

# 国际中学生数学竞赛试题集粹(初中版)

(中英文对照)

戴筱逢 主编

乌 实 译

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## 策划者寄语

如何将 1、2、3、4、5 和 6 分别填入下列各方格中,使其计算式成立。

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

在垒球比赛中,狮子队、老虎队、骑警队和皇家队 4 个队相互之间都要进行四场比赛,并且胜一场得 3 分、平一场得 1 分、输一场不得分。比赛结束后,狮子队得 22 分、老虎队得 19 分、骑警队得 14 分、皇家队得 12 分。问比赛中一共有多少场为平局?

这些从《国际中学生数学竞赛试题集粹》中选出的,看似简单的数学试题可能会让初中生认真思考一段时间。

数学是自然科学乃至人类文明发展的基础。基础教育阶段,尤其是初中和高中的数学教育一直受到各国政府和教育界的高度重视。美国和加拿大等国家每年都为初中、高中各年级的学生举行全国性的数学竞赛,以考核和培养学生们的基本知识、创新思维能力以及分析问题和解决问题的实际技能,以达到为名牌大学输送高素质学生的目的。

我国教育部 2000 年颁发的有关数学教学大纲,着重强调应对青少年进行素质教育,培养学生的创新精神和实践能力,以更加有利于学生的全面发展,并在坚持贯彻党和国家教育方针的同时,逐步与国际数学教育接轨,为国家社会、经济和科学技术的跨越式发展培养一流人才。

为适应这一新的形势和教育与国际接轨的需要,我们出版由戴筱逢(美籍)博士主编的《国际中学生数学竞赛试题集粹》丛书。戴筱逢长期担任美国路易斯安娜州教育厅中学生教学和考评部主管,丛书中的许多试题也是从由其主编参与设计、北美普遍采用的数学竞赛试题中进行取舍、加工和编撰而成。竞赛试题的选择着重体现了对数学基本知识的掌握和灵活应用,以考核和培养综合运用知识的能力和善于创新的思维。本丛书为各年级中学生提供了按国际标准检测自己数学水平的机会,也为广大教育工作者和家长打开了了解国际数学教学的窗口。本丛书保留原版纯正的英文,有专业词汇和日常词汇约 8 000 个,日常和书面用语 6 000 余条,涉及到日常生活的方方面面,可帮助中学生熟练地掌握和应用英语,并为中学生的出国深造及参与国际交流打下坚实的基础。

策划者热诚欢迎广大师生和家长反馈意见和建议,并且希望为共同打造 21 世纪的一流人才贡献力量。

策划者

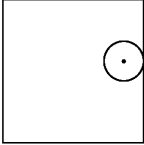
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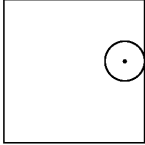
# 第一 部分

# 试 卷 一

## Test 1

- |  |   |
|--|---|
| <p>1. 珍妮买了一个标价为 8.80 美元的计算器。如果购买税为 5% ,则计算器的总价是多少?<br/>(A)0.44 美元 (B)8.36 美元 (C)9.20 美元<br/>(D)9.24 美元 (E)13.20 美元</p> <p>2. 两个人玩纸牌游戏 ,每盘赌注是 0.10 美元。最终一个人赢了 3 盘 ,另一个人赢了 0.30 美元。问两人一共玩了多少盘?<br/>(A)6 (B)7 (C)8<br/>(D)9 (E)信息不足</p> <p>3. 一杂货商用 162 桶面粉交换了 54 桶糖。每桶面粉的价值是 6 美元。问每桶糖的价值是多少美元?<br/>(A)2 (B)9 (C)15<br/>(D)18 (E)27</p> <p>4. 从 777 开始 ,一个学生按间隔为 7 倒数数 777 , 770 ,763 ,.....问会数到下列哪个数?<br/>(A)41 (B)42 (C)43<br/>(D)44 (E)45</p> <p>5. 汤姆一生中的四分之一时间是作为一个小孩 ,五分之一作为一个青年人 ,三分之一作为一个中年人 ,过退休生活 13 年。问他一共活了多少年?<br/>(A)42 (B)56 (C)60<br/>(D)120 (E)上述答案都不对</p> <p>6. 5 个苹果和 3 个香蕉共花费 2.47 美元。如果苹果和香蕉的单价互换 ,则总共要花费 3.13 美元。问 6 个苹果和 6 个香蕉要花费多少钱?</p> | <p>1. Jean buys a calculator whose price is marked as \$ 8.80. If the tax on the purchase is 5% , what will the total price be for the calculator?<br/>(A)\$ 0.44 (B)\$ 8.36 (C)\$ 9.20<br/>(D)\$ 9.24 (E)\$ 13.20</p> <p>2. Two men play a card game for which the stakes are \$ 0.10 a game. At the end , one has won 3 games and the other has won \$ 0.30. How many games did they play?<br/>(A)6 (B)7 (C)8<br/>(D)9 (E)Not enough information</p> <p>3. A grocer trades 162 barrels of flour valued at \$ 6.00 a barrel for 54 barrels of sugar. What is the value of a barrel of sugar?<br/>(A)\$ 2.00 (B)\$ 9.00 (C)\$ 15.00<br/>(D)\$ 18.00 (E)\$ 27.00</p> <p>4. Starting at 777 and counting backwards by 7s , a student counts 777 ,770 ,763 ,etc. A number that will be counted is<br/>(A)41 (B)42 (C)43<br/>(D)44 (E)45</p> <p>5. Tom lived a quarter of his life as a boy , a fifth as a young man , a third in middle-age and 13 years in retirement. How old was he when he died?<br/>(A)42 (B)56 (C)60<br/>(D)120 (E)None of these</p> <p>6. Five apples and three bananas cost \$ 2.47. If the price of apples and bananas was exchanged , the same amount of fruit would cost \$ 3.13. How</p> |
|--|---|

