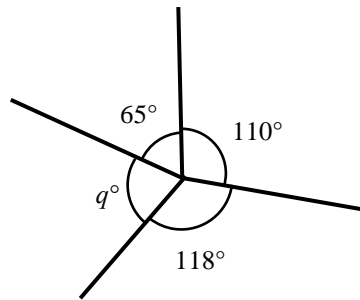


MathConception 2019 S2

- 1) In the figure, find q . [3.0%]
求 q 。



- 2) Simplify $0.28 : 0.64$. [3.1%]
化簡 $0.28 : 0.64$ 。

- 3) Expand $(x - 5)^2$. [3.2%]
展開 $(x - 5)^2$ 。

- 4) Simplify $\frac{2}{x} + \frac{3}{x-4}$. [3.3%]
化簡 $\frac{2}{x} + \frac{3}{x-4}$ 。

- 5) Factorize $x^2 + 7xy + 12y^2$. [3.4%]
因式分解 $x^2 + 7xy + 12y^2$ 。

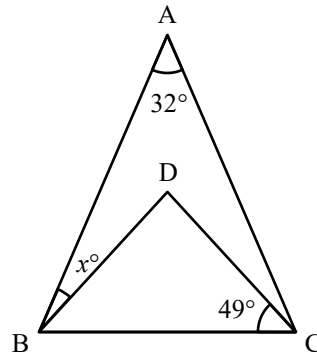
- 6) Peter's height is 170 cm, correct to the nearest 0.5 cm. Find the upper limit of his height in cm. [3.5%]
小明的身高是 170 厘米，準確至最接近的 0.5 厘米。他的身高上限是多少厘米？

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- 7) In the figure, $AB = AC$ and $DB = DC$. Find x .

[3.6%]

圖中 $AB = AC$ 及 $DB = DC$ 。求 x 。



- 8) Solve $\begin{cases} x + 2y = 18 \\ 2x + y = 6 \end{cases}$.

[3.7%]

解 $\begin{cases} x + 2y = 18 \\ 2x + y = 6 \end{cases}$ 。

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- 9) Convert 76_{10} into a hexadecimal number. [4.8%]

以十六進制表示 76_{10} 。

- 10) Ada and Billy are 200 m apart. If they move towards each other, they will meet in 16 seconds. If they move in the same direction, Ada will catch up Billy in 80 seconds. Find the speed of Ada. (Assume the speeds of Ada and Billy are constants.) [4.9%]

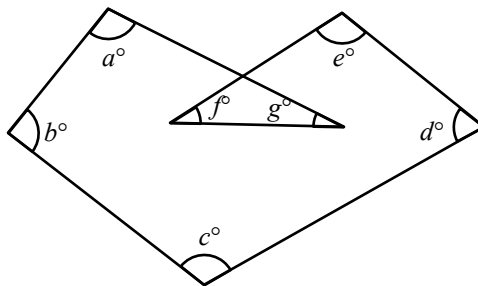
小美和小明相距 200 米。如果他們相向而行，他們將會在 16 秒後相遇。如果他們向同一個方向行走，小美會在 80 秒後追上小明。求小美行走的速率。(假設小美和小明全程行走的速率不變)

- 11) It is given that the ratio of two numbers is 4 : 9. If 7 is added to both numbers, their ratio will become 1 : 2. Find the ratio of the numbers if 7 is subtracted from both numbers. [5.1%]

兩個數字的比是 4 : 9。如果把該兩個數字都加上 7，它們的比會變成 1 : 2。如果把該兩個數字都減去 7，它們的比會變成多少？

- 12) In the figure, find $a + b + c + d + e + f + g$. [5.2%]

求 $a + b + c + d + e + f + g$ 。



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- 13) If a, b are positive and $12a^2 - b^2 = ab$, find the value of $\frac{a}{b}$. [6.3%]

若 a, b 為正數，且 $12a^2 - b^2 = ab$ ，求 $\frac{a}{b}$ 的值。

- 14) A square has area 100. Find the length of its diagonal. [6.4%]

