500×((46%+20%))=330 (people). Answer: The number of students in Grade A and Grade B in the PE test is 330.

[Test points] 1. Bar chart; 2. Using a sample to estimate a population; 3. Pie chart.

10. Calculate: (1-2) ×(2-3) ×(3-4) ×..... ×(2013-2014)=_____.

【Answer】 -1

【Analysis】 Because 1-2= -1, 2-3= -1, 3-4= -1, ... 2013-2014= -1, a total of 1007 -1 multiplied together, so the result is -1.

【Test point】 Calculation of rational numbers.

11. The figure below is a calendar table for a certain month. If you randomly add three numbers from the vertical column of the table, the result is impossible to get ( )

日	一	二	三	四	五	六
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

A. 33 B. 42 C. 55 D. 54

【Answer】 C.

【Analysis】 Let the middle number be x, then the number above it is x-7, and the number below it is x+7, ∴x-7+x+x+7=3x, so it must be a multiple of 3. Also, ∵ $\begin{cases} x-7 \geq 1 \\ x+7 \leq 25 \end{cases}$, ∴8≤x≤25, ∴24≤3x≤66, so the answer is C.

【Test points】 1. Addition and subtraction of integers; 2. Algebraic expressions.

12. (This question is 4 points) There is a question like this: " At that time , find $a=3, b=-4$ $3(2a^3b-a^2b-a^3)-(6a^3b-3a^2b+3)+3a^3$ the value of the polynomial." Xiao Min pointed out that the conditions given in the question $a=3$ are $b=-4$ redundant. Is her statement reasonable? Why?

[Answer] -3

[Analysis] According to the rule of removing brackets and combining the rule of like terms, simplify the integer, and then we can judge.

Question analysis: $3(2a^3b-a^2b-a^3)-(6a^3b-3a^2b+3)+3a^3$

= $6a^3b-3a^2b-3a^3-6a^3b+3a^2b-3+3a^3$

=-3 Because the value of the polynomial is a constant and has nothing to do with the values of a and b, Xiao Min's statement makes sense

[Test point] Addition and subtraction of integers

13. The taxi fare standards in China vary from place to place. City A is: the starting price (driving distance not exceeding 3 kilometers) is 6 yuan, and the price per kilometer after 3 kilometers (less than 1 kilometer, calculated as 1 kilometer) is 1.5 yuan; City B is: the starting price is 10 yuan, and the price per kilometer after 3 kilometers is 1.2 yuan.
(1) What is the difference in the price of taking a taxi for s (s>3) kilometers in City A and City B? (2) If the distance of taking a taxi in City A and City B is 10 kilometers, which city has a higher fare standard? How much higher?
[Answer] (1) (0.3s-4.9) yuan; (2) The taxi fare in City B is higher, 1.9 yuan higher.
[Analysis] (1) According to the taxi fare: starting price + fee for the distance beyond the starting point, you can list the algebraic formula;
(2) Substitute the result into the formula in (1) to find the answer. Question analysis: (1) The price of taking a taxi for s (s>3) kilometers in City A is: [6+1.5 (s-3)] yuan; the price of taking a taxi for s (s>3) kilometers in City B is: [10+1.2 (s-3)] yuan. Therefore, the price difference of taking a taxi for s (s>3) kilometers in the two cities is: [6+1.5 (s-3)]-[10+1.2 (s-3)]=(0.3s-4.9) yuan; (2) Taxi fare in City A: when x=10, 6+1.5 (s-3)]=6+7×1.5=16.5 (yuan), taxi fare in City B: when x=10, 10+1.2 (s-3)=10+7×1.2=18.4 (yuan), 18.4-16.5=1.9 (yuan). Answer: The taxi fare in City B is higher, 1.9 yuan higher.
[Test points] 1. Write an algebraic expression; 2. Evaluate the algebraic expression.

14. (2014 Spring Linzhou City Midterm) The image of the light emitted by the flashlight is ( )
A. Straight line B. Rays C. Line segment D. Broken line

【Answer】 B
【Analysis】 According to the figure formed by a point on a straight line and the part beside it, it is called a ray, which can be infinitely extended in one direction. Solution: The light emitted by the flashlight gives us the feeling that the flashlight is the end point of the ray, and the propagation direction of the light is the direction of the ray, so it gives us the feeling of a ray. Therefore, the answer is B.
【Test points】 Straight line, ray, line segment.

