

GRE latest math machine by 500 questions answer analysis

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Easy part

1. A ↵

解析 : $x^{-2} = \frac{1}{x^2} = \frac{1}{y+1}$, 则 $x^2 = y+1$, x^2 比较大。 ↵

2. D

Analysis: According to the range of the third side of the triangle, $2 < s < 14$

3. A

Analysis: The point is below the line, $a > b$

4. C ↵

解析: $\frac{m^3}{n^6} = \left(\frac{m}{n^2}\right)^3 = 1/27$, $\frac{m}{n^2} = 1/3$, 则 $3m = n^2$ ↵

5. A

Analysis: $x+y=x$, $y=0$, x is relatively large.

6. B

Analysis : Rectangle ABCD area = BC * AB; equilateral triangle area = $1/2 * BC * AB$; so the area of the rectangle is 2 .

7.8

Analysis: $x+2+y+4 = 22$, then $x+y = 16$, and the average is 8. [WeChat Public Account: Mr. Zhang Wei
GRE]

8. D

Analysis: The value range of x is $[-3, 4]$, which cannot be compared with 0.3.

9. A

Analysis: must be a positive number, must be a negative number.

10. B

$$\begin{array}{ccc} 3 & & 3 \end{array}$$

Analysis: $j = k - 1$, $e = k + 1$, then $jke = k - k < k$

11. -9

Line j 经过两点 $(3, 0)$, 和 $(0, -2)$, 则 line j 的表达式为 $y = \frac{2}{3}x - 2$

Line k 和 j 平行, 则俩直线斜率相同 $= 2/3$

Line k 的 y 截距为 6, 则 line k 的表达式为 $y = \frac{2}{3}x + 6$

X 截距 $= -9$

12. A

$$x^2 = x^2 - 2x + 1, x = 1/2$$

13. C

$$QA - QB = 12x + 6 = 12 * (-0.5) + 6 = 0, \text{ which means } QA = QB$$

14.B

$$-6 \leq -2y \leq 8, -4 \leq y \leq 3, \text{ then the minimum value} = -4$$

15. C

$$3200 / 1760 \approx 1.82 \text{ miles}$$

$$1.82 * (3600 / 80) \approx 81 \text{ miles/hour}$$

16. C ↵

(3, 1) 到(-2,-1) 的距离= $\sqrt{25 + 4} = \sqrt{29}$ ↵

(3, 1) 到(-2,1) 的距离= 5 ↵

(3, 1) 到(3,-5) 的距离= 6 ↵

(3, 1) 到(3,5) 的距离= 4 ↵

(3, 1) 到(7,1) 的距离= 4 ↵

↵

(3, 1) 到(3,-5) 的距离最远。 ↵

17. C ↵

根据已知条件, $AB > 6$, 错误。 ↵

根据直角三角形勾股定理, $BD = \sqrt{100 + 36} < 16$; 错误。

$\triangle ABD$ 面积= $1/2 * 12 * 6 = 36$, 正确。 ↵

$\triangle BCD$ 面积 = $1/2 * 10 * 6 = 30$, 错误。 ↵

四边形 ABCD 面积 = $(10+12)*6/2 = 66$, 错误。 ↵

18.B

There are 10 multiples of 3 within 30 , 6 multiples of 5 , and 2 multiples of 15 .

or multiples of 3 or 5 = $10+6-2 = 14$

$14 / 30 = 7/15$

19. E

Analysis: The 38th number falls on 30. [WeChat Public Account: Mr. Zhang Wei GRE]

20.C

The combined base of ABE and ECD is the same as that of AED , which is equal to the length of the rectangle;

The height is the width of the rectangle. equal area.

21. D ↵

$$\sqrt{x}\sqrt{y} = \sqrt{xy} \leftarrow$$

当 $x=y=2$, 两者一样; 当 $x=y=1$, 两者不一样。 ↵

↙

22. . E

$$(0.6x)^2 * (1.5y)^2 = 0.54x^2 y^2$$

23.A

Analysis: The slope of DE is $-8/9$, which is greater than $-4/3$.

24. A

Analysis: Use $A - B = -4 xy = 24$, so $A > B$.

25. D

Analysis: The title does not say the relationship between C D and D E, so it is impossible to judge the relationship between angle t and r.

26. D

Analysis: It can only be deduced that both A and B are numbers less than 0, but the specific size cannot be determined.

27. 125

Parsing: $4 20 - (2 40 + 115 - 60) = 125$

28. D

x^2

Analysis: Set $x^2 + 2x - 15 = 0$, you can solve $x = -5$ or 3 .

29. 150

Analysis: Because AC is the diameter, so $x = 90$ degrees, and because $2x + 3y = 360$ degrees, so $y = 60$ degrees, so $x + y = 150$.

30. D

Analysis: First calculate the price of each sandwich as d/s , and then calculate the price of $s + 2850$ sandwiches as $d/s \times (s + 2850)$, so the answer is D.

31. A

Analysis: Quantity A is 9 to the 60th power after simplification , so it is greater than Quantity B.

32. A ↵

解析 : 正方形边长为 a , 圆的半径为 r , 则 $a^2 = \pi r^2$ ↵

$$\frac{a}{r} = \sqrt{\pi} \approx 1.77 \leftarrow$$

$$\sqrt{2} a/2r = 1.77 * \sqrt{2}/2 > 1 \leftarrow$$

-

33. C

Analysis: x is an integer less than 7.5 , y is an integer greater than 1 0/3 , so the intersection of S and T is the four numbers 4 , 5 , 6 , and 7 .

34. A

Analysis: figure out $x = 0$, $y = 3$.

35. C

Analysis: The bases and heights of two triangles are the same, so the areas are also the same.

36.B

Analysis: After simplification, it is actually $-2 < x < 2$, so $|x|$ is less than 2 .

37. D

Analysis: Cross-multiplication can get $xy = 4$, so it is impossible to judge the relationship between x and y .

38. D

Analysis: both x and y are positive even numbers, then $x + y$ must be even, $QB = 1$; but the parity of $(x+y)/2$ is uncertain; for example, when $x = 2$, $y = 2$, $(x+y)/2$ is even, $QA = QB = 1$; when $x = 2$, $y = 4$, $(x+y)/2$ is odd, $QA = -1$, A is less than B.

39. D

Analysis: The area of a circle is 900π and the area of a square is 3600 , so the ratio is $(3600 - 900\pi)/3600 = (4 - \pi)/4$. [WeChat Public Account: Mr. Zhang Wei GRE]

40. E

Analysis: A = 1 , C and D are both greater than 1 , you can compare B E , B is larger than E , so E is the smallest.

41. 72

Analysis: First calculate the angle C AD = 54 degrees, so the angle B AC = angle EAD = 18 degrees, so x = 72 .

42.C

3

Analysis: According to the title, $t = -s$ can be obtained , so quantity $B = -s$, so A = B .

43. D

Explanation : First solve for $x = \pm 9$, so the magnitudes of the two numbers cannot be compared.

44.B

Analysis: x is less than 7 , so x -2 is less than 5 , so B is greater.

45. A

Analysis: The prime factors of 3 0 are 2 , 3 , and 5 , which are multiplied by 3 0 and added up to 1 0 , so A is large.

46. B

$$x + y$$

Analysis: Simplify first to get $3^{x+y} = 1$, so $x + y = 0$.

47. A

Analysis: The big side is opposite the big angle, so x is greater than y .

48.B

Analysis: The minimum value of s + t is $5 + 6 = 11$ is less than 1 3 .

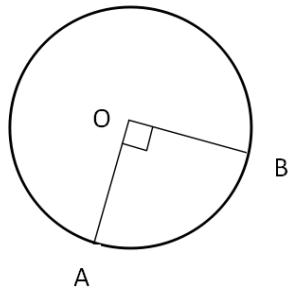
49. 1800

$$x(1/5 - 2/11) = 40$$

Find x = 2200

$$(1 - 2/11)x = 2200 * 9/11 = 1800$$

50. A (as shown in the picture - students who have no pictures in the version, please contact the planning teacher to get the latest version)



$$1/4 * (2\pi r) = 2\pi$$

$$r = 4$$

$$\triangle AOB \text{ area} = 1/2 * 4 * 4 = 8$$

51. A

$$2r + 4t = 11$$

$$3r + 3t = 12$$

Solving for $r = 2.5$

52. E ↲

根据圆的相关定理可知圆的解析方程 $=[x-(-1)]^2+(y-2)^2=16$ ↲

53. C

Let $x=5a$, $y=4a$

$$2x : 3y = 10a : 12a = 5:6$$

$$12x : 10y = 60a : 40a = 3:2$$

$$24x : 25y = 120a : 100a = 6/5$$

DE proportional relationship cannot be determined

54.B

3

$$QA = x < 0$$

$$QB > 0$$

55. C

horse : goat : sheep

$$\begin{array}{ccc} 4 & & 3 \\ & 3 & \\ 3 & & 2 \\ & 12 & 9 \\ 12 & 9 & 8 \\ 36 & 27 & 24 \end{array}$$

56. D

Length cannot be calculated.

57. A

QA > 0, QB < 0

58. D

The sum of the three sides of the quadrilateral = $7+8+9=24$ The length of the fourth side may or may not be equal to 8

59. 5/4

$$x^2 - 2xy + y^2 = (x-y)^2 = 4^2 = 16$$

$$x^2 - y^2 = (\cancel{x+y})(\cancel{x-y}) = 5*4=20$$

$$z=20/16 = 5/4$$

↑

↑

60. D

$$\frac{51!-50!}{50!-49!} = \frac{50!(51-1)}{49!(50-1)} = \frac{50! \times 50}{49! \times 49} = \frac{50 \times 50}{49}$$

M edium section

1. B ↵

解析：假设最开始共有 marbles x 个，则加入 12 个之后，红球的占比 $= \frac{0.6x+6}{x+12} < \frac{0.6x+7.2}{x+12} = 60\%$ ↵

↵

2. B

Analysis: The proportion of less than 76 or greater than 86 is $1-68\% = 32\%$;
between 81 and 86 accounted for 34%

3. C

$$2 \quad \quad \quad 2$$

Analysis: $f(x) = 57x^2 - kx + 925$, $f(-x) = 57x^2 + kx + 925$, then $k=0$. (If the square superscript of 2 above the x shows the wrong scale, please contact the consultant to get the latest version)

4. B

Parsing: $256/x = 144/y$; $x+y = 50$

Simultaneous equations solved for $x=32$, $y=18$

$$32-18 = 14$$

5. C

Analysis: ① If $x \geq 0$, the original formula can be simplified to $0 < x - 2x < 3$, $-3 < x < 0$, the solution set contradicts the assumption and cannot be satisfied.

② If $x < 0$, the original formula can be simplified to $0 < -x - 2x < 3$, $-1 < x < 0$.

Combining the two cases, $-1 < x < 0$, so C is correct.

6.5

Parsing: $3*14000 + 7*12000 + 21000n = 15400(3+7+n)$

Solve for $n=5$

7. A

Analysis: Adding the same number to a group of numbers does not affect the standard deviation.

8. C

Analysis: $k=10$, and the greatest common divisor of n and n is 5, indicating that n contains 5, and there is no 2;

$30 = 2 \cdot 3 \cdot 5$, indicating that k and n also contain the prime factor 3. 3 cannot come from 10, so it can only come from n .

$$n = 3 \cdot 5 = 15$$

9. E

Analysis: $p(1-25\%) - 850 = 850 \cdot 20\%$, solve $p=1360$

10. B

Parsing: The smallest possible value of n is 11, which is less than 12.

11. B

Analysis: The total number of biology classes is $33+34+32+32+34+35 = 200$;

Biology major: $200 \cdot 20\% = 40$

Not biology major: $200 - 40 = 160$

Take chemistry class: $160 \cdot 10\% = 16$

12.B

Analysis: $|zx|$ maximum is $|7-(-2)| = 9$, minimum is $|6-2|=4$, range is 5;

$|zy|$ maximum is $|7-(-5)|=12$, minimum is $|6-5|=1$, range is 11.

13.B

The triangle is an obtuse triangle

$$\begin{array}{ccc} 2 & & 2 \\ 1 & +y & < 2, y < 1. \end{array}$$

14. E

Suppose R now has x , then Q has $5x$

$$5x-10 = 2(x+10)$$

$x=10$ [WeChat official account: Mr. Zhang Wei GRE]

Q has 50liters.

15. C

假设 BC 为 d, 则阴影面积 = $1/2 * \pi(d/2)^2 + 1/2 * \pi(d/2)^2 + 1/2 * \pi d^2 = 3/4 * \pi d^2 = 48\pi$
 $d=8$

$$AC = 2d = 16$$

..

16. C

Assuming the previous sink was x wide, then 4x in length and 5 in depth

The new sink has a width of $x-1$, a length of $4x+4$, and a depth of 5

$$\text{New tank volume} = 5(x-1)(4x+4) = 20(x-1)(x+1) = 300$$

$$x=4$$

$$\text{Previous tank volume} = 4*16*5 = 320$$

17. 3/2

Initially white balls : $3y/16$, yellow balls : $13y/16$

After placing t balls, the white ball: $3y/16 + t/2$, the yellow ball: $13y/16 + t/2$

$$(3y/16 + t/2) / (y+t) = 3/8$$

$$t/y = 3/2$$

18. E

9 different positive integers, to minimize the average, then all the numbers should be as small as possible.

