PERMATO
Persatuan Matematik Olympiad Malaysia

数学奥林匹克学研中心
E MATHEMATICS OLYMPIAD SYSTEM

2021 年
小学
数学奥林匹克国手遴选赛
初赛
高年级组
时间: 90 分钟

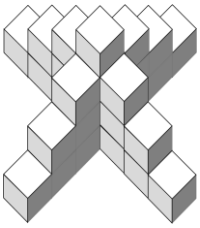
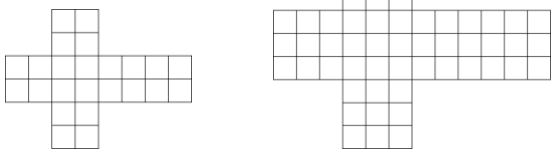
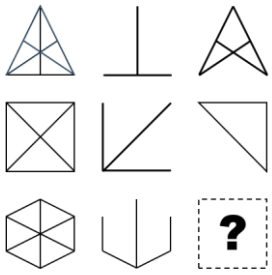
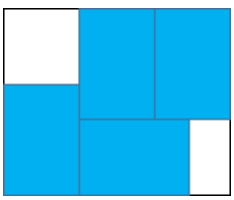
联办单位:
Persatuan Matematik Olympiad Malaysia (PERMATO)
E Mathematics Olympiad System (EMOS)

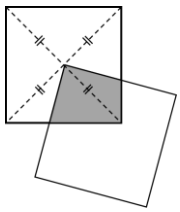
考生资讯:

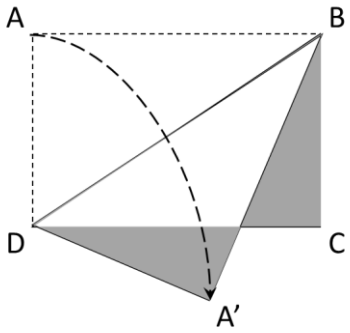
1. 在未获监考官通知前，请勿翻阅试卷。
2. 请将答案填在指定空格内。
3. 回答所有问题，每题 4 分，不部分给分，做错不扣分。
4. 请使用铅笔，蓝色或黑色圆珠笔作答。
5. 试卷内所有几何图形并非按照比例绘制。
6. 不可使用计算机。
7. 考后回收试卷。

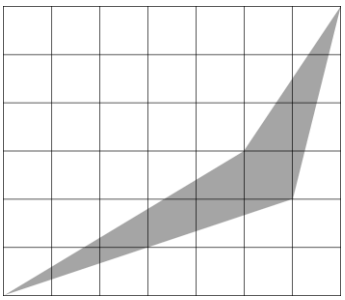
姓名:	年级:
学校:	分数:

This Question Paper Consists of 6 Printed Pages

问题	答案
1. 数方块。 Count the cubes. 	28
2. 下列两图形折成正方体后，求它们体积的比例。 The two figures below can form a cube, find out the ratio of their volume.  A 2 : 3　B 4 : 9　C 6 : 18　D 8 : 27	D
3.  A  B  C  D 	B
4. 白纸上的蓝色纸片都是 30cm × 20cm，它们之间无任何部分重叠，求没有被蓝色纸片遮盖的面积（cm^2）。 There are a couple of pieces of blue paper lay on white paper, each of them having an area of 30cm × 20cm and not overlapping each other. Find the area of the white paper that does not overlap with those blue papers. (in cm^2) 	1200

问题	答案
5. 四边形的内角和与三角形的内角和相差多少度? Find the difference in the sum of interior angles of a quadrilateral and a triangle.	180
6. 哪一个数的值最大? Find the biggest value. A 1.01×1.1 B 0.101×11 C 1.001×0.1 D 11.1×1.001	D
7. 两张边长为 24cm 的正方形纸片重叠在一起（如下图），求阴影部分面积（cm^2）。 Two pieces of square paper with a side length of 24cm overlap each other (as below). Find the area of the shaded area (in cm^2). 	144
8. 求数列 4，0，2，1，4，0，2，1，…… 前 30 个数的总合。 Find the sum of the first 30 numbers of the number series 4，0，2，1，4，0，2，1，……	53
9. 求 2021 最大的质因数。 Find the greatest prime factor of number 2021.	47
10. A、B 两班共有学生 96 人，从 A 班调 8 名学生到 B 班，再从 B 班调 36 名学生到 C 班，这时 A 班的人数是 B 班的 2 倍。原来 A 班有多少名学生? There is a total of 96 students in class A and B. Transfer 8 students from class A to class B, and transfer 36 students from class B to class C. At this time, the student number of class A is twice of class B. How many students in class A from the beginning?	48
11. $\frac{2022+20222022+202220222022}{2021+20212021+202120212021} - \frac{1}{2021} = ?$	1

