

COMO-马来西亚数学邀请赛：总决赛

MALAYSIA MATHEMATICS INVITATIONAL : FINAL CHAMPIONS

6

2017

小学六年级 ↔ STANDARD 6

6

1 小时

INSTRUCTIONS AND INFORMATION

1. Do not open the booklet until told to do so by your teacher.
未获监考老师许可之前不可翻开此比赛试卷。
2. This question paper consists of 30 questions.
本试卷共有 30 题。
3. Diagrams are NOT drawn to scale. They are intended only as aids.
题目所提供之图形只是示意图，不一定精准。
4. Neither mathematical tables nor calculators may be used.
不准使用数学表或计算器。
5. Write your answers in the answer boxes on the **separate answer sheet** provided.
答案请另填写在所提供的作答卷的指定位置上。
6. Working may be shown in the space below each question.
算式可写在试卷的任何空格里。
7. **Marks are awarded for correct answers only.**
只有正确的答案才能得分。
8. The MiMAS reserves the right to re-examine students before deciding whether to grant official status to their score.
为确保竞赛之公平及公正，MiMAS 主办单位保留要求考生重测之权利。

1 - 10 题，每题 3 分。

Question 1-10, 3 marks each .

1. 最小的质数和最小的合数合起来是多少？

What is the sum of the smallest prime number and the smallest composite number?

- (A) 3 (B) 4 (C) 5 (D) 6

2. 计算： $0.45 + 3.35 \div 0.5 - 2.6 \div 5 = ?$

Compute : $0.45 + 3.35 \div 0.5 - 2.6 \div 5 = ?$

- (A) 1 (B) 0.91 (C) 6.63 (D) 1.64

3. 若 $3\frac{3}{4} : 2\frac{1}{2} = \square : 36$ ，求 $\square = ?$

If $3\frac{3}{4} : 2\frac{1}{2} = \square : 36$, Then $\square = ?$

- (A) 64 (B) 50 (C) 48 (D) 54

4. 四位数 $\overline{2A1B}$ 能被 8 整除，则 $A+B$ 的值不可能为何者？

Four-digit number $\overline{2A1B}$ can be divided by 8 without remained. Which of the following will **NOT** be $A+B$?

- (A) 4 (B) 6 (C) 8 (D) 12

5. 下列算式何者错误?

Which of the following equation is FALSE?

(A) $(\frac{1}{3} + \frac{1}{2}) \times \frac{3}{5} = \frac{1}{3} \times \frac{3}{5} + \frac{1}{2} \times \frac{3}{5}$

(B) $(\frac{1}{3} + \frac{1}{2}) \div \frac{3}{5} = \frac{1}{3} \div \frac{3}{5} + \frac{1}{2} \div \frac{3}{5}$

(C) $\frac{3}{5} \times (\frac{1}{2} - \frac{1}{3}) = \frac{3}{5} \times \frac{1}{2} - \frac{3}{5} \times \frac{1}{3}$

(D) $\frac{3}{5} \div (\frac{1}{3} + \frac{1}{2}) = \frac{3}{5} \div \frac{1}{3} + \frac{3}{5} \div \frac{1}{2}$

6. 若 $A = 16 \times 20 \times 42$ ，则 A 共有几个质因子?

If $A = 16 \times 20 \times 42$, how many prime factor does A has?

(A) 2

(B) 3

(C) 4

(D) 5

7. $(1 + \frac{17}{78} \times 11) + (2 + \frac{17}{78} \times 10) + (3 + \frac{17}{78} \times 9) + \dots + (11 + \frac{17}{78} \times 1) = ?$

(A) $66\frac{17}{78}$

(B) $80\frac{5}{13}$

(C) $80\frac{17}{78}$

(D) 83

8. 如右图，问涂色区域的周长为多少公分?

