

【尚友制作】数学猴哥难题 112 讲解 21-30

NO 21

$\lfloor x \rfloor$ represents the greatest integer less than or equal to x and $\lceil x \rceil$ represents the least integer greater than or equal to x .

Column A

$$\frac{\lfloor 1.4 \rfloor + \lceil 1.4 \rceil}{2}$$

21

Column B

1.4

@A

解答：左边是 $(2+1)/2=1.5$

右边是 1.4

左边大

选 A

NO 22

These questions refer to the following table.

APPARENT FAHRENHEIT TEMPERATURES
DUE TO WIND-CHILL FACTOR
(corresponding to actual temperatures and wind speeds)

WIND SPEEDS (miles per hour)	ACTUAL TEMPERATURES (degrees Fahrenheit)				
	-10	0	10	20	30
5	-15	-5	7	16	27
10	-34	-22	-9	3	16
15	-45	-31	-18	-5	9
20	-53	-39	-24	-10	4
25	-59	-44	-29	-15	1
30	-64	-49	-33	-18	-2
35	-67	-52	-35	-20	-4
40	-69	-53	-37	-21	-5

22

If the actual temperature is 13 degrees Fahrenheit and the wind speed is 14 miles per hour, then the apparent temperature could be

- ☐ 5 degrees Fahrenheit
- ☐ -12 degrees Fahrenheit
- ☐ -20 degrees Fahrenheit
- ☐ -25 degrees Fahrenheit
- ☐ -32 degrees Fahrenheit

@B

解答：题目中间，如果实际温度为 13，（虽然表中没有 13 这个数，但是我们可以知道，它是介于 10 和 20 之间的，而且比较接近 10），并且风速是 14（同样的，表中没有 14 这个数，但是可知是 10 到 15 之间，比较接近 15）。所以我们就参考实际温度为 10，风速为 15 的时候，apparent temperature 是-18。答案中和这个

最接近的，就是 B

NO 23

These questions refer to the following table.

APPARENT FAHRENHEIT TEMPERATURES
DUE TO WIND-CHILL FACTOR
(corresponding to actual temperatures and wind speeds)

WIND SPEEDS (miles per hour)	ACTUAL TEMPERATURES (degrees Fahrenheit)				
	-10	0	10	20	30
5	-15	-5	7	16	27
10	-34	-22	-9	3	16
15	-45	-31	-18	-5	9
20	-53	-39	-24	-10	4
25	-59	-44	-29	-15	1
30	-64	-49	-33	-18	-2
35	-67	-52	-35	-20	-4
40	-69	-53	-37	-21	-5

Which of the following can be inferred from the table?

- I. The apparent temperature for an actual temperature of 20 degrees Fahrenheit and a wind speed of 15 miles per hour is the same as that for an actual temperature of 30 degrees Fahrenheit and a wind speed of 40 miles per hour.
- II. At a constant wind speed, as the actual temperature increases, the difference between the actual and the apparent temperatures also increases.
- III. At a constant actual temperature of -10 degrees Fahrenheit, the apparent temperature decreases at a constant rate as the wind speed increases.