15. A commodity is marked with a price increase of 20% based on the cost price, and is sold at a 10% discount. The selling price is 270 yuan. The cost price of this commodity is___Yuan.
[Answer] 250
[Analysis] According to the question, the price is x×(1+20%), and then according to

$\because\ S_{\triangle ABC}=16,$

$\therefore\ S_{\triangle EFB}=\frac{1}{4}S_{\triangle ABC}=\frac{1}{4}\times 16=4.$

Therefore, choose A.

26. Calculation: $\left|-3\frac{1}{2}\right|\times(\frac{1}{2}-\frac{1}{3})\times\frac{12}{7}\div\frac{3}{2}\times(-3)^2\div(-3)$

[Answer] -2

[Analysis] According to the operation rules of rational numbers, the operation can be performed in sequence.

Question analysis: Original formula = $\frac{7}{2}\times\frac{1}{6}\times\frac{12}{7}\times\frac{2}{3}\times 9\div(-3)=-2.$

27. Given $Ax^{n+1}=x^{2n+1}$, then A=_____.

[Answer] x^n

[Analysis] According to the division of powers with the same base, the base remains unchanged, and the exponents are subtracted, we can get $A=x^{2n+1}\div x^{n+1}=x^n$.

28. The counting sticks in "Nine Chapters on the Mathematical Art" are arranged vertically. For the convenience of reading, we change it to horizontal arrangement, as shown in Figure 1 and Figure 2. The number of counting sticks listed from left to right in each row in the figure represents the coefficients of the unknown numbers x and y and the corresponding constant terms. The counting stick diagram shown in Figure 1 is expressed in the form of the equation system we are familiar with now, which is $\begin{cases}3x+2y=19,\\ x+4y=23.\end{cases}$ similar to the counting stick diagram shown in Figure 2. We can express it as ()

Figure 1 Figure 2

A. $\begin{cases}2x+y=11\\4x+3y=27\end{cases}$ B.$\begin{cases}2x+y=11\\4x+3y=22\end{cases}$ C.$\begin{cases}3x+2y=19\\x+4y=23\end{cases}$ D.$\begin{cases}2x+y=6\\4x+3y=27\end{cases}$

【Answer】 A

【Analysis】 Test analysis: The coefficient of x in the first equation is 2, the coefficient of y is 1, and the result of adding them is 11; the coefficient of x in the second equation is 4, the coefficient of $\begin{cases}2x+y=11\\4x+3y=27\end{cases}$ y is 3, and the result of adding them is 27, so the equation can be written as .

Therefore, A is the correct answer .

[Answer] 250 meters

[Analysis] First calculate the temperature difference between the foot of the mountain and the top of the mountain, then calculate how many 0.8°C it has dropped, and then multiply it by 100;

Question analysis: (4-2) ÷ 0.8 × 100 = 250 (meters)

[Test point] Mixed operations of rational numbers.

58. Which of the following statements is correct? ( )

A. -a must be a negative number

B. The sum of two numbers must be greater than each addend

C. If $|m|=2$, then $m=\pm2$

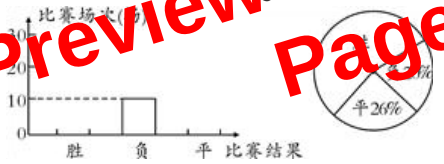
D. If $ab=0$, then $a=b=0$

【Answer】 C

【Analysis】 A. -a is not necessarily a negative number, for example -(-1)=1, so the option is wrong;

B. The sum of two numbers is not necessarily greater than each addend, for example (-2)+(-1)=-3, so the option is wrong; C. If $|m|=2$, then $m=\pm2$, so the option is correct; D. If ab=0, then =0 or b=0, so the option is wrong. So choose C.

59. The bar chart and pie chart (incomplete) that record the results of a football team's games throughout the year (wins, losses, draws) are as follows. According to the information in the figure, the football team played _____ games throughout the year.



【Answer】 50

【Analysis】 According to the statistical chart, the number of games is: 10÷20%=50, so the answer is: 50.

60. If $|a+2|+(b-1)^2=0$, then $(a+b)^{2017}=$_____.

【Answer】 -1

【Analysis】 ∵$|a+2|+(b-1)^2=0$,

∴a+2=0 and b-1=0, we get: a=-2, b=1, then $(a+b)^{2017}=(-2+1)^{2017}=(-1)^{2017}=-1$,

so the answer is: -1.