(圆周率用 3.14 计算)

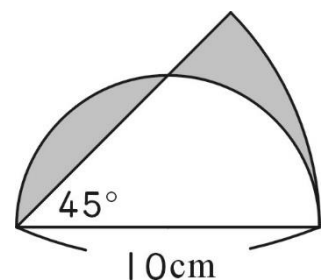
What is the perimeter of the shaded part in unit cm on the right figure? (Pi = 3.14)

(A) 31.4

(B) 23.55

(C) 47.1

(D) 33.55



9. 甲正方形的面积是乙正方形面积的 25 倍，那么：

Area of square A is 25 times the area of square B, then:

(A) 甲是乙的 5 倍的扩大图

A is 5 times enlarge figure of B.

(B) 甲是乙的 $\frac{1}{5}$ 倍缩图

A is $\frac{1}{5}$ times reduce figure of B.

(C) 甲是乙的 25 倍的扩大图

A is 25 times enlarge figure of B.

(D) 甲是乙的 $\frac{1}{25}$ 倍缩图

A is $\frac{1}{25}$ times reduce figure of B.

10. 底 6 公分、高 15 公分的三角形，在 $\frac{1}{200}$ 倍的缩图上，它的实际面积是多少平方公尺？

On $\frac{1}{200}$ times reduce figure, triangle has base 6 cm, height 15 cm. What is the actual area of this triangle in unit m^2 ?

(A) 0.9

(B) 1.8

(C) 360

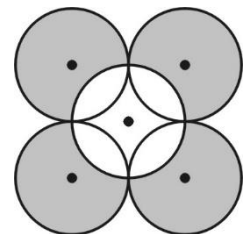
(D) 180

11 - 20 题，每题 4 分。

Question 11-20, 4 marks each.

11. 右图为 5 个相同的圆所组成，圆的半径是 20 公分，涂色面积约为多少平方公分？(圆周率用 3.14 计算)

The right figure is composed of 5 similar circles with 20 cm radius. What is the area of the shaded area in unit cm^2 ? (Pi = 3.14)



(A) 1028

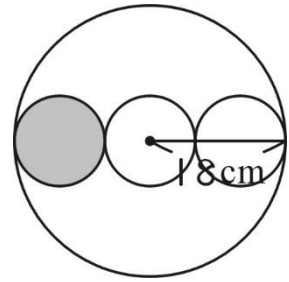
(B) 2056

(C) 4112

(D) 5140

12. 右图中 3 个小圆都一样大，涂色部分图形的周长是多少公分？
(圆周率用 3.14 计算)

On the right figure, 3 small circles are similar. What is the perimeter of the shaded area in unit cm? (Pi = 3.14)



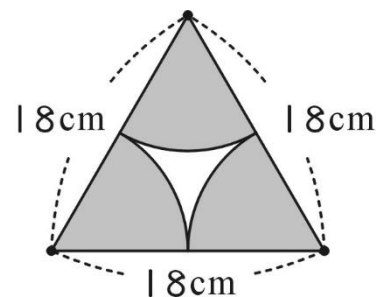
13. 一个圆半径是 14 公分，圆上一段弧长 12.56 公分，由这段弧和两条半径围成的扇形面积是多少平方公分？(圆周率用 3.14 计算)

A circle with radius 14 cm, has a 12.56 cm arc. What is the area of the sector which made by this arc and 2 radius of circle? (Pi = 3.14)

- (A) 48.84 (B) 76.93 (C) 87.92 (D) 153.86

14. 算出右图灰色部分的面积是多少平方公分？
(圆周率用 3.14 计算)

What is the area of the shaded area of the right figure?
(Pi = 3.14)



- (A) 127.17 (B) 137.68
(C) 254.34 (D) 384.78

15. 有甲、乙两长方形，其长的比为 3:2，宽的比为 4:3，则甲、乙两长方形面积的比为：

It has Rectangle A and rectangle B, the ratio of length is 3:2, the ratio of width is 4:3. What is the ratio of area of rectangle A and rectangle B?