☐ I only ☐ II only ☐ I and III only

☐ II and III only ☐ I, II, and III

23

@A

和 22 题为同一个图表题

I: 实际温度是 20，风速是 15 的时候的表观温度（apparent temperature）和实际温度是 30，风速是 40 的时候的表观温度是一样的。

判断：查表可得，实际温度 20，风速 15 表观温度=-5；实际温度=30，风速 40，表观温度=-5.所以这个是对的

II: 当风速恒定的时候，随着实际温度上升，实际温度和表观温度之间的差值也变大了

判断：当风速为 5，实际温度-表观温度依次是 5，5，3，4，3. 没有递增的趋势。所以这个是不对的

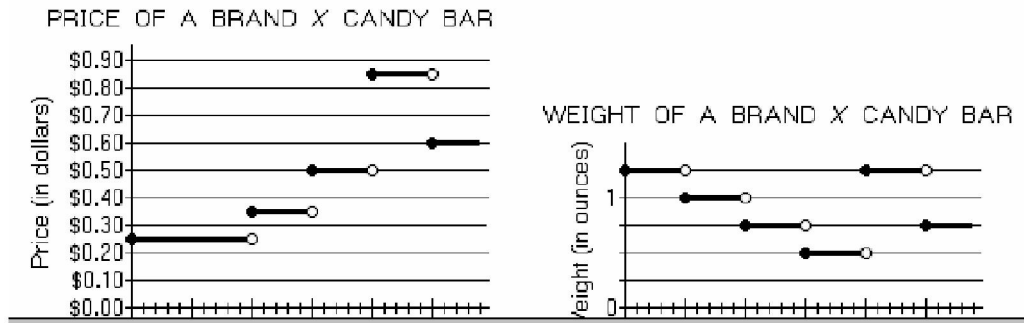
III: 当实际温度恒定在-10，随着风速上升，表观温度依恒定速度下降

判断：当实际温度是-10，看表格第一列。表观温度依次是-15，-34，-45，-53，-59，-64，-67，-69.虽然是下降，但是并没有以恒定的速度。所以这个判断是不对的

综上所述，只有 I 对，选 A

NO 24

These questions refer to the following graphs, which are drawn to scale. An open dot means the point is not included.



From 1982 to 1987 the price of a Brand X candy bar increased by approximately what percent?

- ☐ 40%
- ☐ 50%
- ☐ 70%
- ☐ 150%
- ☐ 250%

24

@C

提示中标明，实心的点是包括在内的，空心点就不包括在内了。

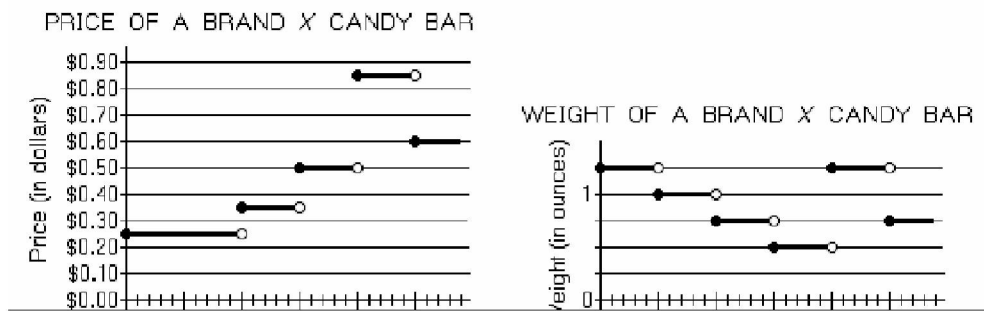
这个图呢。是有点残。大家可以参考 26 题的图

题目问得是从 1982 年到 1987 年，价格上升了多少。

现在到左边的表示价格的图，然后找到 1982 年那个点，对上去的价格是 0.5，同理，找到 1987 年，其价格是 0.85。所以，增长幅度为 $(0.85/0.5) - 1 = 70\%$ 选 C

NO 25

These questions refer to the following graphs, which are drawn to scale. An open dot means the point is not included.



How many times between 1971 and 1991 did the price of a Brand X candy bar increase while the weight decreased?