The median is preceded by 1, 2, 3, 4. The median is followed by 12, 13, 14, 15

The mean is 8.33333.

19. AC

$$-2 < \sqrt[3]{a} < 4$$

$$-8 < a < 64$$

20. D

If P, Q and T are on the same straight line, then there is a line passing through these three points; if P, Q and T are not on the same straight line, such a straight line does not exist.

21. D

The 50th and 51st numbers of the two lists cannot be determined , so the median cannot be determined.

22. B

$$\sqrt{x^{-5}} = x^{-\frac{5}{2}} > x^{-3}$$

23.2.5

$$x = 12.5\% * y, y = 8x$$

$$x = 3.125\% * z, z = 32x$$

$$x / (y+z) = x / 40x = 1/40 = 2.5\%$$

24.B

After 8 days, birdseed consumed has $12 * 8 = 96$ ounces = 6 pound

Birdseed without consumed has $x - 6$ pound

25.B

The slope of the straight line P Q = $(6-1)/(3+2) = 1$, the slope of the straight line l is smaller than 1

26. C

n

The one digit of 3^n is 1. According to the circular rule of the one digit of 3, it means that n is an integer multiple of 4 , and $n = 4k$;

bits

The remainder when $n+3$ is divided by 4 is 3 , so $3^n + 3$ is 7.

27. C

$$b_n = P_{\text{red}} - P_{n-1} = \frac{n+1}{n} - \frac{n}{n-1} = \frac{n^2-1-n^2}{n^2-n} = \frac{-1}{n^2-n}$$

↙

↙

28. A

假设刚出生是重量为 x , 一岁的重量= $3x$

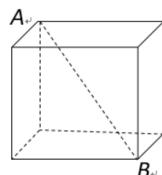
两岁的重量= $3x * 1.5 = 4.5x$

第五年重量 = $4.5x * (1.1)^3 = 18$

$$x = \frac{18}{(1.1)^3(1.5)(3)}$$

↙

29. D (As shown in the picture - students without pictures in the version, please contact the planning teacher to get the latest version-)



Assuming the side length of the cube is a , then $3a^2 = 36$, $a^2 = 12$

Cube surface area = $6a^2 = 6*12=72$

30. D

$$y = f(x) + g(x) = x^2 + bx + 1$$

When $x = 0, y = 1$, exclude BCE

The symmetry axis of the function = $-b/2 < 0$, A does not meet

31. C

Analysis: According to the meaning of the question, we know that $w = 6$, $x = 12$, $y = 18$, $z = 24$, so $A = 15$, $B = 15$, so they are equal.

32. D

Analysis: When the first number and the last number are exactly multiples of 5, this probability is the largest.

33. E

Analysis: The single digit rule of the nth power of 2 is 2 486, and if 1 is subtracted, it is 1 375, so it cannot be 9.

34. B [WeChat Public Account: Teacher Zhang Wei GRE]

Analysis: This year = 0.8^* last year, this year = $(1-x\%)*$ previous year, last year = 0.8^* previous year, so the simultaneous solution obtains $x = 36$, so the answer is B.

35. D

Analysis: This isosceles triangle may be an equilateral triangle, at this time $A = B$, or it may not be an equilateral triangle, so at this time $A \neq B$.

36. C

$$2n + 2$$

Analysis: Q A is simplified to get $(- 1)^{2n + 2}$, $2n + 2$ must be an even number, so $A = B = 1$.

37.C

Analysis: $16 \div 400 = 4\%$, so it must be 3% and 5%, respectively, so the answer is C.

38.B

Explanation: The sum of probabilities of opposing events is 1, so $p + 2p = 1$, so $p = 1/3$, so $p < 1 - p$.

39.B

Analysis: The slope of k is $-2/3$, so the slope of m is $3/2$ (the product of the slopes of two perpendicular lines is -1).

40. 11

Analysis: The minimum is 2 3 , the maximum is 3 3 , there are 11 kinds of results in total.

41.C

Analysis: From 2013 to 2014 , the increase percentage of smart watches is $6.8 - 1.9$ divided by 1.9 , which is about 257.89% , so according to the requirements of the title, from 2014 to 2015 , the increase rate will become about 128.95% , so if we set the number of smartwatches sold in 2015 to be x , then there is the equation $(x-6.8)/6.8 = 128.95\%$, so the closest option to solving x is option C 15.6 million.

42. D

Analysis: $t_1 = r / s$, $t_2 = y / z$, according to the meaning of the title, $t_1 < t_2$, so y / z is greater than r / s , so $ys > rz$ is simplified , so the answer is D.

43.C

Analysis: In fact, this question is to ask how many three-digit numbers can be formed by 5 numbers (each digit is different), so the answer is A (5, 3)=60 .

44.A

Analysis: According to the meaning of the question, these three consecutive odd numbers are 9 , 11 , 13 , so the number greater than the smallest number by 7 is 16.

45. D

Analysis: $1 / w = 1 + (y / x) = 1 + (1/z) = (1+z)/z$, so $w=z/(z+1)$, so the answer is D.

46. E

Analysis: Only when two of 1 , 3 and 5 are obtained, the product is odd, so the probability is $C(3,2)/C(2,5)=3/10$.

47.C

Analysis: The 64th item is an extra 63 7s , so the answer is $63 \times 7 + 4 = 445$.

48. A

Analysis: The area of each panel is 30 square feet , so if there are 60 panels , the area is 1800 square feet , and the conversion unit is 200 square yards . (Note that the area ratio is the square times the side length

ratio)

49.A

Analysis: Because there are fewer males than females, if all of them reduce x people at the same time, the proportion of males will be greater.

50. A

Analysis: The standard deviation is an indicator to measure the dispersion of numbers. It is obvious from observation that the dispersion of the data on the left is larger, so the standard deviation is also larger.

51.C

Analysis : A total of 22 faces are exposed , and the area of each face is 9, so the total surface area is 198 .

52. D

Analysis: Earn 180 a month , then earn $180 \times 12 = 2160$ a year , so the interest rate $r = 2160 \div 24000 = 9\%$

53.A

Analysis: We assume that the usual fee is x , so the first time is $87.5\% x$, and the second time is $120\% \times 87.5\% x = 105\% x$, so the answer is A.

54. D [WeChat Public Account: Teacher Zhang Wei GRE]

Analysis: The title says that it is an isosceles triangle, but it does not say that the two sides are equal, so the angle between P and R cannot be calculated.

55. E

Analysis: Use limit thinking to do this question, the maximum situation is 60 , 60 , 60 , 70 , 70 , so the average at this time is 64 ; the minimum situation is 55 , 55 , 60 , 60 , 60 , this time the average is 58 , so the answer is E .

56. 18

Parsing: Sum of first 6 numbers + sum of last 6 numbers = sum of all numbers + 6th number (median), so median = $35+125-142=18$.

57. D

Analysis: Because I don't know the original price of the two things, I can't compare the actual reduced price.

58. C

Analysis: Paul sold 20,000 and Jack sold 15,000 , so the proportion of Jack is $3/7$.

59.4

Analysis: The 11th item is 10 d more than the 1st item , and so on. The 20th item is 10 d more than the 10th item . According to the title, the sum of the 11th item to the 20th item is 8 20-210-610 , so 6 10 is 1 00 d more than 210 , so 1 00 d = 400 , so d = 4 .

60. C

$$\frac{f(9)}{f(8)} = \frac{7!}{6!} = 7$$

61.B

$$100\% = 85\% + 70\% - 60\% + \text{neither}$$

$$\text{Choose neither} = 5\%$$

62. 87120

$$1 \text{ square yard} = 9 \text{ square feet}$$

$$1 \text{ acre} = 4840 \text{ square yards} = 43,560 \text{ square feet}$$

$$(1.5 + 0.5) * 43560 = 87120 \text{ square feet}$$

63.C

$$Q A = s^*r\% = sr/100$$

64. C

$$2/6 * 1/5 + 4/6 * 2/5 = 1/3$$

65. D

x is odd, y is even

D is even + odd, the result must be odd

66. C ↵

$$C_{11}^3 = 165 \leftarrow$$

..

67. 50.4%

$$(188-125)/125 = 50.4\%$$

68. D

Question mark cannot be solved

	Men	women	Total
Vegetarian	$0.3 * 0.55 = 0.165$	$0.3 - 0.165 = 0.135$	30%
Non- vegetarian		?	70%
Total			1

69. 3 ↵

$$AB = 1, AC = \sqrt{3} \leftarrow$$

$$V = 1/3 * (\pi * 3) * 1 = \pi \leftarrow$$

四舍五入为 3 ↵

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70. B [WeChat Public Account: Teacher Zhang Wei GRE]

$$6r - 6s = (x+y+z+2.7+3.8+5.5) - (x+y+z-2.7-3.8-5.5) = 2(2.7+3.8+5.5)$$

$$rs = (2.7+3.8+5.5)/3$$

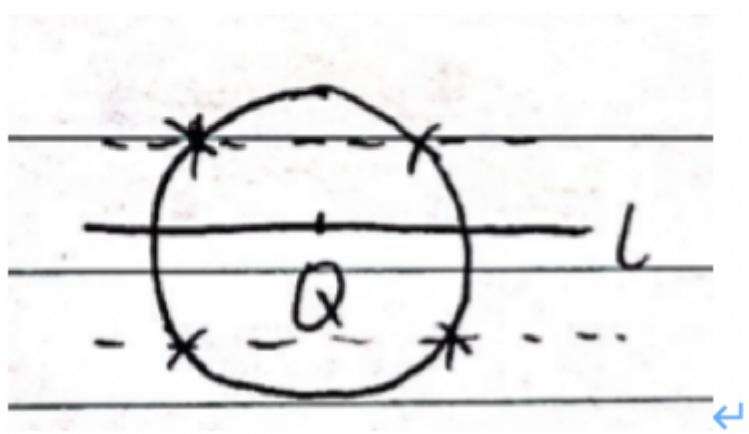
71. A ↵

$$(3.8 \times 6^{25}) - (0.24 \times 6^{26}) = (3.8 \times 6^{25}) - (0.24 \times 6 \times 6^{25}) = 2.36 \times 6^{25} \leftarrow$$

..

72. C ↵

圆和两条横线相交的地方即为满足要求的点，共四个 ↵



73. E ↵

$$f(f(v)) = \sqrt{f(v)} - 2 = \sqrt{\sqrt{v} - 2} - 2 = 0 \Leftrightarrow$$

$$\sqrt{v} - 2 = 4 \Leftrightarrow$$

$$v = 36 \Leftrightarrow$$

..

74. A ↵

$$148\pi = \left(\frac{12\pi}{3}\right)(R^2 + 3R + 3^2) \Leftrightarrow$$

$$R = 4 \Leftrightarrow$$

75. D

Diagonal length cannot be determined

76.A

$$QA = 124 * (1+x\%) > 124$$

77. D ↵

$$\text{正方形边长} = 30/5 = 6 \hookleftarrow$$

$$S = 36 + \frac{\sqrt{3}*6^2}{4} = 36 + 9\sqrt{3} \hookleftarrow$$

78. 1.3 ↵

$$H=8-4.9t^2 = 0, t \approx 1.3 \hookleftarrow$$

79. D

N and R are unknown and the ratio cannot be calculated.

80. C ↵

$\sqrt{12} \approx 3.5$. [5,144]区间内 70 个奇数 ↵

81. B

$$QA = (-1+2) + (-3+4) + \dots + (-99+100) = 50$$

82. E [WeChat Public Account: Teacher Zhang Wei GRE]

$$n = 33k + 24 = 3(11k + 8)$$

83. B

$$r = 1/2 AB^2, AB = \sqrt{2r}, AC = 2\sqrt{r}$$

$$AE = 2\sqrt{r} / 3$$

$$S = 1/2 * (2\sqrt{r} / 3)^2 = 2r/9$$

84. 0.65

$$13/16 * 12/15 = 0.65$$

85. 23

$$4.6 * 5 = 23$$

86. D

$$5 * 10 * 10 = 500$$

[**Note:** In this question, students often say that they need to subtract the five numbers 111, 333, 555, 777, and 999. This wrong statement is because they did not understand the title. The title says different numbers, not different digits., these are two different concepts, if they are different digits, in fact, numbers such as 113 and 557 should also be excluded]

87. B

$$p(1-x\%) : p = 5 : 6$$

$$x \approx 16.7 < 20$$

88.A

$$QA = (1/3 - 1/4) + (1/4 - 1/5) + (1/5 - 1/6) + (1/6 - 1/7) + (1/7 - 1/8) = 1/3 - 1/8 = 5/24 > 1/8$$

89. B

$$25c < \text{mean} \leq 300$$

$$c \leq 12$$

90. D

$$\text{Minimum intersection} = 40\% + 65\% - 1 = 5\%$$

$$\text{Intersection max} = 40\%$$

91. 40

5个质数选2个，4个其他数字选1个， $C_5^2 * C_4^1 = 40$

92.8

Simplify the formula to get: $3x+9y = 4x+2y \Rightarrow 7y = x$

The minimum value of y is 1, $x=7$, $1+7 = 8$

93.C

Tip: This question is about the number of factors. We talked about the formula for calculating the number of factors in class. Please recite it in your heart.