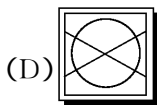
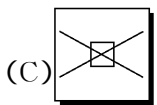
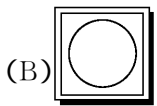
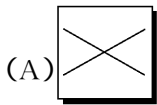
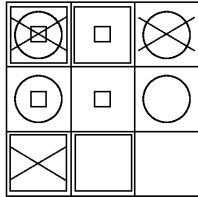
- (A)4.20 美元 (B)4.24 美元 (C)4.40 美元  
(D)4.80 美元 (E)上述答案都不对
7. 在一个宴会上,每 2 个客人分享一盘米饭,每 3 个客人分享一盘汤,每 4 个客人分享一盘肉。若一共有 65 个盘子,问有多少客人出席了宴会?  
(A)42 (B)56 (C)60  
(D)120 (E)上述答案都不对
8. 100 个玻璃球放在 3 个碗中,第 1 个碗和第 2 个碗中球的总数为 56 个,第 2 个碗和第 3 个碗中球的总数为 70 个,第 3 个碗中有多少个球?  
(A)24 (B)30 (C)36  
(D)44 (E)信息不足
9. 某一班 20 个学生在一次考试中的平均成绩为 66。另一班 30 个学生的平均成绩为 56。两班一起的平均成绩是多少?  
(A)58 (B)59 (C)61  
(D)62 (E)上述答案都不对
10. 一个半径为 2 的圆沿着一边长为 10 的正方形内边滚动一周。问圆心经过的长度是多少?  
(A)16 (B)24  
(C)32 (D)40  
(E)上述答案都不对
- 
11. 定义  $a \times b$  为  $2a$  和  $a + b$  两值中较大的一个。那么  $(2 \times 3) \times (3 \times 2)$  等于多少?  
(A)9 (B)10 (C)11  
(D)12 (E)上述答案都不对

- much would six apples and six bananas cost?  
(A)\$ 4.20 (B)\$ 4.24 (C)\$ 4.40  
(D)\$ 4.80 (E)None of these
7. At a banquet, every 2 guests shared one dish for rice, every 3 guests shared one dish for soup and every 4 guests shared one dish for meat. How many guests were present if there were 65 dishes altogether?  
(A)42 (B)56 (C)60  
(D)120 (E)None of these
8. One hundred marbles are placed in three bowls. The first and second bowl contain a total of 56 marbles, and the second and third bowl a total of 70 marbles. How many marbles are in the third bowl?  
(A)24 (B)30 (C)36  
(D)44 (E)Not enough information
9. A class of 20 students achieves an average of 66 on an exam. A second class of 30 students achieves an average grade of 56 on the same exam. The average for the combined classes is:  
(A)58 (B)59 (C)61  
(D)62 (E)None of these
10. A circle of radius 2 rolls completely around the inside perimeter of a square of side 10. What distance is covered by the centre of the circle?  
(A)16 (B)24  
(C)32 (D)40  
(E)None of these
- 
11. Define  $a \times b$  to be the larger of  $2a$  and  $a + b$ . Then  $(2 \times 3) \times (3 \times 2)$  is equal to  
(A)9 (B)10 (C)11  
(D)12 (E)None of these

12. 当  $A$  和  $B$  为任何正整数时, 下列哪一个数不能用  $11A + 19B$  表示?

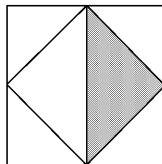
- (A)30      (B)68      (C)123  
(D)211      (E)上述答案都不对

13. 正方形  $A$ 、 $B$ 、 $C$  和  $D$  中哪一个放置在右图空缺的位置比较合理?



