2017-2018 7th Grade Mathematics Semester 1 Mid-term Practice Paper

One, multiple choice questions:

1. In the weather forecast for a certain day in January in our state this year, the lowest temperature in City A is -6 ℃, and the lowest temperature in City B is 2 ℃. The temperature in City A on this day is lower than that in City B by ( )

A. 8 ℃　　B. -8 ℃　　C. 6 ℃　　D. 2 ℃

2. Which of the following estimates of 0.06019 is incorrect? ( )

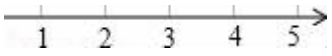
A · 0.1 (specific until 0.1)　　B · 0.06 (specific until 0.001)

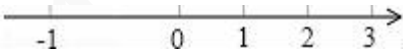
C.0.06(specific until 0.01)　　D · 0.0602 (specific until 0.0001)

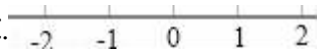
3. 324.1 billion written in scientific notation is ( )

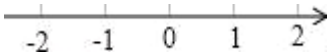
A. 3.241×10^{3}　　B. 0.3241×10^{4}　　C. 3.241×10^{11}　　D. 3.241×10^{12}

4. Which of the following number lines is valid? ( )

A · 

B · 

C. 

D · 

5. Function 7 - kx=x+2k is a function with x as the variable. If x=2, then k equals ( )

A. - 3　　B. $\frac{4}{5}$　　C. 1　　D. $\frac{5}{4}$

6. Which of the following equations is true? ( )

A · 3a - a=2　　B · $-4^{2}=-16$　　C · 3a+b=3ab　　D · - 5 - 2= - 3

7. After removing denominators from $\frac{x}{0.7}-\frac{0.17-0.2x}{0.03}=1$, the correct is ( )

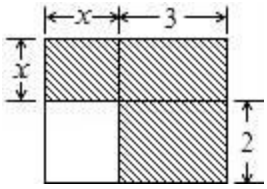
A. $\frac{x}{7}-\frac{17-2x}{3}=1$ B. $\frac{10x}{7}-\frac{17-2x}{3}=1$

C、$\frac{10x}{7}-\frac{17-20x}{3}=10$ D. $\frac{10x}{7}-\frac{17-20x}{3}=1$

8. Calculate -5+ (-2) ×3: ( )

A · -11 B · -1 C · 1 D · 11

9. Among the following four whole expressions, which cannot represent the area of the shaded part in the figure is ( )



A · (x+3)(x+2) - 2x B · x(x+3)+6 C · 3(x+2)+x^2 D · x^2+5x

10. Which of the following has the same value as 3-5-?（ ）

A. 3+5+7 B. -3+(-5)+(-7)

C. 3-(+5)-(+7) D. 3+(-5)+(-7)

11. Which of the following equations are valid? ( )

A · 3a+2b=5ab B · - 4xy+2xy= - 2xy

C · $3y^2$ - $2y^2$=1 D · $3x^2$+2x=$5x^3$

12. Observe and find the pattern:

When n=1, $S_1=1^3=1=1^2$;

When n=2, $S_2=1^3+2^3=9=3^2$;

When n=3, $S_3=1^3+2^3+3^3=36=6^2$;

When n=4, $S_4=1^3+2^3+3^3+4^3=100=10^2$;

…

Then the relationship between S_n and n is（　　）

A. $\frac{1}{4}n^4+\frac{1}{2}n^3$　　B. $\frac{1}{4}n^4+\frac{1}{2}n^2$　　C. $\frac{1}{4}n^2(n+1)^2$　D. $\frac{1}{2}n(n+1)^2$

Two, fill in the blanks:

13. In the morning, the temperature was －13℃. By noon, it had risen 10℃, and fell 8℃ in the evening. The temperature in the evening was_____℃.

14. If |a－1|=2, then a=_____

15. The sum of a polynomial and $2x^2-xy+3y^2$ was $-2xy+x^2-y^2$. What is this polynomial? _____

16. If |x－3|+|y+2|=0, then x + y = _____.

17. Given that $\frac{1}{5}a^4b^{2n}$ and $2a^{3m+1}b^6$ are like terms, then m=____，n=_____.

18. The following sequence of numbers follows a certain pattern: $-\frac{1}{2}$，2，$-\frac{9}{2}$，8，$-\frac{25}{2}$，18……，the nth number would be _____.

Three, calculation problems:

19. Calculate: $(+3\frac{2}{5})+(-2\frac{7}{8})-(-5\frac{3}{5})-(+\frac{1}{8})$

20. Calculate: $(-81)\div\frac{9}{4}\times\frac{4}{9}\div(-16)$

21. Calculate: $-7^2+2\times(-3)^2+(-6)\div(-\frac{1}{3})^2$

22. Calculate: $-3^2+1\div4\times\frac{1}{4}-\left|-1\frac{1}{4}\right|\times(-0.5)^2$

23. Simplify: $5(3a^2b-ab^2)-3(ab^2+5a^2b)$

24. Simplify: $-3a+[4b-(a-3b)]$.

Three, short answer questions:

25. Order the terms 3^2, $(-2)^3$, 0, $\left|-\frac{1}{2}\right|$, $-(2-5)$, $+(-1)$ on the number line from least to greatest.