Parse:

$$QA = 2*2*3 = 12$$

$$QB = 3*4 = 12$$

94.C

The ones digit of H is 4, and the ones digit of G is 2

HG units digit is 2, H+G units digit is 6, multiplying units digit is 2

95. B

$$QA - QB = (x+y-1) - (x-y+1) = 2y-2 < 0$$

96. A [WeChat Public Account: Teacher Zhang Wei GRE]

$$60 * 3/5 = 36$$

Assuming x 3-bedrooms, there are 24-x 2-bedrooms

$$36*1 + (24-x)*2 + 3x = 94$$

$$x=10$$

97.A

$$400 = 6Vx + 2Vy = 6(Vy+20) + 2Vy$$

$$Vy = 35$$

98. E

$$x+y+(90-20) + (90-40) = 360$$

$$x+y = 240$$

99. 60

$$4*5*3 = 60$$

100. D

$$a=1, 15/6 \text{ remainder } =3; a=2, 30/6 \text{ remainder } =0$$

101. 32 ↵

$$\text{阴影面积} = 4 * 1/2 * 8 * 4 - \left(\frac{8}{\sqrt{2}}\right)^2 = 64 - 32 = 32 \text{ ↵}$$

102. B

According to the known conditions, $k = 0.38$ or 2.62 can be obtained, just bring it into the evaluation

103. B

AC is shared, the longer the side corresponds to the larger the angle

104. CE

$A - B = 125$, indicating that AB is odd and even $\therefore A+B$ must be odd, AB must be odd, and AB must be even

105.A

$PM = 1/2 PQ = 9$ $MN = 1/2 MQ = 4.5$ $PN = 13.5$ N is 0, then P is -13.5

106. B

$m = 6a+4$, $p = 6b+5$, $mp = (6a+4)(6b+5) = 36ap + 36a + 24b + 20$. The remainder is determined by 20, and the remainder of 20/6 is 2.

107.C

$1+4=5$, note that 1. x and y can be interchanged in order; 2. x and y can be positive or negative, $x=\pm 1$, $y=\pm 2$, which can make up four groups, and exchange x and y . Another four groups, a total of eight groups.

108. D

Don't know the relationship between x and y , can't judge

109. B

1970: x

1975: $1.25x$

1980: $1.8x$

$$(1.8x - 1.25x) / 1.25x = 44\% < 55\%$$

110. D

$(x+y)^2 = x^2 + y^2 + 2xy$, the exponents of QA and QB differ by $2xy$, but it is impossible to judge the positive or negative of $2xy$, so the magnitude cannot be compared.

111.B

$$(1125 - 1050) / 1050 = 7.14\%$$

112.C

A option, when $a=-2$, $b=0$, the condition is not satisfied;

B option, when $a=0.5$, $b=1$, $a=|ab|$, excluded;

Option C, $ab < 0$, $|ab| \geq 0$, $\therefore ab$ is always less than $|ab|$, correct.

When a and b have different signs, such as $a=-1$, $b=2$, $ba = 2 - (-1) = 3$, $|a+b| = |-1+2| = 1$, $3 > 1$, exclude ;

When a and b have the same sign, such as $a=1$, $b=2$, $a+b = 3$, $|a| + |b| = 1+2 = 3$, the two are equal, exclude

113.C

Adding the same number to each data at the same time does not affect the standard deviation

114.A

AD// BC The perpendicular distance between two parallel distances is the shortest, and the longer it is cut, the longer it is $\angle BAD = 88^\circ$, so AB is more inclined and has a longer length.

115.A

Diameter of great circle = $4 + 2 + 2 = 8$, radius = 4

The sum of the areas of the four small semicircles = $4 * 1/2 * \pi (4/2)^2 = 8\pi$

Square area = $4^2 = 16$

Shaded area = $42\pi - 8\pi - 16 = 8\pi - 16$

116. CDs

x<y<z according to the big side to the big angle, b>40° and smaller than the third angle

So the exclusion of less than 40 degrees

When b=48, the third angle=180 - 40 - 48 = 92, the condition is satisfied.

When b=67, the third angle=180 - 40 - 67 = 73, the condition is satisfied.

When b=71, the third angle=180 - 40 - 71 = 69, the condition is not satisfied.



117. BC ←

设 width 为 x, 则 length=3x, 周长 = $2(x+3x) = 8x$

area = $3x^2$

$24 < 3x^2 < 63$

$\sqrt{8} < x < \sqrt{21}$

$8\sqrt{8} < 8x < 8\sqrt{21}$

$22.62 < 8x < 36.66$



118.C

The greatest common divisor is qr, equal.

119.A

Multiplying the slopes of the two right-angled sides = -1, the slope of the hypotenuse = 7

∴ Multiply the slopes of the three sides = $-1 \times 7 = -7$.

120. E

The square of a number closer to 0 is smaller, the closest is d, so d^2 is the smallest.

121. BC

Let the line k expression $y = 2x + b$

Substitute (5, 5), 5 = 10 + b, b = -5, line k expression is $y = 2x - 5$

When $x = -5$, $y = -10 - 5 = -15$, A is wrong

When $x = 0$, $y = -5$, B is correct

When $x = 10$, $y = 15$, C is correct

122. D

The initial height is 6, the height of each rebound is at most 90% of the previous height, then the highest height after 5 rebounds is $6(0.9)^5$

123. C ←

$$15000 = 2^3 \times 3 \times 5^4 = 25 \times 2^3 \times 3 \times 5^2$$

15,000 is divisible by $25a^k b^2$, 说明 $\frac{25 \times 2^3 \times 3 \times 5^2}{25 \times a^k \times b^2}$ 结果是一个整数
k 最大值 = 3

124. A [WeChat Public Account: Teacher Zhang Wei GRE]

$$29.8 * 3600 = 107280 \text{ miles/hour}$$

125. 76

$$101 - (1+1+2+2+3+3+4+4+5) = 76$$

126. B

This question needs to make up the case where the area is exactly equal, only B can, because

$$1080 \times 6 \times 6 = 38,880 = (15 \times 12) \times (18 \times 12)$$

127. 22

$$(4 \times 3 - 1) \times 2 = 22$$

128. E

$$1 - \sqrt{2} < \sqrt{2} - 1 < \sqrt{2} < 2 \text{ times } \sqrt{2} - 1 < 1 + \sqrt{2}$$

129.B

q=5, r is up to 7

130. B

The preceding exponents are all multiples of 7, and the remainder when -4 is divided by 7 is 3. [If you can't understand it, you can add -4 to 7 to get 3, and 3 divided by 7 is the remainder of 3. You can understand it now, or if you still If you can't understand it, add 7 to get 10 divided by 7 with remainder 3] (this principle is to add a multiple of the divisor to the dividend, and the remainder remains unchanged, for example: "1 divided by 2" and "3 divided by 2" The remainder must be the same)

131. D

By adding the same units to each number at the same time, the mean increases but the standard deviation does not change.

132. B

Total profit of n cars = p, profit per car = p/n

cost = $s - p/n$

133. E

Yellow pencil = $20 * 0.8 = 16$

Eraser = $16 - 6 = 10$

P (yellow pencil with eraser) = $10/20 = 1/2$

134. ABD

The number of boys and the total number are both prime numbers, excluding the composite numbers 4 and 6 in the option

When there are 2 boys and 1 girl, and the total number is 3, the conditions are met.

When there are 3 boys and 2 girls, the total number is 5, and the conditions are met.

When there are 5 boys and 2 girls, the total number is 7, and the conditions are met.

135.A

$$S_{\text{shade}} = \frac{1}{4} * \pi * 2^2 - \frac{1}{2} * 2^2 = \pi - 2$$

136.A

Three consecutive positive integers must contain multiples of 3, A is correct, BC is wrong. B can be excluded with 4, 5, 7; C can be excluded with 2, 3, 4, 5.

137.9

$$b^2 - 4 * 18 > 0, \text{ the minimum value of } b \text{ is } 9$$

138. D

Efficiency: $(P_1 + P_2 + P_3) = 1/6$, $(P_1 + P_2) = 1/8$

$$P_3 = 1/6 - 1/8 = 1/24$$

So it takes 24 hours

139.C

Assuming that x grams B solution is required

$$200 * 10\% + 20\%x = 12\% (200+x)$$

Solve for $x = 50$

140. A

$$(22-39) + (34-39) + (46-39) = -15$$

Hard part

1. ABD

Analysis: Both Science and English are odd-numbered books, so there are even-numbered books together.

12- even = even, the answer must be even;

If Science and English are the least, that is, each has three books, then Math has six ;

If Science has 5 , English has 3, then Math has 4 ;

Each of Science and English has five books, and Math has two ;

2. B

The mean cannot be known from the median;

$45 = \text{mean} - 12 * 1/3$, mean = 49, B choice.

Option C cannot determine the mean.

3. E

The odds against the event that the integer selected will be an even integer , that is, the ratio of an odd number selected to an even number = 1/0.95 .

A Option Odd: Even = 11:10 = 1.1 , not eligible.

Option B has the same odd and even numbers, and the ratio = 1 , which does not meet the price adjustment.

Option C has 10 odd numbers and 9 even numbers , and the ratio is 1:0.9 , which does not meet the conditions;

D option is 20 odd and even numbers , the ratio = 1 , does not meet the conditions.

E option has 20 odd numbers and 19 even numbers . The ratio = $20/19 = 1/0.95$, which satisfies the condition.

4. B[↙]

8个数字平均数为 $3c$ 。 $S = (4+4+4+1+1+1+4+9)$ $c^2=28$ $c^2\downarrow$

$28 c^2/8 = 3.5 c^2\downarrow$

$\sqrt{3.5c^2}$ 最接近 $1.9c\downarrow$

5. A

Because m is an even number, half of the odd and even numbers in the first sequence, so the proportion of odd numbers is 50%;

n is an odd number, so there is one more odd number than even number in the second sequence, so the proportion of even number is less than 50 %

6. B If Hopetown is x, then non- Hopetown is 5x;

Hopetown accounts for Lewis County : $x/6x = 1/6 < 18\%$

7. D

Binding problem, Debbie and Esther next to each other, $= 6 * 2 = 12$

8.5

9 0feet/minute = 1.5 feet/second

9 3feet/minute= 1.55 feet/second

Assuming a difference of 0.25foot after x seconds , $(1.55-1.5)x = 0.25$, $x=5$

9. B

The median of 25 scores is to determine the 13th number .

The known mean cannot determine which;

1 student scored 80 points, ranking in front of 12 scores higher than 80 points , it is the 13th , correct .

1 2 fractions are less than or equal to 7 5 , the exact number of the 13th number cannot be determined .

10. A

Adding 9 to each number in L does not affect the size of the standard deviation, so $s = t$, so $s + 3 > t$

11. C

9 $5*20\% + 84*20 \% + 148*25\% + 50* 35\% = 19 + 16.8 + 37 + 17.5 = 90.3$

12. ABD

n

7 the ones of $\frac{n}{r}$, that is, the value of r is 7, 9, 3, 1 loop

n

9 the ones of $\frac{n}{t}$, that is, the value of t is 9, 1, 9, 1 cycle

$$7+9=16$$

$$9+1=10$$

$$3+9=12$$

$$1+1=2$$

13. D

① $|x-215| = 1$, $|x-215| = 0$, $x=215$

② $|x-215| = -1$, then $|x-215| = 2$, $x=213$ or 217

14. CDE

statistics class: $120 * \frac{3}{5} = 72$

Calculus class: $120 * \frac{1}{2} = 60$

Minimum intersection: $72 + 60 - 120 = 12$, at this time there are only 60 people on the statistics classes

Maximum intersection: 60, at this time only 12 people are on the statistics class

15. B

Analysis: The smallest 4 numbers are reduced by \$ 200, so the dispersion of the numbers is increased, so the standard deviation becomes larger.

16. C

Analysis: Connecting each point is actually six equilateral triangles, P Q is the height of the equilateral triangle, and the side length is 3. So Quantity A = Quantity B

17.C

100 200 101 99 99 101 99

Analysis: $4 = 2$, Q A can be simplified to $2 \times 2 \times 5 = 2 \times 10$, QB can be simplified to $2 \times 2 \times 5 = 2 \times 10$, so the tens digits are all 0 . [WeChat Public Account: Mr. Zhang Wei GRE]

18. D

Analysis: This question can be evaluated from the largest number. If there are 5 tables with 1 person, then the remaining 11 tables will have 45 people , which does not meet the requirements of the question . If 4 tables seat 1 person, then the remaining 12 tables will seat 46 people , which is achievable . So the answer is D.

19. A [WeChat Public Account: Teacher Zhang Wei GRE]

Analysis: Just bring in the check calculation, pay attention to $14 \div 15 = 0 \dots 14$.

20. CDs

Answer: The maximum number of the odometer is $66000 + 52000 = 118000$, and the minimum is $84000 - 52000 = 32000$, so the answers C and D are in line.