(E)信息不足

14. 一正方形四边中点的连线构成另一内接小正方形。小正方形的阴影部分为原正方形的几分之几?



- (A) $\frac{1}{8}$       (B) $\frac{1}{6}$   
(C) $\frac{1}{4}$       (D) $\frac{1}{3}$   
(E) $\frac{1}{2}$

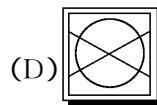
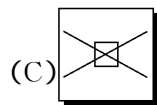
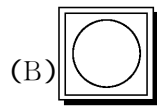
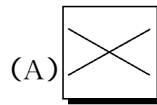
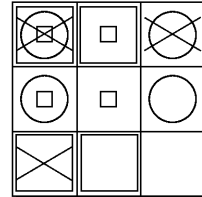
15. 一俱乐部中的女性比男性多 16 人, 女性人数的 7 倍比男性人数的 9 倍还多 32 人。问男性的人数是多少?

- (A)4      (B)24      (C)32

12. Of the following numbers, which cannot be expressed in the form  $11A + 19B$  where  $A$  and  $B$  are positive integers?

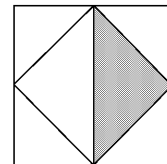
- (A)30      (B)68      (C)123  
(D)211      (E)None of these

13. Which of the squares  $A$ ,  $B$ ,  $C$  or  $D$  should logically occupy the missing place in the figure below?



(E)Not enough information

14. The midpoints of the sides of a square are joined together and part of the resulting square is shaded. The shaded area represents what proportion of the original square?



- (A) $\frac{1}{8}$       (B) $\frac{1}{6}$       (C) $\frac{1}{4}$   
(D) $\frac{1}{3}$       (E) $\frac{1}{2}$

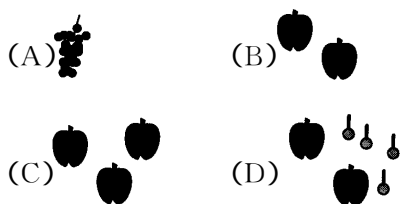
15. The women in a club outnumber the men by 16.7 times the number of women exceeds 9 times the number of men by 32. Find the number of men.

- (A)4      (B)24      (C)32

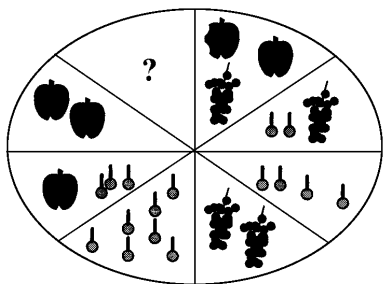
(D)42 (E)上述答案都不对

16. 如果前 100 个整数  $1 + 2 + 3 + \dots + 99 + 100 = 5\,050$ , 那么前 50 个奇数  $1 + 3 + 5 + \dots + 99 = ?$   
 (A)2 500 (B)2 524 (C)2 525  
 (D)2 550 (E)上述答案都不对

17. 苹果、樱桃和葡萄按下列方式放置在画板中: 相对区域的水果的值相等。为与 2 串葡萄等值, 在对应的空白区应放多少水果?



(E)信息不足



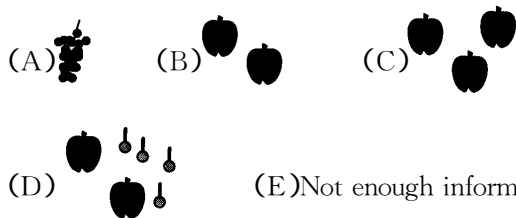
18. 通过前一位数字乘以 2 再加上  $a$  可得到一个序列。如果序列的第 6 位数量 70, 第 9 位数量 609, 那么  $a$  的值是多少?  
 (A)1 (B)3 (C)7  
 (D)49 (E)上述答案都不对

19. 假定一球从任一高度落下都会反弹到一半高度。若一个球从 100 米高处落下, 在它第 4 次着地时一共已运动了多少距离?  
 (A)137.5 米 (B)187.5 米 (C)275 米  
 (D)375 米 (E)信息不足

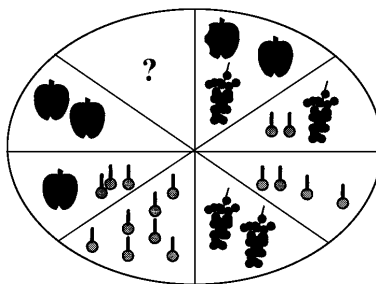
(D)42 (E)None of these

16. If the sum of the first 100 integers:  $1 + 2 + 3 + \dots + 99 + 100 = 5\,050$ , then the sum of the first 50 odd integers:  $1 + 3 + 5 + \dots + 99 = ?$   
 (A)2 500 (B)2 524 (C)2 525  
 (D)2 550 (E)None of these

17. Apples, cherries and grapes are arranged on a platter in the following fashion: opposite sectors contain fruit which is of equal value. To equal the value of two bunches of grapes, how much fruit must be placed in the empty sector?