61. Solve the equation

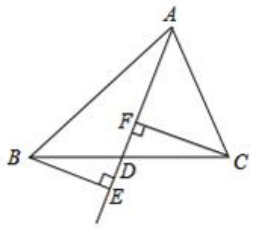
(1) 5x+2=3（x+2）（2） $\frac{x-1}{3}-\frac{3-x}{2}=1$.

【Answer】 (1) x=2 (2) x=3.4

【Analysis】 Analysis: (1) Remove the brackets, move the terms and combine them, and reduce the coefficient of x to 1 to find the solution; (2) First remove the denominator, then move the terms, combine like terms, and reduce the coefficient to 1. Analysis of

this question: (1) Remove the brackets and we get 5x+2=3x+6, Remove the brackets and we get: 2x - 2 - 9+3x=6, ∴x=2. (2) Remove the denominator and we get: 2(x-1)-3(3-x)=6 Remove the brackets and we get: 2x-2-9+3x Move the terms and combine them and we get: 5x=17, and we get: x=3.4.

62. As shown in the figure, BE⊥AE at E, CF⊥AD at F, and BE=CF, then are BD and DC equal? Please explain the reason?



[Answer] BD=DC, see the analysis for the reason.

[Analysis] BD=DC

Reason: ∵ BE⊥AE, CF⊥AD In Rt△BED and Rt△CFD, ∠BDE=∠CDF, ∠BED=∠CFD, BE=CF ∴ △BED≌△CFD ∴ BD=CD

63. The sum of all integers whose absolute values are greater than 1 and less than 4 is ( )

A6 B. -6 C. 0 D4

【Answer】 C

【Analysis】 Test question analysis: The integers with absolute values greater than 1 and less than 4 are: ±2; ±3.

-2+2+3+（3）=0. So the answer is A. The reciprocal of

64. — $\frac{3}{5}$ is _____, and its opposite is: _____

【Answer】 $-\frac{5}{3}$ $\frac{3}{5}$

【Analysis】 $(-\frac{3}{5})\times(-\frac{5}{3})=1$, so $\frac{3}{5}$ the reciprocal of - is $-\frac{5}{3}$, $\frac{3}{5}$ the opposite of - is $-(-\frac{3}{5})=\frac{3}{5}$,

so the answer is: $-\frac{5}{3}$, $\frac{3}{5}$.

65. The figure shows a program operation. If the input x is 1, the output y is

84. **The square of the difference** between 2 times a and b $\frac{1}{3}$ should be expressed as ( ) in algebraic expression.

A. $2a^2-\frac{1}{3}b^2$ B. $2a^2-\frac{1}{3}b$ C. $\left(2a-\frac{1}{3}b\right)^2$ D. $2a-\left(\frac{1}{3}b\right)^2$

【Answer】 C

【Analysis】 According to the question, the double of a is 2a, the double of b $\frac{1}{3}$ is $\frac{1}{3}$ b, and their difference is 2a- $\frac{1}{3}$ b. Therefore, according to the square of the difference, we can directly express it as $\left(2a-\frac{1}{3}b\right)^2$.

So the answer is C

【Test Point】 Exerting algebraic expression

85. Simplify and evaluate: $5(x^2y-3x)-2(x-2x^2y)+20x$, where $x=-2$, $y=-\frac{1}{2}$.

【Answer】 -24.

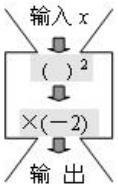
【Analysis】 Remove the brackets and combine the original expression to get the simplest result. Substitute the values of x and y into the calculation to get the value.

Test Question Analysis: Original expression = $5x^2y-15x-2x+4x^2y+20x=9x^2y+3x$.

When $x=-2$, $y=-\frac{1}{2}$, the original expression = $9\times(-2)^2\times\left(-\frac{1}{2}\right)+3\times(-2)=-24$.

【Test Point】 Addition and subtraction of integers; simplify and evaluate.

86. The figure shows a numerical conversion machine. If the output result is -32, then the input value of x is_____.



【Answer】 ±4.

【Analysis】 Test analysis: According to the question, $x^2\times(-2)=-32$,

so $x^2=16$,

∵ $(\pm4)^2=16$,

∴$x=\pm4$.

【Test point】 Square root.

87. If $|x+3|$ and $(y+2)^2$ are opposite numbers, then $x+y$=_____.

【Answer】 -5.