21. CDE

Analysis: This question mainly needs to translate the title correctly. The question means that $g(x)$ is the largest integer less than or equal to x . If $g(x) = -3$, ask how much x can be equal to. First of all, A and B are excluded first, and C and DE are all in line.

22. 11

Analysis: According to the title description, the recursive formula $a_n = a_{n-1} \times d - c$ can be obtained, and then the two items of 4 and 14 are brought in to have $4 = 2d - c$, $14 = 4d - c$, so we get Out of $d = 5$, $c = 6$, so $c + d = 11$.

23. D

Analysis: We assume this number $n=7k + 3$, so if n is divided by 4, the remainder is uncertain, for example, it may be 2, 1, 0, so the answer is D.

24. 39

Analysis: The total cost is 600 dollars, and the total sold money is $20 \times 30 + 30 \times 50 + 40 \times 60 = 4500$ dollars, so the total profit is 3900 dollars, and the average profit per tree is $3 \$ 9$.

25. AD

Analysis: know the maximum value and the range, so know the minimum value, so A is right; the median cannot be known, B is wrong; the standard deviation needs to know every number, so C is wrong; know the mean, so you can choose the sum, D right.

26. C

Analysis: This problem mainly lies in the correct translation of the problem: for all x , $h(x)$ is a number that is 1 greater than the largest integer less than or equal to x . So $h(1.5) = 1+1=2$, $h(1.75)=1+1=2$.

27.B

Analysis: Enumeration method, the numbers that meet this requirement are 181, 272, 363, 454, 545, 636, 727, 818, 999, so there are 9 numbers in total.

28.B

Analysis: $(a+1, b+1)$ is to translate (a, b) to the right and up by one unit, so the B option is exactly the first quadrant after translation.

29. 350

Analysis: There are 1500 works in total, 800 are paintings, so 700 are non-paintings; among the 700 non-paintings, 490 are not from the twentieth century, so 210 are from the 20th century. Then the title says that 40% of the artworks in the 20th century are paintings, which means that 60% are not paintings, and the 60% corresponds to 210, so 40% corresponds to 140, so the 20th century Artwork = $210+140=350$ pieces. Draw a double overlay as shown in the figure:

	20th century _	non - 20th century	Summary
Painting	1 40 (40 %)	6 60	8 00
non-painting	2 10 (60 %)	4 90	7 00

Summary | 3 50 | 1 150 | 1 500 artworks in total

30. D [WeChat Public Account: Teacher Zhang Wei GRE]

Analysis: The title says that the average of the first n positive integers is k , then $k = \frac{(1+n)}{2}$, so $n = 2k - 1$, so the sum of the first n items $= (2k-1) \times 2k / 2$, the D option is obtained after simplification.

31. D

Analysis: Perimeter = $39.4 = 2x + 10.6 \times 2 + 2.8$, so $x = 7.7$, so figure area = $10.6 \times 7.7 - 2.5 \times 1.4 = 78.12$ square centimeters, because the figure scale is 1 cm: 1.5 meters, so the actual area is $78.12 \times 1.5^2 = 175.77$ square meters.

32. ABC

2 1 3 1

Analysis: $1\ 500 = 2 \times 3 \times 5^3$, so $a = 3$, $3\ 3333333 = 3^7 \times 1\ 1111111$ (this is not necessary to continue to decompose, because it cannot continue to divide by 3), so $b = 1$, so A BC are both correct.

33. A

Analysis: Quantity A is significantly closer to the mean, so it has a larger area and a larger proportion.

34. C

Parse:

Suppose all beverages are x, where tea is y

Then tea with caffeine = $36 \times x\% = 60 \times y\%$

Then $y/x = 36/60 = 6/10$

Explain that tea accounts for 60% of all beverages, and the remaining 40% is coffee.

35. AB

Analysis: The average of 1 to 99 is 50 , and the average of c and d is also 50 , so the average of all numbers in list L is 50 , and the median is also 50 , because there is one of c and d . Must be a negative number, and the other must be greater than 100 . So A is correct. Option B is also correct according to the

analysis of option A. The C option is not necessarily correct. For example , when c =-100 and d =200 , the C option can be excluded .

36. A[←]

解析 假设 full-time 学生为 f, part-time 学生为 p, 则 $3f/16=5p/12$, 求得 $f/p=20/9$; 有 welcome package 的学生= $2 * \frac{3}{16} * 20 = \frac{15}{2}$; $\frac{15}{2}/(20+9) = 15/58$ [←]

(Assume f=20, p=9)

37. E

Analysis: Calculate the slope first. The slope of the line from the point to the center of the circle is $-a / b$, so the slope of the tangent line is b / a (the product of the slopes of two perpendicular lines is -1), so according to the point slope The equation that gives this tangent line is $y = b / a(x - b - a) + b - a$, so the answer is option E. (Students who have forgotten the oblique style in junior high school, please Baidu)

38.5

Analysis: It can be considered that when n is divided by 5 , the remainder is 2 , and when divided by 6 , the remainder is 4 , so what is the remainder when divided by 7 ? Dividing by 5 and remaining 2 indicates that the single digit is 2 or 7 , and dividing by 6 remaining 4 indicates that the single digit is an even number, then the single digit must be 2 , so try all from 6 2 to 9 2 , and find that 8 2 is OK. Then 8 2 divided by 7 leaves 5 .

39. 60

Analysis: The average is 1 50 , and then bring it into the formula for direct calculation to get a =60 .

40. A

Analysis: Let PD be z, let the height from P to AD be x, and let the height from P to BC be y, then you can list the formula $4-x^2=9-y^2$, $z^2-x^2= 16-y^2$, and finally z can be relieved to be the root of 11.

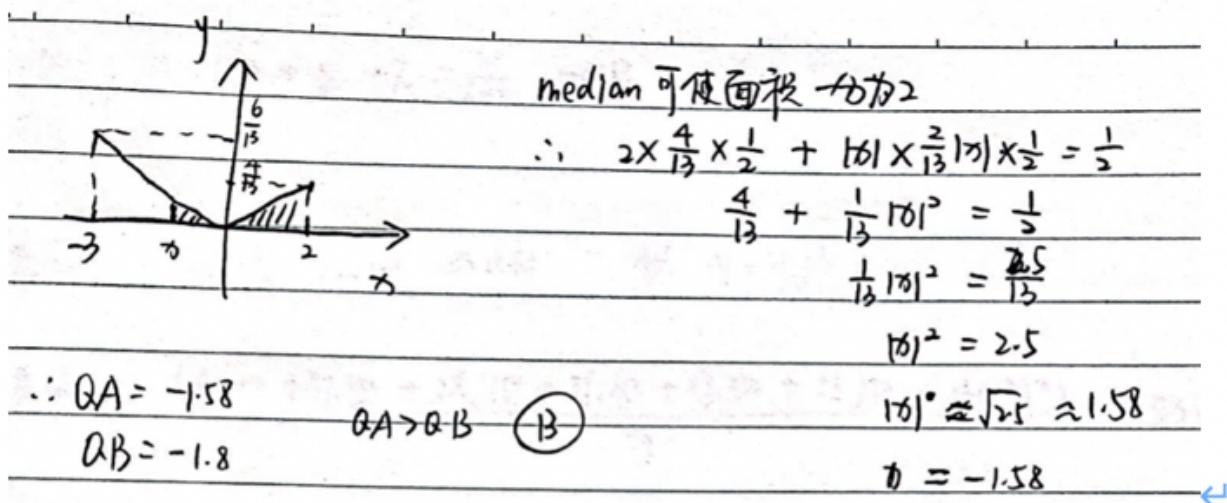
41. D

Analysis: An equilateral parallelogram is a rhombus. We assume that the long diagonal of X is x +20 , the short diagonal is x , the long diagonal of Y is y +8 , and the short diagonal is y . First, there are $2x +20=2 y$

$+8$, so $x = y - 6$, area of $X = 0.5 \times x(x+20) = 0.5 \times (y-6)(y+14) = 0.5 \times (y^2 + 8y - 84)$, the area of Y
 $= 0.5 \times y(y+8) = 0.5 \times (y^2 + 8y)$, so the area difference is 42.

42. A ↵

解析: ↵



(Note: This question has a prerequisite knowledge point - the area of the enclosed graph of the probability density curve is 1)

43. B ↵

解析: ↵

$$\frac{3^1}{13} \text{ 余数}=3 ; \quad \frac{3^2}{13} \text{ 余数}=9 ; \quad \frac{3^3}{13} \text{ 余数}=1 \leftarrow$$

$$\frac{3^4}{13} \text{ 余数}=3 ; \quad \frac{3^5}{13} \text{ 余数}=9 ; \quad \frac{3^6}{13} \text{ 余数}=1 ; \leftarrow$$

..... ↵

当 $k > 2$ 时, r 可以等于 3 或 9 或 1 ↵

$9/r$ 一定能整除, 余数为 0 ↵

..

44. ABCDF

Analysis: List some of the values.

Win	Tie	Loss	Total Points
4	0	0	$3*4=12$
3	1	0	$3*3 + 1 = 10$
3	0	1	$3*3 + 0 = 9$
2	2	0	$2*3 + 2*1 = 8$
2	0	2	$2*3 + 0 = 6$
2	1	1	$2*3 + 1 = 7$
0	1	3	$1*1 + 0 = 1$
0	0	4	0
1	2	1	$1 \times 3 + 2 = 5$

45. B

Examination of the property of absolute value, $|xy| \geq | |x| - |y| |$

46. C

$$QA: R \cup S = R + S - R \cap S$$

$$QB: R \cup T = R + T - R \cap T$$

$$QA - QB = ST - (R \cap S - R \cap T) = 0$$

47. D

If the first game wins 2 times, loses 1 time, and draws 10 times, score /13 = $(2+5)/13 = 7/13$

① **Assumption:** In the second game, if you win 10 times, lose 5 times, and draw 1 time, score /16 = $(10+0+1/2)/16 = 21/32$, QB>QA;

② **Assumption:** In the second game, if you win 4 times, lose 2 times, and draw 100 times, score/6 = $[(1*4)+50]/106 = 9/106$, QB<QA.

48. E

$r/100 = n/20$, indicating that the greatest common divisor of r and 100 is 5, and only 35 meets the conditions.

49. D

total income = $(1+r\%)p * (1+i\%)c$

Bring in option D max.

50. E

$48\% / 60\% = 80\%$ [WeChat Public Account: Teacher Zhang Wei GRE]

51. E

	Digital projects	Hard-copy projects	Total
Attend fine art school	$60\% * 20\% = 12\%$	$40\% * 10\% = 4\%$	16%
Not attend find art school	$60\% - 12\% = 48\%$	$40\% - 4\% = 36\%$	$1 - 16\% = 84\%$
	60%	40%	1

$12\% / 16\% = 75\%$

52.B

Option A: within 0.5 standard deviation of the mean rating, indicating that the score is in the interval $(7.4 - 1.6 * 0.5, 7.4 + 1.6 * 0.5)$, that is $(6.6, 8.2)$, the integers in this interval are 7 and 8, I don't know A score of 7 or 8 is incorrect.

Option B: within 0.4 standard deviation of the mean rating, indicating that the score is in the interval $(5.9 - 1.8 * 0.4, 5.9 + 1.8 * 0.4)$, namely $(5.18, 6.62)$, the integer in this interval is only 6, indicating that rating is 6. Correct.

Option C: Bank I rating = $155 * 7.4 = 1147$; Bank II rating = 944 $1147 > 944$, so the C description is wrong.

53. B ↵

$$QA \approx (\sqrt{10^6} + \sqrt{10^6})^2 = 4 * 10^6 \leftarrow$$

$$QB \approx (\sqrt[3]{10^6} + \sqrt[3]{10^6})^3 = 8 * 10^6 \leftarrow$$

..

54. 11/20

$$P(1/2 < w < 3/4) = P(w > 1/2) - P(w > 3/4) = 9/10 - 7/20 = 11/20$$

55. D

Assuming the width is x , $(100-2x)(80-2x) / (100 * 80) = 3/5$, the solution's $x=10$.

56. CE

$(10n+15r)/(n+r) = 11$, the solution is $n=4r$; if $r>100$, then $4n>400$ and it is a multiple of 4.