(E)Not enough information



18. A sequence of numbers is obtained by multiplying each previous value by 2 and adding a number  $a$  to the result. If the 6th number is 70 and the 9th number is 609, what is the value of  $a$ ?  
 (A)1 (B)3 (C)7  
 (D)49 (E)None of these

19. Assume that a ball dropped from any height rises half the distance on the rebound. If a ball is dropped from 100 m, what distance will the ball have covered by the time it hits the ground the 4th time?  
 (A)137.5 m (B)187.5 m (C)275 m  
 (D)375 m (E)Not enough information

20. 一个矩形网络由红色和绿色两种颜色着色。在每行和每列中两种颜色各占一半。那么图中的  $A$  块和  $B$  块应着什么颜色？

$R$			$G$
		$G$	
	$R$		$B$
	$A$		$R$

- (A)  $A = \text{红}$   $B = \text{红}$   
 (B)  $A = \text{红}$   $B = \text{绿}$   
 (C)  $A = \text{绿}$   $B = \text{红}$       (D)  $A = \text{绿}$   $B = \text{绿}$   
 (E) 信息不足

20. A rectangular grid is coloured with the two colours Red and Green so that each colour occurs half in each column and half in each row. What

$R$			$G$
		$G$	
	$R$		$B$
	$A$		$R$

colours must the squares labelled  $A$  and  $B$  be coloured ?

- (A)  $A = R$   $B = R$       (B)  $A = R$   $B = G$   
 (C)  $A = G$   $B = R$       (D)  $A = G$   $B = G$   
 (E) Not enough information

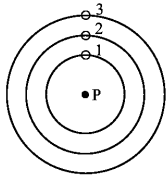
## 试 卷 二

### Test 2

1. 递送包裹,某公司的收费起点是 1 美元,另外每千克加收 0.05 美元,每千米加收 0.01 美元。从蒙克敦到福得日克敦的距离是 180 千米,在两城市之间递送 9 千克的包裹需要支付多少美元?  
(A)1.45 美元 (B)2.25 美元 (C)3.25 美元  
(D)18.45 美元 (E)上述答案都不对

2. 约翰每周的薪水是 300 美元。若每两周中有一周他能积存三分之一,另一周积存二分之一,需要多少周他才能积存 1 500 美元?  
(A)5 周 (B)6 周 (C)10 周  
(D)12 周 (E)15 周

3. 冥王星有 3 颗卫星。卫星一绕冥王星一周为 6 天,卫星二为 10 天,卫星三为 15 天。从图中所示的位置开始,需要多少天才能回复到原来的位置?



- (A)30 天 (B)60 天 (C)90 天  
(D)150 天 (E)900 天

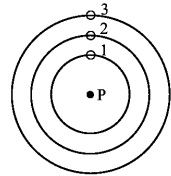
4. 在一地图上两个城镇的距离为 11 厘米。若地图的比例是 1 厘米 = 25 千米,那么两城镇的距离是多少?  
(A)44 千米 (B)50 千米 (C)225 千米  
(D)275 千米 (E)2 525 千米

5. 水箱的容积是 4 000 升。200 升的水需要与 50 升除草剂混合以喷洒 1 公顷土地。若喷洒开始

1. To send a package, a company charges \$ 1 plus \$ 0.05 per kilogram and \$ 0.01 per kilometer. How much would you pay to send a 9 kilogram package from Moncton to Fredericton if the distance between those cities is 180 kilometers?  
(A)\$ 1.45 (B)\$ 2.25 (C)\$ 3.25  
(D)\$ 18.45 (E)None of these

2. John receives \$ 300 every week as a salary. If one week out of two weeks he keeps one third of it and the rest of the time he keeps one half of it, how many weeks will it take to save a total of \$ 1 500?  
(A)5 weeks (B)6 weeks (C)10 weeks  
(D)12 weeks (E)15 weeks

3. The planet Pluto has 3 moons. Moon 1 takes 6 days to make a complete revolution around the planet, moon 2 takes 10 days and moon 3 takes 15 days.