Three Inquisitive Kids

26. First simplify, then substitute: $\frac{1}{2}x-（2x-\frac{2}{3}y^2+3xy）+（\frac{3}{2}x-x^2+\frac{1}{3}y^2）+2xy$, among them $x=-2$，$y=\frac{1}{2}$.

27. The food factory takes 20 bags of samples from the bagged food produced to test whether the quality of each bag meets the standard. The excess or deficiency is represented by positive and negative numbers, and the records are as follows:

Difference from standard mass (unit: grams)	-5	-2	0	1	3	6
# of bags	1	4	3	4	5	3

Is the average mass of the batch more or less than the standard mass? If the standard mass of each bag is 450 grams, what is the total mass of the sampling test?

Three Inquisitive Kids

28. A man starts at his house, and drives his car. Moving east is recorded as positive change, while moving west is recorded as negative change. His movements for the day are as follows: 15,-2, + 5,-1, + 10,-3,-2, + 12, + 4,-5, + 6. At the same time, a woman is moving across a highway that goes from north to south. Moving north is recorded as positive change while moving south is recorded as negative change. Her movements for the day are as follows: -17, + 9,-2, + 8, + 6, + 9,-5 · -1, + 4,-7,-8 ·

（1）When they stop, which direction is both the man and woman from point A, and by how many kilometers?

（2）If the car consumes *a* liters of fuel per kilometer, how many liters of fuel are consumed by each the man and woman from the start to finish?

29. Given that $|a+2|+(b+1)^2+(c-\frac{2}{3})^2=0$, Find the value of algebraic expression $5abc-\{2a^2b-[3abc-(4ab^2-a^2b)]\}$.

Three Inquisitive Kids

Answer Key

1.A

2.B.

3.D

4.D

5.B.

6.D

7.A

8.D.

9.D

10.B

11.C

12.C.

13. ﹣11
14 3 or ﹣1.
15. $-x^2-xy-4y^2$

16.S: ∵|x﹣3|+|y+2|=0，∴x﹣3=0，y+2=0，∴x=3，y=﹣2，∴x+y has a value of: 3﹣2=1, the correct answer is 1.
17. 1，3.
18. $(-1)^n \cdot \frac{n^2}{2}$;

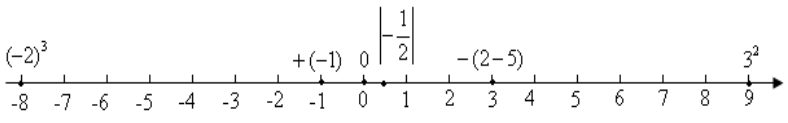
19.-7 ;

20.1
21. Original Equation=-85 ;

22. -9.25

23.Original Equation=$-8ab^2$
24. Original Equation =$-4a+7b$

25.S: $3^2=9,\quad (-2)^3=-8,\quad 0,\quad \left|-\frac{1}{2}\right|=\frac{1}{2},\quad -(2-5)=3,\quad +(-1)=-1$

Listed on the number line: 

Ordered from least to greatest: $(-2)^3 < +(-1) < 0 < \left|-\frac{1}{2}\right| < -(2-5) < 3^2$

26. S : Original Equation $=\frac{1}{2}x - 2x+\frac{2}{3}y^2 - 3xy+\frac{3}{2}x - x^2+\frac{1}{3}y^2+2xy= - x^2+y^2 - xy$,

When $x= - 2$ and $y=\frac{1}{2}$, original equation$= - 4+\frac{1}{4}+1= -\frac{11}{4}$.

27. S: The sum of the differences from the standard quality is $-5\times1+(-2)\times4+0\times3+1\times4+3\times5+6\times3=24$, so on average $24\div20=1.2$.

That is, the average mass of this batch of samples is 1.2 kg more than the standard mass.

Then the total quality of sampling inspection is (450+1.2)×20=9024 (kilograms).

28. S: (1) Because$(+15)+(-2)+(+5)+(-1)+(+10)+(-3)+(-2)+(+12)+(+4)+(-5)+(+6)=39$, so when they stop, the man was east of point A, by 39 kilometers.

Because $(-17)+(+9)+(-2)+(+8)+(+6)+(+9)+(-5)+(-1)+(+4)+(-7)+(-8)=-4$, so when they stop, the woman was south of A, by 4 kilometers.

(2) From start to finish, the man and the woman each consumed 65a liters and 76a liters of fuel respectively.

29. S: By the rules of non-negativity: $a=-2, b=-1, c=\frac{2}{3}$, original equation $= 8abc-a^2b-4ab^2=\frac{4}{3}$.

Three Inquisitive Kids