57. B ↵

$$\begin{aligned} 2a &= \frac{2}{3}(a+b) \Rightarrow 18a = 2a + 2b \therefore b = 8a \\ 2a &= \frac{1}{6}(a+b+c) \Rightarrow 12a = a + b + c \therefore c = 3a \\ 3a + b + c &= 420 \Rightarrow 3a + 8a + 3a = 420 \therefore a = 30 \\ \text{求 } c &=? \qquad \qquad \qquad 14a = 420 \\ \therefore c &= 3a = 90 \end{aligned}$$

↵

58. B ↵

两点之间距离最远可以无限接近 $2\sqrt{2}$, 第五个点离其他点距离最大也小于 $\sqrt{2}$ ↵

59. E ↵

单选题, 带数字看哪个选项满足条件即可。令 $x=2, y=-1$ ↵
 $(x+y)^2=1, x^2-y^2=4-1=3$, and $y^2-x^2=1-4=-3$ ↵

60. 30

$$\text{Total} = 200 * 20 + 100 * (80-20) = 10000$$

half full, that is 5000 ; $5000 = 200 * 20 + 100 * 10$

$20 + 10 = 30$ for a total of 30 minutes

61. C ↵

$$\text{周長} = y + y + 2x + \frac{\pi \cdot x}{2} = 2y + 2x + \pi x = 26$$
$$\therefore y = \frac{26 - 2x - \pi x}{2}$$
$$\begin{aligned}\text{面積} &= 2x \cdot y + \frac{\pi x^2}{2} \\ &= 2x \cdot \frac{26 - 2x - \pi x}{2} + \frac{\pi x^2}{2} \\ &= 26x - 2x^2 - \pi x^2 + \frac{\pi x^2}{2} = 26x - 2x^2 - \frac{\pi x^2}{2}\end{aligned}$$

↵

62. DEFG

In list S , 8 is the 10th number;

In list T , 8 is the eleventh number, the tenth number is the smallest 7 and the largest is 8, so the median is between 7.5 and 8

63. A ↵

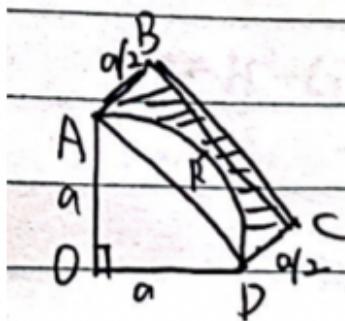
$$\sqrt{\frac{1}{(3^{-4})(5^{-2})}} = \sqrt{(3^4)(5^2)} = 45 \leftarrow$$

其他的化简之后不是奇数 ↵

64. B ↵

$$20^* + 22^* = 20 * 18 * 16 * \cdots * 4 * 2 + 22 * 20 * 18 * 16 * \cdots * 4 * 2 = 20 * 18 * 16 * \cdots * 4 * 2 * (1 + 22) = 23 * 2^{10} * 10! \leftarrow$$

65. E ↵

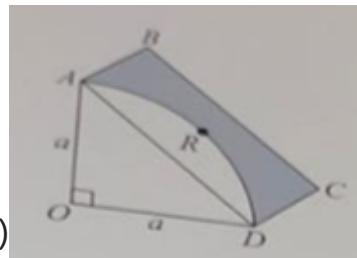


$$\begin{aligned} S_{PA} &= S_{ABCD} - S_{ARD} \\ &= S_{ABCD} - (S_{扇形} - S_{AOB}) \\ &= \frac{a}{2} \cdot \sqrt{2}a - \left(\frac{1}{4}\pi \cdot a^2 - \frac{a^2}{2} \right) \\ &= \left(\frac{\sqrt{2}}{2} - \frac{\pi}{4} + \frac{1}{2} \right) a^2 \end{aligned}$$

↵

(As shown in the figure - students without pictures in the version, please contact the

planning teacher to get the latest version)



66. E ↵

x 截距为 4, y 截距为 3, 直线经过(0,3), (4,0) ↵

带入 $y = kx + b$; $4k + b = 0$, $b = 3$ ↵

求得 $y = -\frac{3}{4}x + 3$ ↵

67.C

$$1 * 25% * (1 - 80%) = 5%$$

68. D

The values of r and t cannot be determined and therefore cannot be judged

69. D

$$\text{Union max} = 14\% + 27\% = 41\%$$

$$\text{Union min} = 27\%$$

[1-41%, 1-27%] without both , i.e. [59%, 73%]

70. D ↵

$$a_1 = 2 - 1 = 1 \leftarrow$$

$$a_2 = -1 \leftarrow$$

$$a_3 = 1/3 \leftarrow$$

$$a_4 = -1/3 \leftarrow$$

... ↵

之后的数字绝对值越来越小, range = $1 - (-1) = 2 \leftarrow$

71. D

$$32000 = (14+20)/2 * t$$

$$t \approx 1882s \approx 31\text{min}$$

72. 37

Assuming that B has x, then A has $1.6x$, $A \cap B = 15$

Only when there is 1 in B, the union is the smallest, at this time there are 16 in B, then there is 25.6 in A, which is not an integer, not satisfied;

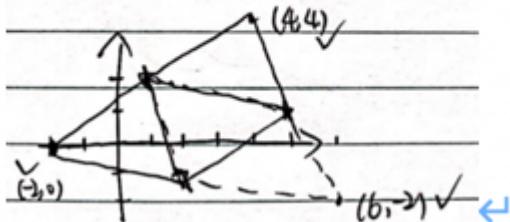
When there are only two in B, three or four cannot ensure that the number in A is an integer;

When there are only 5 in B, then there are 20 in B, then A has 32, and the union = $32 + 20 - 15 = 37$

73. 9/5

$$1/x + 4/5x = 1/y, \text{ solve for } x/y = 9/5$$

74. ABC ↵



75. 545

$$X - Y = 1000 * 9\% = 90$$

$$X + Y = 1000$$

X = 545

76.B

a must be a multiple of 3, so dividing a by 3 has no remainder. The remainder of a+b divided by 3 is determined by b itself, and the remainder is 1; the remainder of ac is determined by -c, and the remainder is 2;

77. E

the amount of sugar in R: $4x$ the amount of sugar in M: x the amount of sugar in S: $2.5x$
 $(4x+2.5x) / 4x = 6.5/4 = 13/8$

78. D

$x+y+z = \text{even}$, it means that there are two odd numbers and one even number, that is, $x(\text{odd})+y(\text{even})+z(\text{odd})$ is an even number: xy , yz , xyz , zx must be an odd number

79.A

$$4/5 * 3/7 = 12/35$$

80. 15625

Two test sites: 1. It is the square of an integer and the cube of an integer, indicating that it must be a multiple of 6 of a certain number to satisfy the power (such as the 6th power, the 12th power, etc.) 2. n The one digit is 5, which means that the one digit of this number must be 5, $5^6 = 125*125 = 15625$ (if it is 15 to the 6th power, it must be out of range)

81. E

$6n = 75x+30$, $6n$ is an even number, and 30 is also an even number, indicating that $75x$ must be an even number, so x must be an even number

When $x=0$, $6n = 30$, $n=5$, $7n = 35$, the remainder of $35/75$ is 35.

When $x=2$, $6n = 180$, $n=30$, $7n = 210$, the remainder of $210/75$ is 60.

When $x=4$, $6n = 330$, $n=55$, $7n = 358$, $385/75$ has a remainder of 10.

82. E

Let paperbacks have x and a total of books y: $5\%x = 3\%y$

$$x/y = 3\% / 5\% = 60\%$$

83. 6822

$$4386 + (42000-31850)*24\% = 6822$$

84. C [WeChat Public Account: Teacher Zhang Wei GRE]

Both occur (intersection) Min = $0.6+0.8-1 = 0.4$ Both occur (intersection) Max = 0.6

85. 12

$$0.0002 = 1/5000$$

n

$$(1/2) > 1/5000$$

n

$$2 < 5000$$

n<13, so max = 12

86. B

Assume x% who had both an expired driver's license and one or more outstanding parking tickets

$$(1-78\%) = 15\% + 10\% - x\%$$

$$x=3\%$$

$$200 * 3\% = 6, 6 \text{ people in total.}$$

87. D

range = 15, the largest known number is 11, if you want range=15, then the smallest number should be -4, in this case x=-4; currently the smallest number is 2, if x=17, Then range can also be 15. But to make the distance between x and a certain number in the List to be 11, we can only make x=-4, $|7-(-4)| = 11$

88. E

The more spread out the numbers, the larger the standard deviation. The most scattered group is list A, and the difference between each value is 2, so the group with the largest and most concentrated a is list C, and the difference between each value is 0.5, so c is the smallest

89. AC

Option A: average = $(6+6+8+13+11+16+14)/7 = 74/7 \approx 10.57$

Half of maximum revenue = $16/2 = 8 > 8$, A is correct

Option B: median = 11, twice the least of the revenues = $2 * 6 = 12 < 11$, B is wrong.

Option C: Note that the title says one of the years, that is, as long as one year is sufficient. From 2010 to 2011, it is obvious that the description of option C is satisfied.

90.C

Neither the mean nor the median can calculate the salary corresponding to a specific percentile of Larry's company and Tony's company, so AB is not correct.

Option C says that Larry's 80th percentile salary > Tony's 70th percentile salary, and Larry's salary is their company's 90th percentile, so Larry's 90th percentile salary > 80th percentile salary > Tony's 70th percentile salary

Through this pass, it can be judged that Larry has a higher salary

91. ABC

Option A: 35 people only take chemistry, which means that $40 - 35 = 5$ people take both, you can ask.

Option B: A total of 65 people have taken biology or chemistry, indicating that both = $30 + 40 - 65 = 5$, available.

Option C: 25 people only go to biology, which means that $30 - 25 = 5$ people go to both, can be requested.

92.B

$$8 * 10 * (7 - 6) = 80 < 100$$

93.B

The three sides of a right triangle are 2, 5, and x. It is possible that 5 is the hypotenuse, and it is also possible

$$2^2 + x^2 = 5^2$$

that x is the hypotenuse. $x^2 = 21$ or 29 . Similarly, $y^2 = 33$ or 65

94. 26400

$$10 * 1.5 * 5280 * 2 / 6 = 26400$$

95. A ↵

$$\text{侧面三角形高} = \frac{\sqrt{3}}{2} * 10 = 5\sqrt{3}$$

$$(5\sqrt{3})^2 - 5^2 = 50$$

$$\sqrt{50} = 5\sqrt{2}$$



96. B ↵

圆的面积= 64π , 半径 $r=8$

$$AO = 8$$

AO 把 $\angle BAC$ 平均分成两半, $\angle OAX = 30^\circ$

$$\therefore OX = 4$$

$$AX^2 = 64 - 16 = 48$$

$$AX = 4\sqrt{3}, AC = 8\sqrt{3}$$

$$AC^2 = 48 + 48 = 192$$

$$\text{三角形 } ABC \text{ 面积} = \frac{\sqrt{3}}{4} * 192 = 48\sqrt{3}$$



97.C

Each non-shaded part is a sector of radius r , 4 arc lengths = $4 * 2\pi r * 1/4 = 2\pi r$

The straight part is $10r$

Perimeter = $10r + 2\pi r$

98. D

Draw a horizontal line through point P and a vertical line through point Q, the two lines intersect at point R

The triangle PQR is a right triangle $PR = 3, QR = 4$ so $PQ = 5$

99. E

1.5 mile takes 108s (0.03 hours), then the speed is $1.5/0.03 = 50\text{mile/h}$

10 miles over the speed limit fine = $50 + 10 * 10 = 150$

100. A

The meaning of the title is an integer between 75-100, and the remainder when divided by 6 is the same as when divided by 7. The multiples of 6 are 78, 84, 90, 96, and the multiples of 7 are 77, 84, 91, and 98. Note that the two 84s are equal. So the number could be 85, 86, 87, 88, 89. So more than 80.

101. D

$$\frac{1}{\frac{1}{12} + \frac{1}{20}} = 7.5$$

102. 1.4

profit = selling price - cost

Single widget cost = $7150 / 6500 = 1.1$

Single selling price = 2.5 profit = $2.5 - 1.1 = 1.4$

103. B

The slope of line m is multiplied by the slope of $x+y=4 = -1$

\therefore slope of line m = 1

Let the expression of line m be $y=x+b$, substitute $(7,7)$, $b=0$

\therefore line m expression is $y=x$

The distance from point (a,b) to the line $x+y=4$ is the intersection of point (a,b) to $y=x$ and $x+y=4$

Simultaneous $y=x$ and $x+y=4$, $x+x=4$, $x=y=2$, the intersection of $y=x$ and $x+y=4$ is $(2,2)$

Point (a,b) is the midpoint of $(2,2)$ and $(7,7)$

$a=b=(2+7)/2 = 9/2$ $a+b = 9/2 + 9/2 = 9$

104. D

encounter problems. A and B start at the same time and arrive at M at the same time, indicating that the time is the same, then the distance ratio $(AM:BM) = \text{speed ratio} = 80:60 = 4:3$, then $AM : AB = 4:7$

105. E [WeChat Public Account: Teacher Zhang Wei GRE]

$$2^2 + 2^2 = OC^2$$

$\triangle OBC$ is a right triangle, $(3960 + 150)^2 - 300^2 = OC^2$

$OC \approx 4099$

C distance from Earth's surface = $4099 - 3960 = 139$

106.C

$(AB+BC)+CD+DE+EF+AF = DE + CD + DE + DE + AF = 3DE + CD + AF = 3DE + CF + AF = 3DE + DE = 4DE$

107.A

$(r+s)(t+u)$ is an odd number, indicating that both parts are odd numbers, so the parities of r and s are different, and the parities of t and u are different

$(r+s+t)(s+t+u)$ is an odd number. It is known that the result of $r + s$ is an odd number, indicating that t is an even number, so u is an odd number; $t+u$ is an odd number, indicating that s is an even number, so r is odd number. A is correct

108. A

$1 \cdot \overline{ab} = 1 + \frac{ab}{99} = \frac{99+ab}{99}$, 所以我们设 $n = 99+ab$, $d = 99$,
要使 n 与 d 互质, 且 ab 最大, ab 可以取 98, 所以 $n+d = 296$.