- Starting from the position shown on the diagram, how many days are necessary to return to the original position?  
(A)30 days (B)60 days (C)90 days  
(D)150 days (E)900 days

4. On a map, two towns are 11 centimeters apart. If the scale of the map is 1 cm = 25 km, how far apart are the towns?  
(A)44 km (B)50 km (C)225 km  
(D)275 km (E)2 525 km

5. The capacity of a tank sprayer is 4 000 liters. If 200 liters of water is mixed with 50 liters of herbicide for

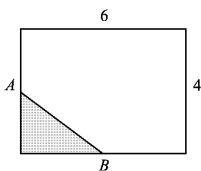
- 时水箱为 75% 充满,则可以喷洒多少公顷土地?
- (A)12 (B)15 (C)16  
(D)20 (E)上述答案都不对
6.  $241 \times 376$  的乘积还应加上多少才能是 9 的倍数?
- (A)2 (B)3 (C)4  
(D)5 (E)6
7. 一个长方形的水池宽 8 米、长 12 米。水池周围绕有一均匀宽度的混凝土走道。水池和走道的总面积为 320 平方米,问走道的宽度是多少米?
- (A)2 (B)4 (C)6  
(D)8 (E)上述答案都不对
8. 如果 1 英尺 = 12 英寸,那么可以在体积为 2 英尺  $\times$  2 英尺  $\times$  2 英尺的箱子中装多少体积为 6 英寸  $\times$  4 英寸  $\times$  8 英寸的盒子?
- (A)8 (B)9 (C)54  
(D)72 (E)上述答案都不对
9. 下列有四个是相等的。挑出与其他不相等的数值。
- (A)  $\frac{1}{12} + \frac{2}{3}$  (B)  $\frac{13}{20} + \frac{1}{10}$   
(C)  $\frac{5}{12} + \frac{1}{6}$  (D)  $\frac{1}{4} + \frac{1}{2}$   
(E)  $\frac{11}{20} + \frac{1}{5}$
10. 一数学竞赛试卷有 19 道题目。答对了得 7 分,答错了扣 3 分。有一道试题被取消,即没有加分或扣分。如果丹尼尔的得分为 76 分,那么他答对了多少道试题?
- (A)10 (B)11 (C)12  
(D)13 (E)14
11. 在 130 至 200 之间有一个三位数,它可以被 6 和 8 整除,它的十位数比个位数大。这个数是多少?
- each acre sprayed, how many acres can be sprayed if the tank is 75% full when the spraying begins?
- (A)12 (B)15 (C)16  
(D)20 (E)None of these
6. How much should we add to the product  $241 \times 376$  to obtain a multiple of 9?
- (A)2 (B)3 (C)4  
(D)5 (E)6
7. A rectangular pool is 8 m wide and 12 m long. A concrete walk of uniform width surrounds the pool. If the total area of the pool and the walk is 320 square meters, how many meters wide is the walk?
- (A)2 (B)4 (C)6  
(D)8 (E)None of these
8. If  $1' = 12''$ , determine the number of  $6'' \times 4'' \times 8''$  rectangular boxes that can fit completely inside a  $2' \times 2' \times 2'$  box.
- (A)8 (B)9 (C)54  
(D)72 (E)None of these
9. Four of the following are equal. Which is the odd one out?
- (A)  $\frac{1}{12} + \frac{2}{3}$  (B)  $\frac{13}{20} + \frac{1}{10}$   
(C)  $\frac{5}{12} + \frac{1}{6}$  (D)  $\frac{1}{4} + \frac{1}{2}$   
(E)  $\frac{11}{20} + \frac{1}{5}$
10. A mathematics contest consists of 19 questions. Seven points are awarded for each correct answer, and 3 points are deducted for each wrong answer. If a question is omitted, no points are awarded. If Daniel gets a score of 76 on the contest, how many questions did he answer correctly?
- (A)10 (B)11 (C)12  
(D)13 (E)14
11. A three digit number is between 130 and 200. It is divisible by 6 and 8. The tens digit is greater than the ones digit. What is the number?

- (A)144      (B)168      (C)184  
(D)192      (E)196

12. 一个水箱的一半被充满后是 48 升。若要充满到  $\frac{2}{3}$  水箱, 还需要加多少升的水?

- (A)16      (B)18  
(C)20      (D)22  
(E)24

13. 图中 A 和 B 分别是两边的中点。那么阴影部分为整个长方形的几分之几?



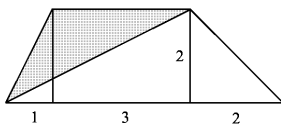
- (A)  $\frac{1}{16}$       (B)  $\frac{1}{8}$   
(C)  $\frac{1}{4}$       (D)  $\frac{1}{3}$   
(E) 上述答案都不对

14. 总长度为 9.1 米的墙体包括 10 个均匀隔开的正方形柱子(墙体两端均有柱子)。柱子边长为 10 厘米。问两相邻柱子间的距离是多少厘米?