【Analysis】 Test question analysis: According to the question, we get: $\begin{cases}x+3=0\\y+2=0\end{cases}$

where $x=-3$. $y=\frac{1}{3}$ Given x="2," y=-1; calculate the value of (x-5y)(-x-5y)-(-x+5y)^2;

[Answer] (1) -7; (2) $3x^2y^4-9x^2y^2$; $-\frac{26}{3}$; (3) -28.

[Analysis] (1) Construct a ^{3m} and b ^{3n} according to the power operation rule , and then substitute them into the calculation to obtain the result; (2) Use the power operation rule to simplify, and then substitute them into the calculation to obtain the result; (3) Simplify according to the multiplication of integers first, and then substitute them into the calculation to obtain the result.

Question analysis: (1) $\left(a^{2m}\right)^3+\left(b^n\right)^3-a^{2m}b^na^{4m}b^{2n}=a^{6m}+b^{3n}-a^{6m}b^{3n}$

$=\left(a^{3m}\right)^2+b^{3n}-\left(a^{3m}\right)^2b^{3n}=3^2+2-3^2?2=-7$;

(2) $(-2xy)^2\cdot y^2-(-3xy)^2+(-3x)^2\cdot(-4y)^4-10(xy^2)^2=4x^2y^2\cdot y^2-9x^2y^2+9x^2\cdot256y^4-10x^2y^4=3x^2y^4-9x^2y^2$,

when x=-3, y= $\frac{1}{3}$, the original formula=$3\times9\times\frac{1}{81}-9\times9\times\frac{1}{9}=-\frac{26}{3}$;

(3) $(x-5y)(-x-5y)-(-x+5y)^2=25y^2-x^2-x^2+10xy-25y^2=-2x^2+10xy$. When x=2, y=-1, the original formula=$-2\times4+10\times2\times(-1)=-28$.

【Test points】 1 Power operation; 2 Multiplication of integers; 3 Evaluation of algebraic expressions.

97. Calculate: $(-x^2y)^2=$_____.

【Answer】 x^4y^2.

【Analysis】 Question analysis: $(-x^2y)^2=x^4y^2$

【Test point】 Powers and products

98. There are two buckets, A and B. Bucket A contains 1 kg of water, while bucket B is empty. The first time , half of the water in bucket A is poured into bucket B. The second time, one-third of the water in bucket B is poured into bucket A. The third time, one-quarter of the water in bucket A is poured into bucket B. The fourth time, one-fifth of the water in bucket B is poured into bucket A. This cycle is repeated 2,000 times. How many kilograms of water are there in bucket B?

【Answer】 $\frac{1000}{2001}$ Kilograms

【Analysis】 Because the sum of the water in the two buckets is 1 kilogram each time, write the formula for the remaining water in bucket A and bucket B several times, and find that the remaining water in bucket B is $\frac{1}{2}$ kilograms after pouring an odd number of times, and you can get the result.

Solution: After the first pour: Bucket B has: $1\times\frac{1}{2}=\frac{1}{2}$(kilograms)

【Test point】 The properties of absolute value.

107. In the number guessing game, Xiao Ming wrote the following set of numbers: $\frac{2}{5}$, $\frac{4}{7}$, $\frac{8}{11}$, $\frac{16}{19}$, $\frac{32}{35}$,..., Xiao Liang guessed that the sixth number is $\frac{64}{67}$, according to this rule, the nth number is _____.

【Answer】 $\frac{2^n}{2^n+3}$

【Analysis】 ∵ The numerators of the fractions are: $2^1=2$, $2^2=4$, $2^3=8$, $2^4=16$,..., and the denominators of the fractions are: $2^1+3=5$, $2^2+3=7$, $2^3+3=11$, $2^4+3=19$,..., ∴ the nth number is $\frac{2^n}{2^n+3}$.

108. The heart rate of a person during exercise is related to his age. If a represents a person's age and b represents the highest heart rate per minute that the person can withstand during exercise under normal circumstances , then we have $b=0.8(220-a)$:

(1) Under normal circumstances, what is the highest heart rate per minute that a 12-year-old can withstand during exercise? (2) If a 40-year-old person's heart rate is 23 beats per minute within 10 seconds of exercise, is he in danger?