109. E ↵

$$8000 * \left(\frac{1}{2^1} + \frac{1}{2^2} + \dots + \frac{1}{2^{10}} \right) = 8000 * \frac{\frac{1}{2^1}(1 - (\frac{1}{2})^{10})}{1 - \frac{1}{2}} = 2^6 * 5^3 * \frac{1023}{2^{10}} = 1023 * 125 / 16 = 7992.1875 \text{ ↵}$$

110. ABC

If $K=\{2, 5, 6, 7, 12\}$, $M=\{4, 5, 6, 7, 12\}$, then range=8.

If $K=\{1, 2, 4, 8, 11\}$, then M can be equal to $\{1, 2, 4, 11, 16\}$, range = 15.

If $K=\{10, 11, 12, 14, 20\}$, then M can be equal to $\{10, 11, 12, 14, 40\}$, range = 30.

111.C

Assuming that the large hourly efficiency is $1/x$ and the small hourly efficiency is $1/y$, then $1/x + 1/y = 1/6$

$$x = 2/3 * y$$

Simultaneous solution, $x = 10$, $y = 15$ of the solution

112. A ↵

equilateral parallelogram, 即菱形, 对角线互相垂直平分,

$$\text{边长} = \sqrt{18.3^2 + 21.05^2} \approx 27.89 \text{ ↵}$$

$$27.89 * 4 = 111.56 \text{ ↵}$$

113. A

$$\text{桌子面积} = 2*1 + \pi\left(\frac{c}{2}\right)^2 - 1/2 * \pi\left(\frac{d}{2}\right)^2 = 2 + \frac{2\pi c^2 - \pi d^2}{8}$$

如果 $c=d$, 则面积 >2 , A 正确 ;

如果 $d=2c$, 则面积 <2 , B 错误 ;

If $d=3/4$, the area has a surface area greater than 2.

114.B

$$QA = (841 * 1189) / (594 * 841) = 2.0017$$

$$QB = (594 * 841) / (420 * 594) = 2.0023$$

115.A

Sample I: mean = 700, median = 700, $700-700 = 0$

Sample II: mean = 720, median = 800, $720-800 = -80$

116. B

$$\frac{\frac{g}{2}}{y-x} = \frac{g}{2y-2x}$$

117.A

In 2010, 88%: 12% = 22:3, A is correct;

The total number of people is not known, so the specific number cannot be calculated, BC is wrong.

118.C

$$x/3 + x/2 = 3$$

$$x = 18/5 = 3.6$$

$$3.6/3 = 1.2$$

119.C

$15\% * 300 = 45$, that is, k is larger than 45 numbers, and the first 45 numbers just end at 9, so the smallest $k=10$

120. E

There are x households who send one newspaper, $2x$ households who send 3 newspapers, and $3x$ households who send 2 newspapers

$$x + 3*2x + 2*3x = 13x = 104$$

$$x=8$$

$$3*8 = 24$$

121. BC

Minimum time for 46 students to study = $0+20*21 + 40*9 + 60*3 + 80*3 = 1200$, A is wrong

Average study time = $1200/46 > 26$, B is correct;

range minimum = $80-19 = 61$, C is correct

122. BGH

If n is 8, then 8 tickets can only be purchased separately, and the cost = $1.25*8 = 10$. Buying more tickets must cost more than 10 , which is excluded;

If n is 9, cost = $1.25 * 9 = 11.25$, and buying 10 tickets costs 11 , the condition is satisfied.

When n is 11 , 12 , 16 or 17 , the price of buying a ticket does not exceed \$20 , and none of the conditions are met.

When n is 18 or 19 , the price of buying tickets is more than 20 , and it will be cheaper if you buy 20 tickets.

(Note: There is a little bit of imprecision in this question, that is, if 9 people buy 10 tickets directly, it will save a little bit, but if you think about it like this, there is no answer. I hope this question is an additional test question.)

123.B

Reverse exclusion.

Assuming that Kyle hits all the first 9 hits, misses all the 10th to 20th, hits all the 21st to 33rd, and misses all the 33rd to 40th, option A can be ruled out.

Option B must be correct, because the hit rate of the first 20 shots is 45%, and it will increase to 55% by the 40th shot, so it will definitely pass 48% to 52% in the middle.

Assuming that Kyle missed all of his first 11 hits, all hits from 12th to 20th, all misses from 21st to 27th, and all hits from 28th to 40th, this special case can rule out option C.

124. CDE

limit method. If the average is 20, the largest difference is half 30 and half 10, so the absolute deviation is 60 ;

The case with the smallest difference is: the number of registrants in the past 6 months is 20 , then the absolute deviation is the smallest at this time, $|20-20| *6 =0$

125. B

Account B has more profits and lower interest rates, so the principal must be more.

126.A

$$250,000 * 20 = 5,000,000 \text{ centimeters} = 50,000 \text{ meters} = 50 \text{ kilometers}$$

127. B

$$\sqrt[3]{3} + \sqrt[3]{192} + \sqrt[3]{375} = \sqrt[3]{3} + 4\sqrt[3]{3} + 5\sqrt[3]{3} = 10\sqrt[3]{3} = \sqrt[3]{3000}$$

128.C

Profit for a small tricycle = $75-750/50$; 700 profit = $700(75-750/50)$

Profit for one big tricycle = $110 - 1000/50$; 600 profit = $600 (110 - 1000/50)$

129. D

Suppose charity needs \$x

$$x + (9000/3) + (x-9000) *2/5 = 68000$$

$$x=49000$$

130. BF

They are all even powers, so they will not be less than 0, so when $x=4$ or -5 , the original formula =0

131. C

假设 2005 年 X 人口为 a, 则 Y 人口为 $2a$

Town X 2008 年人口 : $a(1.04)^3$

Town Y 2008 年人口 : $2a(1.01)^3$

132. BC

- Option A: There will be three remaining beans in a box, and two in a box of juice. If there are more than four, do not choose;
- Option B: 2 boxes of beans, nothing left; 1 box of juice, 2 left, 2 boxes of flour, 2 left, exactly 4;
- Option C: 2 boxes of beans, nothing left; 2 boxes of juice will leave four, and 3 boxes of flour will leave nothing, a total of four

133. B (If there is no superscript n in the question, please contact the planning teacher to get the latest version)

The title is $2^n \times k$

$$16 = 2^4 \times 1$$

$$96 = 2^5 \times 3$$

$$108 = 2^2 \times 27$$

$$162 = 2^1 \times 81$$

$$200 = 2^3 \times 25$$

So the n of option B is the largest.

134. B

Assuming that the distance from C to end is x, then the distance from B to C = $2x + 120$, and the distance from A to B = $\frac{1}{2}(2x + 120) = x + 60$

$$100 + x + 60 + 2x + 120 + x = 1000$$

$$x = 180$$

135. E

6 is at the percentile, and the place value is 0.01; 1000 times is 10, or 7 in the tens place .

136. D

$$10x + 6 = 9(x + 1) + 5, \text{ the solution is } x = 8;$$

$$10 * 8 + 6 = 86$$

137. D [WeChat Public Account: Teacher Zhang Wei GRE]

	Live on-campus	Live off-campus	Total
Own a car			$1200 * \frac{3}{4} = 900$
Not Own a car			$1200 - 900 = 300$
Total	$\frac{1}{4} * 1200 = 300$	$1200 - 300 = 900$	1,200

Live on campus and own a car maximum of 300, minimum of 0, AB is wrong;

When the number of people who live on campus and own a car is 0 , the number of people who live off campus and own a car is the largest , which is 9 00 ; when the number of people who live on campus and own a car is 300 , the number of people who live off campus and own a car is 300 At least, 600 , D is correct, C is wrong.

138. E

$p+p^2 = p(p+1)$, p is a prime number greater than 5 , so p is an odd number, $p + 1$ is an even number, indicating that $p + 1$ is an even multiple of 5 (p is a prime number, it cannot be 5 A multiple of), the ones digit is 0 , so the one digit of p is 9 , and the remainder when divided by 5 is 4 .

139.C

You can try this question with the table. The smallest positive entry is $(-1) \times (-5) = 5$.

140. A

If 40% of the 55% are non- liberal arts majors , x is the smallest at this time , $55 - 40 = 15$

Chart title section

1. D

In 1970 , about 8% were 5 years old or younger , 10% were 65 years old and over , and the rest accounted for about 82% .

2. E

Analysis: The number of people under 5 years old and those over 65 years old = the total number of the year * the proportion of the two. In 1990 , both the total number and the proportion were the largest, so these two age groups had the largest number in 1990 .

3.B

Number of people aged 5 and under in 1900 = $75 * 12\% = 9$

Number of people aged 5 and under in 1940 = $140 * 9\% = 12.6$

$(12.6 - 9) / 9 = 40\%$

From 1900 to 1940 the number increased by 40%

4. D

There are 6 presidents younger than 50 , and 9 view presidents younger than 50 , a total of 15 .

$15/60 = 1/4 = 25\%$

5. E

The age of vice president of 12 of the 30 organizations is at least one year older than that of the president , and the remaining 18 organizations do not meet this condition. Randomly select two organizations, the proportion of vice president 's age is not one year older than the president = $C(2,18)/C(2,30)= 153/435 \approx 0.35$

Finally calculate $1-0.35 = 0.65$

6. C (note that this question requires a person who is just 15 years older, so those over 15 years old are not counted)

There are two presidents who are just 15 years older than the vice president . (Look carefully in the picture yourself)

7C

Analysis: $5901*10\% = 590.1$, so you need to choose if it exceeds 590.1.

8A

$$(245+438)/1.1=620.9$$

9 B

The problem requires that the area of the clockwise sector decreases in turn, and the adjacent two are exchanged, at least a few times. 612 is swapped counterclockwise twice, 512 and 504 once, and 438 and 245 once, for a total of four times.

10. D

Work-related budgeted: $120+100+75+55+50 = 400$

Non-work-related budgeted: $800+550+300+300+250+160+100+50+90 = 2600$

$$400/(400+2600) = 4/30 = 1/7.5$$

11. A

Soft drink: $80*23.75\% = 19$

Total actual work-related expenditures: $120+100+40+40+80 = 380$

$$19/380* 100\% = 5\%$$

12. C

Uniform: $(75-40)/75 \approx 46.67\%$

Laundry/Dry Cleaning: $(55-40)/55 \approx 27.27\%$

Lunch and Snacks: $(80-50)/50 = 60\%$

Entertainment/Restaurants: $(380-300)/300 \approx 26.67\%$

Clothing: $(50-30)/50 = 40\%$

Other: $(90-70)/90 \approx 22.23\%$

13. B

Analysis: Just calculate directly $(5 \times 40 + 4 \times 20 + 3 \times 30 + 2 \times 35 + 1 \times 25) / 150 = 3.1$.

14. E

Analysis: $(900 \times 5 + 700 \times 6 + 600 \times 1) / 12 = 775$

15. D

Analysis: 1000×2 for the first two weeks, $2 \times (1000 - x)$ for the third four weeks, and $4 \times (1000 - 2x)$ for the last four weeks, adding up to $8000 - 10x$.

16. D

Analysis: try from 12 down, when the four-bedroom house is 12 sets, there are $8800 - 700 \times 12 = 400$ left, this is impossible. When the four-bedroom is 11 sets, there are $8800 - 700 \times 11 = 1100$ left, so it happens to be one set for each of the two-bedroom and three-bedroom, which meets the requirements of the title.

17. DE

Analysis: The median of 125 should be the 63rd, which is the number corresponding to the range of 40-49, so the answer is DE.

18. E

Analysis: According to the title data, check or credit card = $15 + 21 = 36$, cash = 33, so the ratio is 12 to 1.

19. A

Analysis: The governor of the pie chart is $2\pi \times 3.2 = 6.4\pi$, and the credit card accounts for 21%, so the arc length is $6.4\pi \times 21\%$, and the closest option is A.

20. 22%

Analysis: Ask what percentage of the money not paid by cash in 2003 was paid by check. What is not paid in cash is 67%, of which check accounts for 15%, so the percentage is 15 divided by 67 $\approx 22\%$ (rounded to the nearest unit)

21. A

Analysis: The survey said that companies that increase prices account for 41 % , and 25 % of them do not actually increase prices , so the answer = $1600 \times 41 \% \times 25 \% = 164$.

22. 288

Analysis: The median is 18% , so the corresponding number is $18\% \times 1600 = 288$.

23.B

Analysis: $(15-12)/15 = 20\%$

24.1

Analysis: Player A 's score = $8+3+7 \times 2 + 8 \times 2 + 4 \times 3 = 53$ points, Player B 's score = $7+3+2 \times 2 + 8 \times 2 + 8 \times 3 = 54$ points, So the absolute value of the difference is 1 point.

[WeChat Public Account: Mr. Zhang Wei GRE]

25.A

Translation: Among the 3-letter words listed by A and B, there are 4 words listed by two people. How many 3-letter words are listed by only one person?

Analysis: A lists 8, B lists 7, and then 4 are duplicates, so there are 4 more in A alone, and 3 in B alone, so there are 7 in total.