- ☐ One
- ☐ Two
- ☐ Three
- ☐ Four
- ☐ Five

25

@B

这道题是问，从 1971 年到 1991 年，有多少次是 价格上升，但是重量下降

1975 P 上升 W 下降

1980 P 上升 W 下降

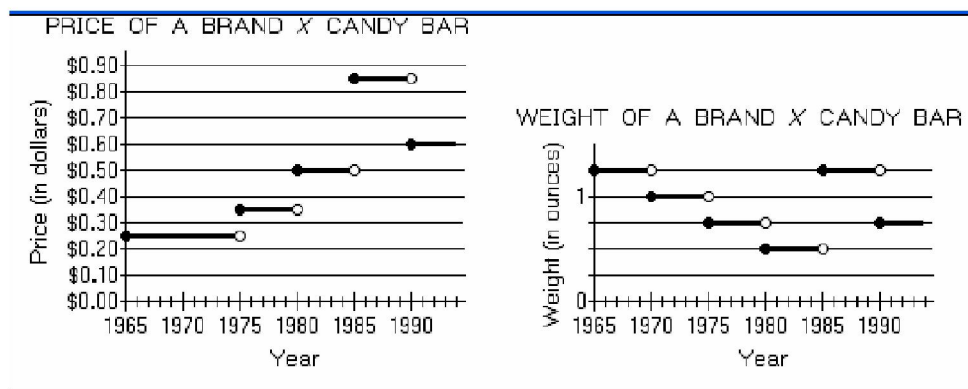
1985 P 上升 W 上升

1990 p 下降 W 下降

可见只有 1975，和 1980 是符合条件的，共两年

选 B

NO 26



How many times between 1971 and 1991 did the price of a Brand X candy bar increase while the weight decreased?

- ☐ One
- ☐ Two
- ☐ Three
- ☐ Four
- ☐ Five

26

@B

解法同上一题目；

NO 27

Of the 500 delegates attending a convention, 200 are Republicans and the rest are Democrats. One hundred of the delegates are vegetarians and, of those who are not vegetarians, 270 are Democrats. How many of the vegetarian delegates are Republicans?

- ☐ 30
- ☐ 40
- ☐ 50
- ☐ 60
- ☐ 70

27

@E

翻译：共 500 人，其实 R 200，剩下的 D 为 300

500 人当中有 100 人是素食主义 --> 剩下的 400 不是素食主义

这 400 人中有 270 是 D，上面已知，D 共 300 人，那么可知有 30 人，是素食主义

所以可得

demoncrat & vegetarian = 30

demoncrat & non vegetarian = 270

republican & vagetarian = total vegetarian - demoncrat & vegetarian = 70

republican & non vegetarian = total non vegetarian - demoncrat & non vegetarian = 130

所以答案是 70，选 E

NO 28

S is a set of n consecutive integers.

Column A

Column B

The mean of S

The median of S

28

@C

解答：题干：S 是一个有 n 个连续整数组成的数列

比较 S 的 mean 和 median
同样是 (首项+尾项)/2
所以是相等的, 选 C

NO 29

An airline must charge an 11 percent tax on the price of an airline ticket. The airline wishes to charge the whole-dollar amount of \$433.00 for the ticket, including the tax. What price, to the nearest \$0.01, should the airline set for the ticket before the tax is added?

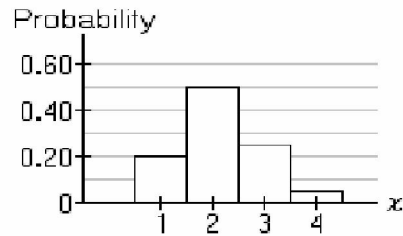
- ☐ \$385.37
- ☐ \$389.70
- ☐ \$390.09
- ☐ \$393.64
- ☐ \$422.00

29

@C

解答: $\text{tax} = 11\% \times \text{ticket price before tax}$
 $\text{tax} + \text{ticket price before tax} = 433$
 $\text{ticket price before tax} = 433 / (1 + 0.11) \times 1 = 390.09$
选 C

NO 30



Note: Drawn to scale.

From the probability histogram, what is the probability that x is either 1 or 2?

- ☐ 0.35
- ☐ 0.45
- ☐ 0.50
- ☐ 0.70
- ☐ 0.75

30

@D

解答：由图可知

$$P(x=1)=0.2$$

$$P(x=2)=0.5$$

$$P(x=3)=0.25$$

$$P(x=4)=0.05$$

$$\text{So, } P(x \text{ is either 1 or 2}) = P(x=1 \text{ or } x=2) = P(x=1) + P(x=2) = 0.2 + 0.5 = 0.7$$

选 D

活动详情请参见论坛帖子

<http://www.sharewithu.com/thread-425567-1-2.html>