【Answer】 (1) When a=12, $b=0.8\times(220-12)=166.4\approx166$(次)

· ... (5 $b=0.8\times(220-40)=144$(次)

points

) ∴The maximum number of heartbeats per minute that a 40-year-old can withstand during exercise is 144, and $23\times6=138<144$, his heartbeats per minute during exercise

is

· ...

A. 1 B. 0 C. -1 D. 0 or 1

【Answer】 D

【Analysis】 Analysis: If the square of a non-negative number x is equal to a, then x is the arithmetic square root of a. According to this definition, the answer can be obtained.

Answer: Solution: ∵The arithmetic square root of 0 is equal to $\sqrt{0}=0$;

the arithmetic square root of 1 is equal to $\sqrt{1}=1$;

-1<0 has no square root, so the numbers whose arithmetic square root is equal to itself are 0 and 1. Therefore, the answer is D.

120. Factorization

[1] $a(m-n)+b(n-m)+(m-n)$

[Answer] (mn)(a-b+1)

[2] a^3b-ab^3

[Answer] ab(a+b)(ab)

[3] $-4a^2x^2+8ax-4$

[Answer] $-4(ax-1)^2$

[4] $(x^2+4)^2-16x^2$

[Answer] $(x+2)^2(x-2)^2$

121. Calculate (1) $(-2x)^3=$_____(2) $-a^{4n}\div(-a)^{2n}=$_____

(3) $2xy\cdot($_____$)=-6x^2yz$ (4) $(-3)^{12}\times(\frac{1}{81})^3=$_____

【Answer】 (1) $-8x^3$ (2) $-a^{2n}$ (3) $-3xz$ (4) 1

【Analysis】 (1) To raise the product to a square, raise each factor in the product to a square, $(-2x)^3=-8x^3$ (2) $-a^{4n}\div(-a)^{2n}=-a^{4n}\div a^{2n}=-a^{2n}$ (3) $()=-6x^2yz\div 2xy=-3xz$ (4) $(-3)^{12}\times(\frac{1}{81})^3=3^{12}\times(\frac{1}{3})^{12}=1$

122. Which of the following statements is correct?

A. $\frac{1}{3}\pi x^2$ The coefficient of is $\frac{1}{3}$ B $\frac{1}{2}xy^2$ is $\frac{1}{2}x$

C. The coefficient of -5 x^2 is 5 D. x^2 The coefficient of 3 is 3

【Answer】 D

【Analysis】 Omitted

123. If $a^2+ab+b^2+A=(a-b)^2$, then A is equal to ( )

A. $-3ab$ B. $-ab$ C. 0 D. ab

[Answer] A

[Analysis] This question tests the application of the perfect square difference formula and the properties of the equation; in this question, the right side is expanded using the perfect square difference formula and compared with the left side. According to the properties of the equation, A can be obtained; that is, from $(a-b)^2=a^2-2ab+b^2=a^2+ab+b^2+A\therefore A+ab=-2ab\therefore A=-3ab$, so choose A;

124. The correct operation of the following is ( )

A. $x^5+x^5=x^{10}$ B. $x^5\cdot x^5=x^{10}$ C. $(x^5)^5=x^{10}$ D. $x^{20}\div x^2=x^1$

[Answer] B

[Analysis] According to the operational properties of power $x^5+x^5=2x^5$, $(x^5)^5=x^{25}$, $x^{20}\div x^2=x^{20-2}=x^{18}$, so only B is correct.

So choose B

[Test point] The operational properties of power

125. Monomials $-3x^my^3$ and monomials $\frac{1}{2}x^4y^n$ are similar terms, then $m-2n=$_____.

[Answer] -2.

[Analysis] According to the concept of like terms, we can conclude that m=4,n=3, so m-2n=4-2×3=-2

[Test point] Like terms.

126. The polynomial $3a^2b^2-5ab^2+a^2-6$ is ____The constant term is_____.

[Answer] Quartic quaternary, -6

[Analysis] The highest unknown in this question is 4th, so it is quartic. There are two unknowns, a and b, so it is a quartic binomial; the constant term is -6

[Test point] Polynomial

Comment: This question is a test of basic knowledge of polynomials. Candidates need to master the basic degree of polynomials

127. Simplify and evaluate: $\left(\frac{1}{2}x-y\right)+2\left(\frac{1}{4}x+y\right)$, where $x=-1,y=\frac{1}{3}$

[Answer] x + y, $-\frac{2}{3}$

[Analysis] Solution: Original formula = $\frac{1}{2}x-y+\frac{1}{2}x+2y$ (2 points)

= x + y (4 points) Then $x=-1,y=\frac{1}{3}$

the original formula = x + y = $-1+\frac{1}{3}$ (5 points)

141. The sum of the interior angles of a polygon is 180° less than 6 times the sum of its exterior angles. Find the number of sides of this polygon.