26. C

Analysis: $(7 \times 3 + 3 \times 4 + 2 \times 5 + 8 \times 6 + 8 \times 7) \div (7 + 3 + 2 + 8 + 8) = 5.25$.

27.B

January to June 2015 range: $33-23 = 10$; July to December range: $62-22 = 40$, then $x=40-10 = 30$;

January to June 2016 range: $40-32 = 8$; July to December range: $52-26 = 26$, then $y=26-8 = 18$

$30-18 = 12$

28. E

$[(32*31 + 35*30 + 32*31) - (26*31+26*30+23*31)] = 735$

29. 3/2

Months with an increase of more than 28%: April ($26*1.28 = 33.28$), May ($24*1.28 = 30.72$), November ($22*1.28 = 28.16$)

Months with a decrease of more than 10%: August ($59 * 0.9 = 53.1$), September ($62*0.9 = 55.8$)

30. B

$21250/32000 \approx 2/3$

31. C

$$(40000+31250+28750+31250+37500+38750 + 41250)/7 \approx 35535$$

32. D

Sunday: $20000 * 1.5 = 30000 < 40,000$ to satisfy the condition

In the same way, Monday and Tuesday also meet the conditions, but the other days do not.

33. D

$$2400 * 75\% = 1800$$

$750/1800 = 41.67\%$, so anything less than 41.67% is.

34. AB

Option A: $20\% : 15\% = 4:3$, correct

Option B: $55\% + 20\% = 75\%$, correct

Option C: $1800 * 43\% / 2400 = 32.25\%$, wrong

35. E

$$1 - (38\% + 31\% - 24\%) = 55\%$$

36. C

$$(6*11 + 7*7 + 11*8 + 5*9 + 33*10)/(11+7+11+5+33) = 8.62$$

37.C

A total of 103 scores, the median is the 52nd , 7 points.

38.C

$(6.72 - 2.98, 6.72 + 2.98)$, i.e. $(3.74, 9.7)$, the number of 4-9 points is $8+8+11+7+11+5 = 50$

$$50/103 = 48.54\%$$

39.C

A total of 11 bids, the median is the sixth, 30699.33

40. A

$$23145 / 37976 = 0.6$$

41. A

$$100/215 = 46.51\%$$

[WeChat Public Account: Mr. Zhang Wei GRE]

42.B

$$4\%/29\% = 13.79$$

43. D

$$(6\%x + 29\%y) / (\text{wavy } x+y) = \frac{6x+29y}{(100)(x+y)}$$

44.C

$$(19-13) / 19 = 31.57\%$$

45.C

$$(44.1 + 10.0 + 24.1)/510 = 15.33\%$$

46. B

$$510 - (29.8 + 14.1 + 44.1 + 8.9 + 10.0 + 24.1 + 17.9) = 361.1$$

47. D

$$\text{Total precipitation} = 696 \times 29.8 = 20740.8$$

The total precipitation in that area is $200 \times 10 = 2000$, so the precipitation in other areas is $20740.8 - 2000 = 18740.8$, and then the area of other areas is $29.8 - 10 = 19.8$, so the average precipitation in other areas $= 18740.8 \div 19.8 \approx 950$.

48. E

$$20.6 - 3.7 = 16.9$$

49. D

Find the increase in emissions from 1990 to 2001, Canada, France, Japan, Mexico, and United States

50. D

$$\text{Per capita emissions in 1990} : 17.1 / (1+0.103) = 15.50$$

$$31 * 17.1 - 15.5 * (31-3) = 96.1 \text{ million}$$

51.C

$$10.1 / (1-16.6\%) = 12.11\%$$

52. A

$$(31 * 17.1 + 284 * 20.6) / (31+284) = A$$

53. C

Note that the population unit is million, so the order for this question is $284 \times 10^6 \times 20.6 \times 2205 \approx 10^{13}$.

[WeChat Public Account: Mr. Zhang Wei GRE]

54. D

There are 15 gram carbohydrates in unit serving, $15*4 / 139 = 43.17\%$

55. C

$$2.5 * 7 = 17.5 \text{ grams}$$

$$(28-17.5)/17.5 = 60\%$$

56. D

Suppose the number of grams of Trail Mix is x

$$2*2.5 : (28*2.5) = N : x$$

$$x = 70N/2 = 35N$$

$$x=14N$$

57. E

Pay attention to the understanding of the meaning of the question. The question asks what percentage of A's score is higher than B's score in all games where the score difference between the two teams is 1 point.

Games with a difference of 1 point are 2, 7 and 10, with two high A's, $2/3 = 66\%$

58. A ←

A 得分高的有 5 次, $C_5^2 / C_{10}^2 = 2/9$ ←

←

[WeChat Public Account: Mr. Zhang Wei GRE]

59. E

B scores higher than A 5 times, of which more than 50% are 3, 5, 6 and 9, accounting for 4/5

60. C

There are 45 people in total, the median is 23rd, which is equal to 4

The mode is the book with the most frequent occurrences, which is also 4

Latest 100 Questions

section 1

1. Answer: B

Analysis: The single digits of the four items are 7 , 1 , 7 , 7 respectively , so the single digit of a is 2 , so B is large.

2. Answer: A

Analysis: The midpoint of P and S is 1.5 , and the midpoint of Q and R is 1 , so A is large. (WeChat public account: Teacher Zhang Wei GRE)

3. Answer: B

Analysis: z and its opposite angle are equal, so $x = 58^\circ$.

4. Answer: A

Analysis: $17 \diamond 36 = 17 + 63 = 80$, $80 \diamond 36 = 80 + 63 = 143$, so A is big.

5. Answer: D

When $n < 2$, A is large, and when $n > 2$, B is large, so D is selected.

6. Answer: C

Analysis: $A=0$ is calculated , so the two are equal.

7. Answer: B

Analysis: $b < 0$, so $a > 1$, so $t < 0$, so B is large.

8. Answer: A

Analysis: The total cost is $3 \times 50 + 225 + 2 \times 400 = 1175$, and the total number is $3+5+20=28$, so the average is 41.96 , so the closest is 42 . (WeChat public account: Teacher Zhang Wei GRE)

9. Answer: D

Analysis: Assuming that the scores of both exams are x, then $x = 20 + 0.5 r$, $x = 32 - 0.8 t$, so $t = 15 - 0.625 r$ can be obtained simultaneously , so the answer is D.

10. Answer: 360

Analysis: The sum of squares formula can be expanded and calculated.

11. Answer: E

Analysis: According to the chart, it can be seen that the proportion of silver in the five types of cars is significantly lower than 20 % .

12. Answer: D

Analysis: $(105-76)/76 \approx 38.16\%$ (WeChat public account: Teacher Zhang Wei GRE)

13. Answer: A

Analysis: The total is 500 , divided by 30 , the average is about 17 .

14. Answer: E

Analysis: The base of the triangle EGH is half of ACE and the height is one-third of ACE , so the area is one-sixth. So $EGH : ACE = 1 : 6$, then the area ratio of ACE and ABCEDF looks like this, $ABC = AHC$, and so on, so ACE is exactly half the area of the big hexagon, so the answer is E.

15. Answer: C

Analysis: Because $AD=BD$, so $\angle BAD = \angle ABD = 71^\circ$, and because $AD=CD$, so $\angle DAC = \angle DCA = 49^\circ$, so $x = 71 - 49 = 22^\circ$.

16. Answer: A

Analysis: $A=5$, $B=1$ (the hundreds digit of $4w$ is 1), so A is large. (WeChat public account: Teacher Zhang Wei GRE)

17. Answer: A

Analysis: The square of r must be a positive number, and the cube of m must be a negative number, so obviously A is large.

18. Answer: B

Analysis: The total number is 200 , 80% of those who are not biology majors , that is, 160 people, 10% of these people are in chemistry class, so 16 people, so B is bigger. (WeChat public account: Teacher Zhang Wei GRE)

19. Answer: B

Analysis: The range of X is $k - j$, the range of Y is $r - p$, so the mean is $(k+rjp)/2$, and the range of Z is $(p+r)/2 - (j+k)/2 = (p+rjk)/2$, because the title says $k < p$, so B is large.

20. Answer: C

Analysis: 8 crates can't hold 175 batteries, but can hold up to 168 batteries . 10 crates require a minimum of 190 batteries, so only 9 crates are possible.

section 2

1. Answer: D

Analysis: $x + y$ must be even, but the parity of $(x + y)/2$ is uncertain , so the answer is D.

2. Answer: D

Analysis: This multiple-choice question can be set $b = -1$, so that $r = 0$, $s = 4$, $t = -2$.

3. Answer: D

Explanation: Each number is multiplied by a and then b is added , and the average changes in the same way.

4. Answer: A

6

Analysis: Assuming that the initial deposit is x , then there is $x (1+2.2\%)^6 = 20000$, and the closest option to x is option A , which can also be brought in for evaluation. (WeChat public account: Teacher Zhang Wei GRE)

5. Answer: 4

Analysis: A and B are {1, 2, 3, 4, 5, 6, 9, 10}, and then C is {1, 3, 5, 9}, so there are 4 elements in total.

6. Answer: C

Analysis: The time period when the number of candidates decreased, one was 1910-1920, and the other was 1940-1950.

7. Answer: A

Analysis: choose the maximum value with the least amount of the minimum value, which is obviously the A option.

8. Answer: E

Analysis: The median is about 20,000 , and the mean is about 22,000 .

9. Answer: 0.6

Analysis: Probability of taking at least one course = 1- probability of not taking any course = 0.6 .

10. Answer: A

Analysis: According to the meaning of the question, $b = nc$, $a = mb + c = mnc + c$, so a must be a multiple of c , so the remainder of a divided by c is 0 . (WeChat public account: Teacher Zhang Wei GRE)

11. Answer: E

Analysis: $y = 130\% z$, $x = 150\% y$, so $x = 195\% z$, so x is 95% more than z .

12. Answer: D

Analysis: It can only be known that Jim is 15 years older than D inah , but the relationship of multiples is uncertain .

13. Answer: B

Analysis: $AB=CD= r$, $BC=2 r$, AD must be less than $4 r$, so the perimeter of ABCD must also be less than $8 r$.

14. Answer: B

Analysis: Set $m = 10 x + y$, then there are $10 x + y = 2(x+y)$, and $8 x = y$ is calculated , so it can only be $x = 1$, $y = 8$, so $m = 18$.

15. Answer: A

Analysis: According to the Pythagorean theorem, it can be calculated that the distance from the origin to (6,8) is 10, that is, the radius of the circle is 10, $OS=6$,

so SR=4, so A is larger.

16. Answer: D

Analysis: Since it is not known whether these two wrong values will increase or decrease the dispersion of the actual numbers, it is impossible to determine how the standard deviation changes. (WeChat public account: Teacher Zhang Wei GRE)

17. Answer: D

Analysis: The value of Z is uncertain, so the size relationship is also uncertain.

18. Answer: B

Analysis: Draw a Venn diagram according to the meaning of the question. There are 4 people who do not like both, 32 people who only like skiing , 21 people who only like hiking , and 8 people who like both , so the answer is B .

19. Answer: D

Analysis: Solve all inequalities, only D option is satisfied.

20. Answer: A

Parse:

$$\text{原式} = \frac{2.82}{10^{51}} - \frac{1^0 \times 3.96}{10^{51}} = -\frac{393.18}{10^{51}} = -3.9318 \times 10^{-49}$$

section 3

1.

答案: 6

解析: $n^2 - 12n + 35 < 0$, $(n-5)(n-7) < 0$, 所以 $5 < n < 7$, 所以 $n=6$ 。

2. Answer: D

Analysis: 20% reduction from 1997 to 2025 , so the 1997 average is $7500 \div 80\% = 9375$, so the closest option is D.

3. Answer: A

Analysis: China 's average water consumption in 2025 is 2,000 , which is 300 more than the standard , and the population is 1,400 million, so the total is 420,000 .

4. Answer: B

Analysis: Tunisia has the smallest per capita and population, so the total amount is also the smallest. China's per capita is only 2000 , but the population is the largest, and the total multiplied by it is also the largest.

5. Answer: A

Analysis: The smallest of these 6 numbers may also be 1 , 2 , 3 , 4 , 5 , 6 , so the median is at least 3.5 , not 3 . (WeChat public account: Teacher Zhang Wei GRE)

6. Answer: A

Analysis: The relationship between event T and event R is uncertain. If they are mutually exclusive events, the probability of simultaneous occurrence can be 0 .

7. Answer: 6

Analysis: $(25 \times 12.8 + 15 \times 10.4 + 19 \times x) \div (25+15+19) = 10$, solve for $x = 6$.

8. Answer: C

Analysis: $|15x+25y| = |5(3x+5y)|$, $3x+5y \neq 0$, \therefore When $|3x+5y|=1$, there is a minimum value = 5 .

9. Answer: C

Analysis: A 's work efficiency is $n/30$, B 's work efficiency is $n/20$, so B 's work efficiency is 1.5 times that of A , so if A uses 1.5 times the time of B , the total output of AB is the same .