问题	答案
12. 长方形 ABCD，AB = 14cm，AD = 12cm，沿对角线 BD 将它对折（如下图）。求阴影部分的周长（cm）。 Rectangle ABCD, AB = 14cm, AD = 12cm, fold against BD (as below). Find the perimeter of the shaded area (in cm).  	52
13. 一项工程 R 先生独一人 3 天可完成，T 先生独立一人 6 天可完成，问两人合作几日可完成? Mr. R finishes the project in 3 days, Mr. T finishes the project in 6 days. How many days will be needed if Mr. R and Mr. T co-work to finish the project?	2
14. 松鼠採果子，晴天採 20 颗，雨天採 12 颗，它一共採了 112 颗，平均一天採 14 颗。问这些天中有几天是雨天? The squirrel love to pick fruit, it picked 20 on every sunny day and picked 12 on every rainy day. It picked 112 pieces of fruits in total, on average it picked 14 in a day. How many days of these days are rainy days?	6
15. 一辆汽车从甲地到乙地，如果以每小时 10km 的速度行驶可提早 2 小时到达；如果以每小时 8km 的速度行驶则会迟到 3 小时。问甲乙两地距相距多少 km? A car move from A to B, if it drives at a speed of 10km per hour, it can arrive 2 hours earlier; if it drives at a speed of 8km per hour, it will arrive 3 hours late. Find distance between A and B (in kilometer)?	200
16. 求 97531 × 17 ÷ 7 的余数。 Find the reminder of 97531 × 17 ÷ 7	0

问题	答案
17. 图中每个小正方形都是 1cm^2，求阴影部分面积是多少 cm^2? The area of each small square in the figure is 1cm^2. Find the area of the shaded area (in cm^2). 	7
18. 某次演出，第一天男观众比女观众多 700 人，第二天男观众减少了 10%，女观众增加了 5%，第二天共有 1995 人观看演出，请问第一天一共有多少观众? In one show, 700 more male audiences than female audiences on the first day, the male audiences decreased by 10% and female audiences increased by 5% on the second day, we know that there are 1995 audiences on the second day. Find the number of audiences on the first day of the show.	2100
19. 一工程 A，B 两队合作 20 天完成。B，C 两队合作 60 天完成。C，D 两队合作 30 天完成。A，D 两队合作需几天才可完成? A team and B team co-operated need 20 days to complete the project. B team and C team co-operated need 60 days to complete the project. C team and D team co-operated need 30 days to complete the project. Find how many days do A team and D team co-operate to complete the project?	15
20. 一支队伍长 900 米前进速度是 3600 米每小时，队长从队伍的前端至后端观察队员的状况，共用了 4 分钟。问队长的速度是多少米每分钟? A troop with a length of 900m march at a speed of 3,600 meters per hour, and the leader observes the status of each member from the front to the back of the troop, he used 4 minutes. Find the moving speed of the leader.	165
21. $\overline{ab}$比$\overline{cd}$大 24，$1\overline{ab}$比$\overline{cd}1$大 15，$\overline{ad}$ = ? $\overline{ab}$ is 24 greater than $\overline{cd}$，$1\overline{ab}$ is 15 greater than $\overline{cd1}$，$\overline{ad}$ = ?	32

	问题	答案
22	从 0，1，4，7，9，五个数字中选出 4 个数字组成一四位数数字，把其中只能被 3 整除的数按照顺序排列，第三个数字为_____。 Choose 4 digits from 0, 1, 4, 7, 9 to form a four-digit number and arrange the numbers that can only be divisible by 3 in ascending order, the third number should be _____.	1407
23.	某一班往返吉隆坡与槟城的火车中途有 8 个停靠站，请问一共会贩售几种火车票? There is 8 train stop between Kuala Lumpur and Penang. How many types of train tickets are in total for sale?	90
24.	A，B 两地相距 477km，X 车车速每小时 46km，Y 车车速每小时 38km。两车先后从 A，B 两地出发，相向而行，当两车相遇时，X 车行驶了 230km。问 Y 车比 X 车早出发几分钟? The distance between A and B was 477km, car X drive at an average speed of 46km/h, car Y drive at an average speed of 38km/h. Car X and car Y depart from A and B after another. Car X and Y moving toward each other. Car X and Y meet while X traveled 230km. How many minutes did car Y depart earlier than X car?	90
25.	一项工程 5 人合作 20 日可完成，问若要 5 日完成该工程需多少人? A project getting done in 20 days by 5 workers, how many workers needed if we wish to complete the project in 5 days?	20

Good Luck