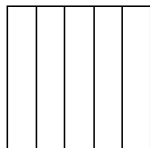
- (A)81      (B)90  
(C)91      (D)100  
(E) 上述答案都不对

15. 图中阴影部分的面积是多少?

- (A)2      (B)3      (C)4  
(D)5      (E)6



16. 一正方形被划分成 5 个全等的长方形。若长方形的周长为 30 个单位, 那么正方形的周长是多少?

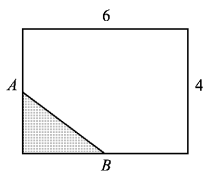


- (A)144      (B)168      (C)184  
(D)192      (E)196

12. A water tank contains 48 liters when it is half full. How much water needs to be added so that it will be  $\frac{2}{3}$  full?

- (A)16      (B)18  
(C)20      (D)22  
(E)24

13. A and B are the middle points of the sides. What fraction (of the total area) does the shaded region represent?



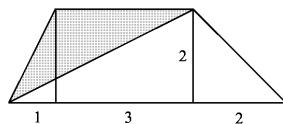
- (A)  $\frac{1}{16}$       (B)  $\frac{1}{8}$   
(C)  $\frac{1}{4}$       (D)  $\frac{1}{3}$   
(E) None of these

14. A wall which is 9.1 meters long is divided by 10 evenly spaced 10 cm square posts (including the posts on the corners). How many cm wide is the space between consecutive posts?

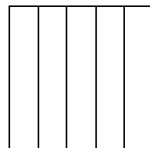
- (A)81      (B)90  
(C)91      (D)100  
(E) None of these

15. What is the area of the shaded region?

- (A)2      (B)3      (C)4  
(D)5      (E)6



16. The square is divided into 5 congruent rectangles. If the perimeter of one rectangle is 30 units, what is the perimeter of the square?



- (A)50            (B)60            (C)150  
(D)225           (E)信息不足
17. 一个三角形的两边边长分别为 5 和 13。第三边边长的整数位可能有多少？  
(A)1            (B)9            (C)10  
(D)11           (E)12
18. 有多少个三位数,它们各位上的数字和为 24？  
(A)3            (B)6            (C)7  
(D)10           (E)18
19. 在北美使用的硬币面值有 0.01 美元、0.05 美元、0.10 美元、0.25 美元、1 美元和 2 美元,有多少方法可以获得 10 个硬币的总值为 3.15 美元？  
(A)1            (B)2            (C)3  
(D)4            (E)不可能
20. 将小于 49 的正整数相乘。问这一乘积尾数有多少个零？  
(A)5            (B)9            (C)10  
(D)48           (E)49

- (A)50            (B)60            (C)150  
(D)225           (E)Not enough information
17. The lengths of two sides of a triangle are 5 and 13. How many integers are possible values for the length of the third side?  
(A)1            (B)9            (C)10  
(D)11           (E)12
18. How many 3-digit numbers are there for which the sum of the digits of the number is 24?  
(A)3            (B)6            (C)7  
(D)10           (E)18
19. In North America we use coins of the following denominations: \$0.01, \$0.05, \$0.10, \$0.25, \$1 and \$2. In how many ways can we obtain a sum of \$3.15 using exactly 10 coins?  
(A)1            (B)2            (C)3  
(D)4            (E)It is not possible
20. All the positive integers less than 49 are multiplied together. How many zeros will this product end in?  
(A)5            (B)9            (C)10  
(D)48           (E)49

## 试 卷 三

### Test 3

1. 一时钟在下午 1 点校准,它每小时慢 3 分钟。在次日上午正 10 点时,这一时钟的读数是多少?  
 (A)8:57 (B)9:03  
 (C)10:00 (D)11:03  
 (E)上述答案都不对
2. 在一锦标赛中每一队将与另外各队相遇 2 次。锦标赛一共有 30 场比赛。问一共有多少代表队参加了比赛?  
 (A)4 (B)5 (C)6  
 (D)7 (E)15
3. 一个乐队有 30 个音乐家。其中 12 位能演奏长笛,有 12 位能演奏小号,有 6 位既能演奏长笛又能演奏小号。问有多少音乐家既不能演奏长笛又不能演奏小号?  
 (A)0 (B)6 (C)12  
 (D)15 (E)上述答案都不对
4. 有多少个整数  $n$  值可以满足  $\frac{5}{61} < \frac{1}{n} < \frac{13}{57}$ ?  
 (A)1 (B)6 (C)7 (D)8 (E)9
5. 在棒球比赛中,选手的击球平均数可以用击到球的次数除以轮到击球的次数计算。一选手在轮到 400 次击球次数中击到球 100 次。若到本赛季结束他还有 200 次击球次数,要使击球平均数达 0.300,他需要击到球多少次?  
 (A)60 (B)80 (C)120  
 (D)180 (E)上述答案都不对
1. A clock is set correctly at 1:00 p. m. . It loses 3 minutes during every hour. What will the clock read when the correct time is 10:00 a. m. the next day?  
 (A)8:57 (B)9:03  
 (C)10:00 (D)11:03  
 (E)None of these
2. In a tournament where each team meets every other team twice, a total of 30 games are played. How many teams play in this tournament?  
 (A)4 (B)5 (C)6  
 (D)7 (E)15
3. An orchestra has 30 musicians. Twelve of them can play the flute and twelve of them can play the trumpet. Six of them can play both. How many of the musicians can not play either of these instruments?  
 (A)0 (B)6 (C)12  
 (D)15 (E)None of these
4. How many integers  $n$  are there such that  $\frac{5}{61} < \frac{1}{n} < \frac{13}{57}$ ?  
 (A)1 (B)6 (C)7 (D)8 (E)9
5. In the game of baseball, a player's batting average is obtained by dividing the number of hits by the number of times at bat. A player has already had 100 hits in 400 times at bat. If he still has 200 more times at bat until the end of the season, how many more hits does he need in order to end the season with a batting average of 0.300?  
 (A)60 (B)80 (C)120  
 (D)180 (E)None of these