10. Answer: A

Analysis: y must be greater than 0 , x must be less than 0 , and because y is greater than the absolute value of x, $x+y$ must be greater than 0.

11. Answer: B

Analysis: 203 accounts for 58% of 350, that is, 0.62gram is the 58th percentile, so the percentile of 0.61gram must be less than 60, so B is larger.

12. Answer: C

Parse: (x min 2 5 , max 5 0 ; y min 50 , max 7 5)

13. Answer: D

Analysis: If the numbers in S are all positive, such as $S = \{2, 4\}$, $r=2$, then $T = \{8, 64\}$, range=56 > , in this case QA is larger;

If the numbers in S all have negative numbers, such as $S = \{-2, 4\}$, $r=6$, then $T = \{-8, 64\}$, range=72< , in this case QB is larger; (WeChat official account : Teacher Zhang Wei (GRE)

14.

答案: D

解析: 令 $y=0$, 则 x -intercept $= -k/2$; 令 $x=0$, 则 y -intercept $= k$

三角形面积 $= 1/2 * |-k/2| * |k|$

选项中 k 都是非负数字, 去掉绝对值符号, 三角形面积 $= 1/2 * (k/2) * (k) = \frac{k^2}{4}$

$1 < \frac{k^2}{4} < 4$, 解得 $4 < k^2 < 16$, 在范围内的只有 3.

15. Answer: B

Analysis: The maximum possible value of r is required, and q is as small as possible, so q takes 5²

, so r is less than 90, so r can only take 7.

16.

答案: E

解析: 按从小到大排列为 $1-\sqrt{2}$, $\sqrt{2}-1$, $\sqrt{2}$, $2\sqrt{2}-1$, $1+\sqrt{2}$, 所以中位数是根号 2。

17. Answer: DE

Analysis: The median of 125 data is the 63rd , which should be in the segment 40-49 , so the answer is DE .

18. Answer: 24

Analysis: The president sits in the third position, which means that only the positions of the remaining 4 people need to be arranged, so the answer is $4! = 24$ kinds. (WeChat public account: Teacher Zhang Wei GRE)

19. Answer: 1/4

Analysis: Assuming that regular sells x and organic sells y , then there is $(0.6x + 0.9y)/(x + y) = 0.8$, so $y = 2x$, so the total price of regular is $0.6x$, and the total price of all bananas is $0.6x$. The total price is $0.6x + 0.9y = 2.4x$, so the ratio is $1/4$.

20. Answer: ABC

Analysis: Simplify to the root sign $x < 24$, so $x < 576$, so the answer is ABC .

section 4

1. Answer: C

Analysis: $700 / 2400 = 29.17\%$, and those with more than 29.17 % are campus visit, current students, family members, and high school counselors.

2. Answer: E

Resolution: $2400 \times 32\% = 768$.

3. Answer: AD

Analysis: The maximum union of catalog and alumni is only 43% , which must be smaller than campus visit, so A is right. 55% are campus visits, so 45% are not campus visits .

4. Answer: ABC

Analysis: A is correct, $1200 \times 10\% = 120$. 52% is greater than the general population, B is correct. 13% is 30% greater than 10% , so C is also correct. (WeChat public account: Teacher

5.

答案: C

解析: $R-T = -16^{-1} + 32^{-1} = -32^{-1}$, 所以两者相等。

6. Answer: B

Analysis: The area of triangle BCD is half of ACE, so the height of BD and perpendicular to BD is 2 times the square root of AE and the height perpendicular to AE, so k = 7 times square root of 2, which is about 4.949, so B is larger.

7. Answer: A

Analysis: According to the meaning of the question, it can be known that the working time ratio of R and P is 5:4, so the efficiency ratio is 4:5, so R has classified $\frac{4}{9}$ books, a total of 80 books.

8. Answer: C (WeChat official account: Teacher Zhang Wei GRE)

Analysis: Multiplying by 10000 just adds 4 0s after the original number, and does not affect the number size of the digits.

9. Answer: D

Analysis: The arithmetic mean and median cannot be directly compared, and the two algebraic expressions cannot be compared in magnitude.

10. Answer: C

Analysis: Let $m = 8k$, $q = 4 \times (2t+1)$, so $m + q = 8k + 8t + 4$, if this number is divided by 8, it must be a remainder of 4.

11. Answer: D

Analysis: If $a=2$, $b=3$, $c=1$, then Quantity B is greater; if $a=3$, $b=2$, $c=1$, then Quantity A is greater. (WeChat public account: Teacher Zhang Wei GRE)

12. Answer: A

Analysis: All are unified into yard units, $1/2 \text{ mile} = 880 \text{ yard}$, $24 \text{ feet} = 8 \text{ yard}$, $4 \text{ inch} = 1/9 \text{ yard}$, so the volume is $880 \times 8 \div 9 = 782.22$, and the closest option is A .

13. Answer: E

Analysis: The first 13 numbers are 1, 2, 3, ..., 13, then the 14th number is the largest, which is $14 \times 14 - (1+2+3+\dots+13) = 105$.

14. Answer: D

Analysis: There are 301 multiples of 2, 201 multiples of 3, and 100 multiples of 6, so the answer is $301 + 201 - 100 = 402$.

15. Answer: 11/6

Analysis: directly formulate the equation $79 = m + d/2$, $72 = m - 2d/3$, solve $m = 76$, $d = 6$, so 87 is $11/6$ standard deviations more than 76 .

16. Answer: BCDEF

Analysis: To make the whole 0 , the numerator must be 0 , and the solution x can be ± 1 , ± 2 and 0 , so the answer is BCDEF .

17. Answer: 30

Analysis: $x = 143\% y$, so the answer is $(1.43 y - y)/1.43 y \approx 30\%$.

18. Answer: ACDE

Analysis: It can be calculated directly. The E option is divided by the combination of one or three items of the molecule and the combination of two or four items.

19. Answer: E

Analysis: n is a multiple of 7, so at least one of s and t is also a multiple of 7, but since it is not exactly which, only the E option is guaranteed to be a multiple of 49.

20. Answer: D

Analysis: It can be calculated that the sum of the three numbers of xyz is 165 , which may be the three numbers of 41 , 42 and 82 ; it may also be the three numbers of 99 , 32 and 34 . So the answer is uncertain.

section 5

1. Answer: D

Analysis: The standard deviation is a measure of the dispersion of numbers, so it is not directly related to the number of new and old books, but mainly depends on the dispersion of the data.

2. Answer: C

Analysis: $w = 2$, $x = 0$, $y = 2$, $z = 4$, so it adds up to 8 . (WeChat public account: Teacher Zhang Wei GRE)

3. Answer: B

Analysis: Use the extreme value method to calculate, to calculate the minimum value born on Friday, it is necessary to make the number of people in the other six days as large as possible, so that 8 , 8 , 9 , 9 , 9 , 9 , 10 (where 10 is Friday number of people) is the most extreme case.

4. Answer: 27

Analysis: The average of the first 11 months is 15 , and the median of the 12 months can only be 14 , 14.5 , 15 , 15.5 or 16 . If the median is 16 , the last month's number can be calculated by the arithmetic mean to be 27 . If the median is any other number, both can be checked for exclusion.

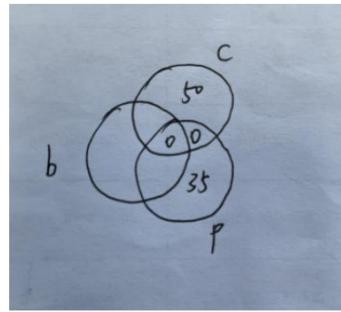
5. Answer: E

Analysis: $2n + 3$ must be an odd number, so if $2n + 3 = 11k + 3$, then k must be an even number, if $k = 2m$, then there are $2n + 3 = 22m + 3$, so $n = 11m$, so $n + 15 = 11m + 15$, so if you divide by 11 , the remainder must be 4 .

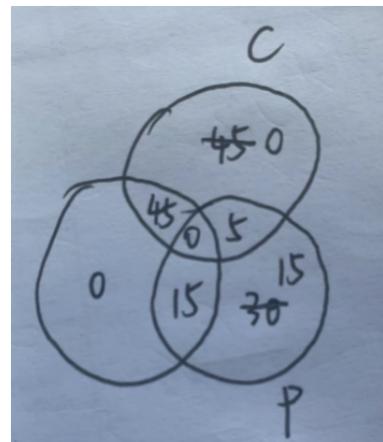
6. Answer: BCDE

Analysis: This question needs to draw a Venn diagram of two extreme values.

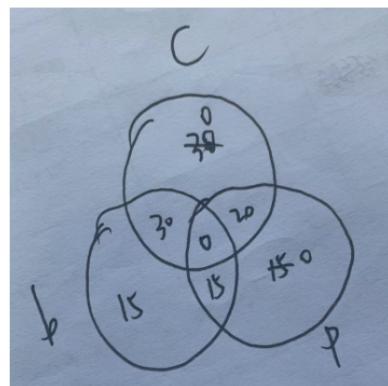
If the intersection of chemistry and physics is 0, then the total number of them has exceeded 80, which is obviously wrong, as shown in the Venn diagram.



If the intersection of chemistry and physics is 5, then the total number of them is exactly 80, so if it is the situation as shown in the figure, it can meet the meaning of the question. This is an extreme value case.



Then when the intersection of chemistry and physics is 20, as shown in the figure, this is another extreme case.



For other situations that do not meet the meaning of the question, I hope students can draw it by themselves to strengthen their understanding of the topic.

7. Answer: B

Analysis: According to the content of the course, the greatest common divisor is the smaller exponent of the same prime factor. So the answer is option B.

8. Answer: BC

Analysis: Pay attention to the for all negative integers b in the title requirements. If $a = -1$, $b = -1$, this inequality does not hold, so it does not satisfy for all. If $a = 0$ and b is negative, then $|ab|$ must be greater than 0, and $|a| - |b|$ must be less than 0, so it is satisfied. If $a = 3$ and b is a negative number, then the left side of the original formula is $|3-b|$, and the right side is $3-|b|$, and the left side must be larger, so it is also satisfied.

9. Answer: A

Explanation: Adding the same positive number to both the numerator and denominator of a positive and false fraction will make the result smaller. (Extension: Adding the same positive number to both the numerator and denominator of a true fraction makes the result larger.)

10. Answer: D

Analysis: width 1.5 feet = 18 inches, length 4.5 feet = 54 inches, plus the total length of the frame is 60 inches, the total width is 24 inches, so the area of the frame is $60 \times 24 - 54 \times 18 = 468$, and then use Divide the area of 468 by 3 to get a total frame length of 156 inches, or 13 feet.

11. Answer: B

Analysis: 3 negative numbers are impossible, because there must be one positive and one negative on the left and right. It is possible to have 4 negative numbers, such as 2 negative numbers on the left and 2 negative numbers on the right, so that the negative numbers on the left and right may be equal. 5 negative numbers are impossible, because it is also necessary to have one positive and one negative.

12. Answer: 16

Analysis: first regard the middle white as the shadow part, in this case, the area of the trapezoid formed by the first quadrant + the fourth quadrant is 14, the area of the second quadrant is 3, the area of the third quadrant is 2, and the area of the middle white triangle is 3, so the shaded area is $14+3+2-3=16$.

13. Answer: A

Analysis: $R \cup T$ has more elements than $S \cup T$, indicating that R and T have more intersection elements (more intersections will reduce the number of union elements), so A is larger.

14. Answer: E

Analysis: The subsets that can be formed from 1 to 10 are $C(1,10)+C(2,10)+\dots+C(10,10)=1023$, minus the subset $C(1,5)+C(2,5)+\dots+C(5,5)=31$, then subtract the subset $C(1,5)+C(2,5)+$ that is all odd. $\dots+C(5,5)=31$, so the final answer is 961.

15. Answer: B

Analysis: There are four triangles in total, up and down, left and right. The area of these four triangles is equal to the area of the shadow part in the middle (you can put the small triangle on the small trapezoid, which happens to be the same square as the shadow part), so the shadow part occupies one fifth.

16. Answer: C

Analysis: 17.6 is in the interval $m - d$ to $m - 2d$, indicating that $30 - 17.6$ must be greater than one standard deviation, so $d < 12.4$, and 12.4 is only about 1 multi-standard deviation in length, so the closest estimate is 8.

17. Answer: B

$$2 \quad 2 \quad 2$$

Analysis: Set $PQ=2x$ and the radius is r , then $x^2 + 4 = r^2$, $2x + 1 = r$, solve $x = 5/3$, so the length of PQ is $10/3$.

18. Answer: C

Analysis: There are a total of 55 0s, and the row and column with an odd number of 0s are $1+2+3+4=10$, so the probability is $2/11$.

19. Answer: E

Analysis: Each of the 4 people has 3 choices, and they do not affect each other, so the answer is $3^4 = 81$ choices.

20. Answer: E

Analysis: The standard deviation of L is 0 , indicating that the 80 numbers of L are the same, the average of M is 12 , and the total number is 972. After removing 92 , there are 880 left , indicating that each number in L is 11 . So the set of M is composed of 80 11s and one 92, the mean is 12 , and the standard deviation is calculated as option E according to the formula. (WeChat public account: Teacher Zhang Wei GRE)