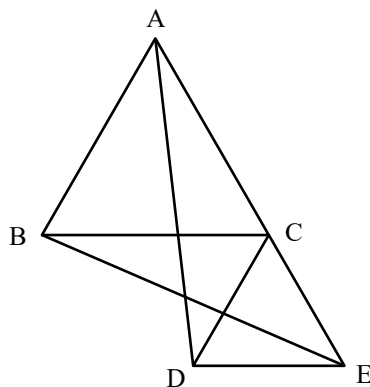
某正方形的面積是 100。求它的對角線的長度。

- 15) Find the smallest positive integer n such that $n + 25$ is a square number while $135n$ is a cubic number. [6.5%]

求最小的正整數 n ，使得 $n + 25$ 是平方數，而 $135n$ 是立方數。

- 16) In the figure, $\triangle ABC$ and $\triangle CDE$ are equilateral triangles. ACE is a straight line. If $\angle DAC = 26^\circ$, find $\angle BEC$. [6.6%]

圖中， $\triangle ABC$ 和 $\triangle CDE$ 是等邊三角形。 ACE 是直線。若 $\angle DAC = 26^\circ$ ，求 $\angle BEC$ 。



- 17) What is the remainder when the 1000-digit number 100010001000...1000 is divided by 7? [6.7%]

當 1000 位數 100010001000...1000 除以 7 時，餘數是多少？

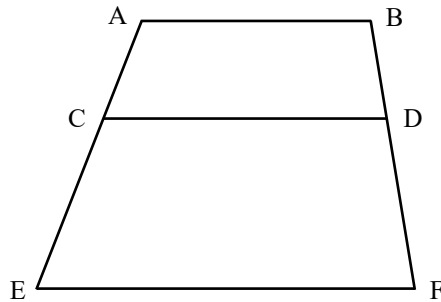
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- 18) The average of n consecutive positive integers is a . If the smallest number among these numbers is replaced by 860, or the largest number among these numbers is replaced by 900, their average becomes 80. Find a . [6.8%]

n 個連續正整數的平均數為 a 。若把這些數中最小的數換成 860，或把這些數中最大的數換成 900，他們的平均數會變成 80。求 a 。

- 19) In the figure, $AB \parallel CD \parallel EF$. ACE and BDF are straight lines. If $CD = 56$, $EF = 72$ and $AC : CE = 1 : 2$, find AB . [6.9%]

圖中， $AB \parallel CD \parallel EF$ 。ACE 和 BDF 是直線。如果 $CD = 56$ 、 $EF = 72$ 及 $AC : CE = 1 : 2$ ，求 AB 。



- 20) How many ways are there to put a positive integer in each cell on a 2×2 grid, such that the product of the four numbers is equal to 72, and that the sum of the two numbers in each row and each column is less than 10? [7.0%]

有多少種方法在 2×2 方格表的每格填上一個正整數，使得四個數之積等於 72，且每行和每列的兩數之和均小於 10？

End of paper



ANSWER SHEET

REG NO		
NAME		
GROUP		
SEAT		

ANSWER			ANSWER		
1	67	<input type="radio"/>	11	3 : 8	<input type="radio"/>
2	7 : 16	<input type="radio"/>	12	540	<input type="radio"/>
3	$x^2 - 10x + 25$	<input type="radio"/>	13	$\frac{1}{3}$	<input type="radio"/>
4	$\frac{5x - 8}{x(x - 4)}$	<input type="radio"/>	14	$10\sqrt{2}$	<input type="radio"/>
5	$(x + 3y)(x + 4y)$	<input type="radio"/>	15	200	<input type="radio"/>
6	170.25	<input type="radio"/>	16	34°	<input type="radio"/>
7	25	<input type="radio"/>	17	6	<input type="radio"/>
8	$x = -2$ $y = 10$	<input type="radio"/>	18	60	<input type="radio"/>
9	$4C_{16}$	<input type="radio"/>	19	48	<input type="radio"/>
10	7.5 m/s	<input type="radio"/>	20	36	<input type="radio"/>