ ，求 x 的整數部分。



Name _____

Reg No _____

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ANSWER SHEET

1) 12	11) $\frac{3}{16}$	21) \$1286.5	31) 15
2) 7.69	12) 1	22) \$69.3	32) 15
3) 0.98	13) 2500	23) $\frac{5}{12}$	33) 127
4) 4.004	14) $\frac{1}{4}$	24) 800	34) 58
5) 10	15) 1	25) 55	35) 22.5 or $22\frac{1}{2}$
6) 0.7	16) 40%	26) 32	36) 648
7) 187	17) 7	27) 27	37) 1729
8) 52	18) 62.1	28) 12	38) 2017
9) 6.869	19) 3000	29) 66	39) 31486
10) 2.9	20) $33\frac{1}{3}\%$ or $33.\bar{3}\%$	30) 105	40) 224