- (A) 2:1 (B) 9:8 (C) 8:9 (D) 1:2

16. 某数除以 5 余 3，除以 6 余 4，除以 7 余 5，这个数最小是甲数，求甲数除以 11 的余数是多少？

A number divided by 5 leaves remainders 3, divided by 6 leaves remainders 4, divided by 7 leaves remainders 5, the smallest number of this number is A. What is the remainders when A divided by 11?

- (A) 10 (B) 9 (C) 8 (D) 7

17. 有一块长方形木板，长 1 公尺 50 公分、宽 60 公分，如果要切成大小一样，且边长是整数公分的正方形，正方形的边长最大是几公分？

A rectangle board with 1 m 50 cm length and 60 cm width, cut into same size square with integer number of length. What is the largest number of square length?

- (A) 20 (B) 25 (C) 30 (D) 45

18. 有一分数，分子与分母的和是 190，若分子加上 17 后，分数可约分为 $\frac{2}{7}$ ，请问原分数的分子与分母的差是多少？

The sum of numerator and denominator of a fraction number is 190. If the numerator add up 17, the fraction number becomes $\frac{2}{7}$. What is the difference between the numerator and denominator of the original fraction number?

- (A) 132 (B) 127 (C) 115 (D) 109

19. 小英跟阿伦要出钱合买一辆价值 8888 元的脚踏车，已知小英跟阿伦拿出的钱的比为 3:5，请问阿伦比小英多拿出多少钱？

Ying and Alan buy a bicycle worth \$8888 together. The ratio of the money Ying and Alan paid is 3:5. How much does Alan pay more than Ying?

- (A) 2000 (B) 5555 (C) 2222 (D) 3333

20. 甲、乙、丙三数，其最大公因子是 24，甲、乙、丙三数最简整数比为 2:3:4，则甲、乙、丙之最小公倍数是多少？

The highest common factor of number A, B and C is 24, the simplest integer ratio of number A, B and C is 2:3:4. What is the least common multiple of number A, B and C?

- (A) 576 (B) 456 (C) 384 (D) 288

21 - 30 题，每题 5 分。

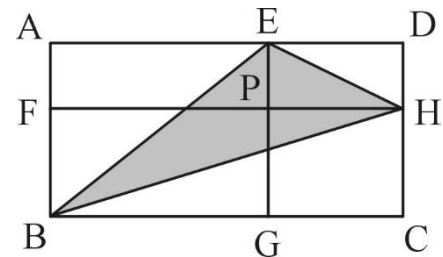
Question 21-30, 5 marks each.

21. 把 6 公分×6 公分的正方形放在一个三角形上，它正好重叠此三角形面积的 $\frac{2}{3}$ ，从下方来看也可以说此三角形正好重叠正方形面积的 60%，则三角形的面积为多少平方公分？

Put a 6 cm×6 cm square on a triangle, it overlaps $\frac{2}{3}$ of the triangle area. On the other hand, the triangle overlaps 60 % of the square area. What is the area of this triangle in cm^2 ?

22. 如右图，若长方形 AFPE、DHPE、CGPH 的面积分别为 30、18、30 平方公分，则涂色部分的面积是？

In the figure, the area of rectangle AFPE, DHPE, CGPH are 30 cm^2 , 18 cm^2 , and 30 cm^2 respectively. What is the area of the shaded area?



23. 若规定 $A \# B = [A, B] - (A, B)$ 的值，如 $18 \# 12 = [18, 12] - (18, 12) = 30$ 。试回答下列问题：

(1) $322 \# 483 = ?$

- (2) 若要让 $24 \# X$ 的值最大，且 X 是介于 1 到 100 之间的整数，则 $X = ?$

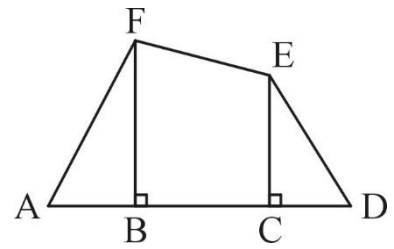
If $A \# B = [A, B] - (A, B)$, for example: $18 \# 12 = [18, 12] - (18, 12) = 30$. Please answer the questions below:

(1) $322 \# 483 = ?$

- (2) To make the value of $24 \# X$ maximum, and X is an integer between 1 and 100. What is the value of X ?