6. 保罗比罗马小 5 岁, 朱尔斯比保罗和罗马岁数的总和小 10 岁。若三个人的岁数总和是 80 岁, 罗马是多少岁?

- (A)20            (B)25            (C)30  
(D)35            (E)40

7. 光速为每秒 300 000 千米。行星冥王星与地球的距离为 60 亿千米。若宇宙飞船按恒速直线飞行从地球到冥王星需 100 小时, 则飞船的速度是光速的几分之几?

- (A) $\frac{6}{100}$             (B) $\frac{1}{18}$             (C) $\frac{1}{180}$   
(D) $\frac{1}{1\ 080}$         (E)上述答案都不对

8.  $\sqrt{\frac{1\ 997}{10\ 000}}$  最接近下列哪一个数值?

- (A)0.004 4        (B)0.014 1        (C)0.044 6  
(D)0.141 1        (E)0.446 9

9. 下列序列中的缺项是哪一个数?

- 1    2    5    12    ?    58  
(A)24            (B)27            (C)28  
(D)33            (E)上述答案都不对

10.  $2^1 \times 3^2 \times 4^3 \times 5^4$  的积是几位数?

- (A)5            (B)6            (C)7  
(D)8            (E)上述答案都不对

11. 若定义  $a \times b = a^2 + \frac{1}{b}$ , 计算  $3 \times 5$  的值。

- (A) $\frac{9}{5}$             (B) $\frac{46}{5}$             (C)15  
(D) $\frac{76}{3}$             (E)上述答案都不对

12. 一农夫在一块长方形的土地上按排栽种树。若每排栽种的树是排数的 3 倍, 并且一共栽种了 972 棵树, 问每排有多少棵树?

6. Paul is 5 years younger than Roman and Jules is 10 years younger than the sum of Paul's and Roman's ages. How old is Roman if the three ages add up to 80 years?

- (A)20            (B)25            (C)30  
(D)35            (E)40

7. The speed of light is 300 000 km/sec and the planet Pluto is located at a distance of 6 billion km from Earth. If a spaceship, traveling at a constant speed in a straight line, goes from Earth to Pluto in 100 hours, at what fraction of the speed of light is this spaceship traveling?

- (A) $\frac{6}{100}$             (B) $\frac{1}{18}$             (C) $\frac{1}{180}$   
(D) $\frac{1}{1\ 080}$         (E)None of these

8. Of the following, which is the closest estimate of

$$\sqrt{\frac{1\ 997}{10\ 000}}?$$

- (A)0.004 4        (B)0.014 1        (C)0.044 6  
(D)0.141 1        (E)0.446 9

9. Find the missing term in the sequence:

- 1    2    5    12    ?    58  
(A)24            (B)27            (C)28  
(D)33            (E)None of these

10. How many digits does the number  $2^1 \times 3^2 \times 4^3 \times 5^4$  have?

- (A)5            (B)6            (C)7  
(D)8            (E)None of these

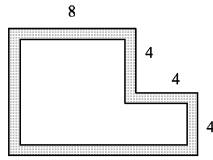
11. If  $a \times b = a^2 + \frac{1}{b}$ , find the value of  $3 \times 5$ .

- (A) $\frac{9}{5}$             (B) $\frac{46}{5}$             (C)15  
(D) $\frac{76}{3}$             (E)None of these

12. A farmer plants trees in rows in a rectangular field. If each row has three times as many trees as there are rows and if there are 972 trees in the field, how many trees are there in each row?