【Answer】 Let n be the number of sides of the polygon. .....1 point 180(n-2)=360×6-180 .....5 Decompose to get: n=13 Answer: The number of sides of this polygon is 13. .....7 points

【Analysis】 Use the sum of the exterior angles of the polygon to be 360° to list the equation and find the number of sides of the polygon.

142. It is known that the equation $x^{2k-1}+k=0$ is x a linear equation of one variable about , then the solution of the equation is equal to ( ).

A. -1 B. 1 C. $\frac{1}{2}$ D. $-\frac{1}{2}$

【Answer】 A

【Analysis】 Analysis: An equation with only one unknown number (yuan) and the exponent of the unknown number is 1 (times) is called a linear equation. Its general form is ax+b=0 (a, b are constants and a≠0). According to the definition, we can list equations about k and solve them.

Solution: According to the characteristics of linear equations, 2k-1=1, and we get k=1, so the linear equation is x+1=0, and we get x=-1. So A is the correct answer.

143. A store sells color TVs at 10% off the marked price and still makes a profit of 20% of the purchase price of the color TV is 2400 yuan, the marked price of the color TV is _____ yuan.

【Answer】 3200

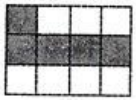
【Analysis】 Omitted

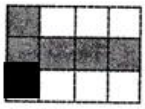
144. Students A, B, and C from a certain school investigated the traffic volume of Beijing's Second Ring Road, Third Ring Road, and Fourth Ring Road during peak hours.

Student A said: "The traffic volume of the Second Ring Road is 10,000 vehicles per hour." Student B said: "The traffic volume of the Fourth Ring Road is 2,000 more than that of the Third Ring Road per hour." Student C said: "The difference between the traffic volume of the Third Ring Road and the traffic volume of the Fourth Ring Road is 3 times the traffic volume of the Second Ring Road, which is 2 times the traffic volume of the Second Ring Road." Based on the information they provided, please calculate the traffic volume of the Third Ring Road and the Fourth Ring Road during peak hours.

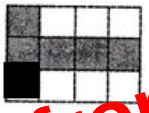
Solution: ∵∠C=90°, ∠ABC=60°, ∴∠A=30°, ∵BD bisects ∠ABC, ∴∠CBD=∠ABD=∠A=30°, ∴BD=AD=6, ∴CD= $\frac{1}{2}$BD=6× $\frac{1}{2}$=3.

So fill in the blanks: 3. This problem uses the properties of right triangles and the properties of angle bisectors to solve.

178. As shown in the figure, there are 12 squares of the same size, of which the 5 small squares in the shaded part are part of the surface development diagram of a cube. Please select a small square from the remaining small squares and shade it so that the pattern forms the surface development diagram of this cube and is an axially symmetrical figure. 

[Answer] As shown in the figure: 

[Analysis] According to the definition of axially symmetrical figures and the characteristics of the surface development diagram of the cube, the figure can be drawn.

As shown in the figure: 

[Test point] Basic drawing

Comments: Drawing questions are the focus of junior high school mathematics, which runs through the entire junior high school mathematics learning. It is a common knowledge point in the high school entrance examination. It is generally not difficult and needs to be mastered.

179. Comparison of size (there must be a solution process): $-\frac{13}{24}$ $-\frac{5}{8}$

[Answer] $-\frac{13}{24}>-\frac{5}{8}$

[Analysis] It can be judged according to the rules for comparing the size of rational numbers. ∵$\left|-\frac{13}{24}\right|=\frac{13}{24}, \left|-\frac{5}{8}\right|=\frac{5}{8}=\frac{15}{24}, \frac{13}{24}<\frac{15}{24}$ ∴$-\frac{13}{24}>-\frac{5}{8}$

[Test points] This question tests the comparison of the size of rational numbers . Comments: The key to answering this question is to master the rules for comparing the size of rational numbers: positive numbers are greater than 0, negative numbers are less than 0, positive numbers are greater than all negative numbers, and of two negative numbers, the one with the larger absolute value is