24. 已知 ABCD 是直线, \overline{AC} 长 12 公分, \overline{BD} 长 10 公分, \overline{BF} 长 8 公分, \overline{CE} 长 6 公分, 问四边形 ADEF 的面积是多少平方公分?

ABCD is a straight line, \overline{AC} is 12 cm, \overline{BD} is 10 cm, \overline{BF} is 8 cm and \overline{CE} is 6 cm. What is the area of quadrilateral ADEF in cm^2 ?



25. 老陈和小陈一起做一工程。若由老陈单独做, 需要 18 天, 且小陈每天的工作效率是老陈的 1.2 倍。2 人每天一起工作, 做完 2 天后, 老陈不慎受伤, 于是第三天起, 老陈每天工作效率变成原来的 $\frac{3}{4}$ 。问第五天工作结束时, 已完成全部工作的几分之几?

Tan and Chan do a project together. If Tan do it alone, it needs 18 days, and the daily working efficiency of Chan is 1.2 times of Tan. Both of them work together every day, after 2 days, Tan accidentally injured. From 3rd day, The daily working efficiency of Tan becomes $\frac{3}{4}$ times of original. How much of work has been complete after 5 days?

26. 五个人参加一场考试, 共有七题是非题。每题答对得 1 分, 答错倒扣一分, 不作答不计分。下表纪录了 A、B、C、D、E 五个人的作答, 已知 A、B、C、D 都得 2 分, 问 E 应得几分?

5 persons take an exam, total 7 questions, one point for one correct answer, penalty one point for incorrect answer, unanswered question is worth 0 points. Table below records the answer of 5 persons, A, B, C, D and E. Let A, B, C and D are get 2 points each. How many points E get?

题目 / 姓名 Question/Name	A	B	C	D	E
1	○	○		×	○
2		×	○	×	○
3	×	○	×	×	×
4	○	○	×	○	
5	×	×	○	○	○
6	○	×	×		×
7	○		○	×	○
得分 Marks	2	2	2	2	?

27. $0 \times 1 \times 2 + 1 \times 2 \times 3 + 2 \times 3 \times 4 + 3 \times 4 \times 5 + \dots + 14 \times 15 \times 16 = ?$

28. 两个五位数 \overline{ABCDE} 及 \overline{EDCBA} 都是 24 的倍数, 问 \overline{ABCDE} 的最小值 = ?
(相同的英文字母代表相同的数)

Two 5-digits \overline{ABCDE} and \overline{EDCBA} are multiple number of 24. What is the minimum value of \overline{ABCDE} ? (The same letters represent the same number)

29. 4 个不同的正整数 A、B、C、D, 使得 $\frac{1}{A} + \frac{1}{B} + \frac{1}{C} + \frac{1}{D} = 1.1$, 则 A+B+C+D 的最小值是?

4 different positive integer A, B C and D, $\frac{1}{A} + \frac{1}{B} + \frac{1}{C} + \frac{1}{D} = 1.1$. What is the minimum value of A+B+C+D?

30. 在右边直式算式的□内，填入小于 10 的适当质数，使得直式算式成立，则所得的乘积是多少？

Fill in suitable prime number under 10 into the □ on the right side straight formula, make the formula established. What is the product number?

$$\begin{array}{r}
 \phantom{} \\
 \times \phantom{} \\
 \hline
 \phantom{} \\
 \phantom{} \\
 \phantom{} \\
 \hline
 \phantom{}
 \end{array}$$

本试卷共有 12 页（包括本页）