- (A)18 (B)27 (C)36  
(D)54 (E)上述答案都不对

13. 若图中阴影部分的宽度恒定为 1 个单位, 则非阴影部分的面积与阴影部分的面积的差值是多少?



- (A)0 (B)4  
(C)8 (D)12  
(E)上述答案都不对

14. 一个水果店苹果的售价为每个 5 美分, 橘子的售价为每个 10 美分, 香蕉的售价为每个 25 美分。如果你在水果店花费了 55 美分仅购买两种水果, 问有多少不同的选择?

- (A)7 (B)8 (C)9  
(D)14 (E)18

15. 你销售 A 和 B 两种电视游戏。第一天你销售出 3 个 A 种游戏、5 个 B 种游戏, 总收入为 450 美元。第二天你将 A 种游戏减价 20 美元, 将 B 种游戏提价 10 美元。这一天你销售出 5 个 A 种游戏、4 个 B 种游戏, 总收入为 430 美元。问第二天 A 种游戏的售价是多少?

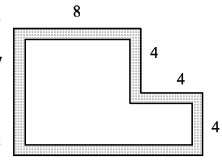
- (A)30 美元 (B)40 美元  
(C)50 美元 (D)60 美元  
(E)70 美元

16. 一行走道的运动速度为 4 千米/小时。一步行者按 6 千米/小时速度在行走道上按走道同方向行走 1 千米, 然后再向反方向行走回到起点。问步行者这一个来回花了多少时间?

- (A)10 分钟 (B)20 分钟  
(C)30 分钟 (D)36 分钟  
(E)上述答案都不对

- (A)18 (B)27 (C)36  
(D)54 (E)None of these

13. If the shaded region has a constant width of 1 unit, what is the difference between the areas of the non-shaded region and the shaded region?



- (A)0 (B)4 (C)8  
(D)12 (E)None of these

14. A fruit shop sells apples for 5 cents each, oranges for 10 cents each and bananas for 25 cents each. If you spend exactly 55 cents at the shop, how many distinct purchases of exactly two kinds of fruit can you make?

- (A)7 (B)8 (C)9  
(D)14 (E)18

15. You are selling video games of two types, A and B. The first day, you sell 3 games of type A and 5 games of type B for a total of \$450. The second day, you decrease the price of type A games by \$20 and you increase the price of type B games by \$10. You then sell 5 games of type A and 4 games of type B for a total of \$430. What was the price of the type A games on the second day?

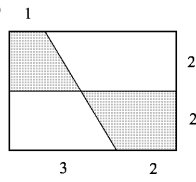
- (A)\$30 (B)\$40  
(C)\$50 (D)\$60  
(E)\$70

16. A moving sidewalk travels at 4 km/h. A pedestrian walking at 6 km/h covers 1 km on the sidewalk going in the same direction as the sidewalk and then comes back to the starting point walking in the opposite direction from the movement of the sidewalk. How long does the round trip take?

- (A)10 min (B)20 min  
(C)30 min (D)36 min  
(E)None of these

17. 阴影部分的面积是多少？

- (A)6  
(B)8  
(C)10  
(D)12  
(E)信息不足



18. 指数  $2^{1997}$  的最后一位数是多少？

- (A)0 (B)2 (C)4  
(D)6 (E)8

19. 可用三根管向容器中注入液体,采用第一根管注满容器的时间为 10 小时。采用第二根管和第三根管注满容器的时间分别为 12 小时和 15 小时。由于压力问题使每根管的输入能力仅为原来的一半。因此决定用三根管同时向容器中注入液体,问这时注满空容器需要多长时间？

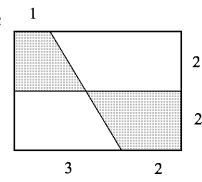
- (A)4 小时 (B)5 小时 (C)8 小时  
(D)12 小时 (E)上述答案都不对

20. 包括 1 至 1 000 之间的整数中有多少个不含数字 8 或 9？

- (A)200 (B)488 (C)512  
(D)521 (E)800

17. What is the area of the shaded region?

- (A)6  
(B)8  
(C)10  
(D)12  
(E)Not enough information



18. What is the last digit of the number  $2^{1997}$ ?

- (A)0 (B)2 (C)4  
(D)6 (E)8

19. Three pipes can be used to fill a tank. It is filled in 10 hours using only the first pipe, in 12 hours using only the second pipe and in 15 hours using only the third one. A pressure problem cuts the flow capacity of each pipe in half. It is then decided to use the three pipes together. How long will it take to fill the tank?

- (A)4 hr (B)5 hr (C)8 hr  
(D)12 hr (E)None of these

20. How many integers between 1 and 1 000 (inclusive) do not contain the digits 8 or 9?

- (A)200 (B)488 (C)512  
(D)521 (E)800