2017-2018 7th Grade Mathematics Midterm Test, Changchun City, Jilin Province

One, multiple choice (3 points per question, full score 30 points)

1. The opposite number of 5 is ( )

A. 5 B. -5

C. $\frac{1}{5}$ D. $-\frac{1}{5}$

2. Out of the following four numbers, the one less than -2 is ( )

A.1 B.0

C.-1 D.-3

3. 350 000 000 written in scientific notation is ( )

A. 3.5×10^7 B. 35×10^7

C. 3.5×10^8 D. 0.35×10^9

4. The temperature that morning was -6 degrees. Throughout the day, it rose 11 degrees and dropped 9 degrees. The temperature by the end of the day is ( )

A. -4℃ B. -5℃

C. -6℃ D. -7℃

5. Rational numbers *a* and *b* are plotted on the number line. *A* + *b* = (

(Question 5)

A. Less than 0 B. Greater than 0

C. Less than *a* D. Greater than *b*

6. Which one of the following statements are correct about monomial $-\frac{3xy^2}{5}$? ( )

A. The coefficient is $-\frac{3}{5}$, the degree is 2 B. The coefficient is $\frac{3}{5}$, the degree is 2

C. The coefficient is $-\frac{3}{5}$, the degree is 3 D. The coefficient is -3, the degree is 3

7. In the whole expression $x^{n+2} - 5x+2$, n has a value of ( )

A · 1 B · 2

C · 3 D · 4

8. In its first year, a factory produced a of a product. In its second year, it produced 20% more than the first year. The total amount of product it produced in its first two years is ( )

A. 0.2a B. a

C. 1.2a D. 2.2a

9. The sum of three consecutive odd integers are 81. The second odd integer is ( )

A.23 B.25 C.27 D.29

10. The correct statement is ( )

A. x has a coefficient of 0 B. y is not a monomial

C. 0.5 is a monomial D. -5a has a coefficient of 5

Two, fill in the blanks (3 points per question, full score 30 points)

11. Calculate: $\left|\frac{1}{2}-1\right|$ =_____ ·

12. 2.75 is accurate to the _____ths ·

13. In a two-digit number, it has a tens digit of a, and a ones digit of b. The value of this two-digit number written in an algebraic expression is _____ ·

14. When a = 2, b = -1, algebraic expression b^3+4a =_____ ·

15. Polynomial $2x^2-3x+x^3$ reordered by the index of x is_____ .

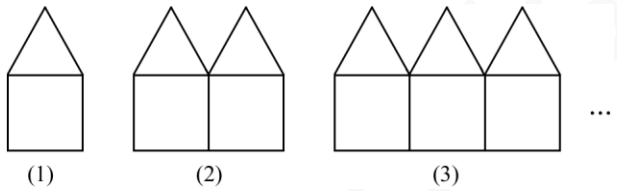
16. Given that: a – b = -3, c + d = 2, then (b + c) – (a – d) =_____ .

17. Polynomial: $9-5x^2-3x+2x^3$ has a degree of _____ and is a _____mial.

18. (x - y) has an opposite number of_____ .

19. The purchase price of a commodity is m dollars. It is sold at a cost 20% more than its purchase price. The sales price is _____ dollars.

20. Use matches equal length to form a pattern as shown in the figure. There are 6 matches in the first figure, 11 matches in the second figure, ..., so there is _____ matches in the nth figure.



(Question 20)

Three, short answer questions (8 points per question, full score 60 points)

21. (5 points) Calculate: 23-17-(-7) +(-16).

22. (5 points) Calculate: $3+50\div 2^2\times(-\frac{1}{5})-1$.

23. (6 points) Calculate: $-1^4-(-5\frac{1}{2})\div\frac{11}{4}\times(-2)^3$.

24. (6 points) Calculate : 5 (x^2y-2xy^2+z) - 4 ($2z+3x^2y-xy^2$)

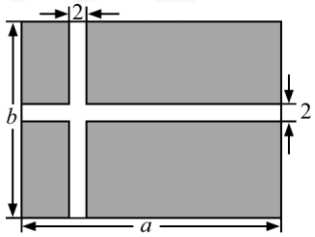
25. (8 points) Given that $|x| = 4$, $|y| = \frac{1}{2}$, and $x + y < 0$, find $x+y$.

26. (8 points) First simplify, then substitute: $5x^2-[3x-2(2x-3)+7x^2]$, with $x = -1$

27. (10 points) A park is ready to construct a new grassy field, with a length of a meters, and a width of b meters. There is also a walking space on the grass, with a width of 2 meters.

(1) Use an algebraic expression containing a, b to find the area of the walking space.

(2) If $a = 30$, $b = 20$, find the area of the shaded area.



28. (12 points) A garment factory produces suits and ties. Each suit costs 50 dollars. During the promotion period, the factory provides two preferential schemes to customers: ① Buy a suit and get a tie; ② A 10% discount on both a suit and a tie. A customer wants to buy 30 suits and x ties. ($x > 30$)

(1) If the customer purchases according to plan ①, he' ll spend _____ dollars on suits, _____ dollars on ties (Use algebraic expressions containing x).

If the customer purchases according to plan ②, he' ll spend _____ dollars on suits, _____ dollars on ties (Use algebraic expressions containing x).

(2) If $x = 50$, would Plan ① or Plan ② be more cost-efficient?

(3) If the two plans are used at the same time when $x = 50$, can you figure out the most cost-efficient strategy? Write out your purchase plan and calculate the payment amount required for the plan.

Grading

School: _____ Student Name:

One	Two	Three	Total

Answer Key

One, 1. B 2. D 3. C 4. A 5. B 6 . C 7. A 8. D 9.C 10.C

Two, 11. $\frac{1}{2}$ 12. hundredths 13.10a+b 14. 7 15. x^3+2x^2-3x

16. 5 17. Three, Four 18. y-x 19 1.2m 20. $5n+1$

Three,

21. Original Equation = $23-17+7-16=30-33=-3$. (Solution 3 points, result 2 points)

22. Original Equation = $3+50\times\frac{1}{4}\times(-\frac{1}{5})-1=3-\frac{5}{2}-1=-\frac{1}{2}$. (Solution 3 points result 2 points)

23. Original Equation = $-1+\frac{11}{2}\times\frac{4}{11}\times(-8)=-1+(-16)=-17$. (Solution 4 points, result 2 points)

24. Original Equation =-7 x^2y-6$x\,y^2$-3z (Solution 4 points, result 2 points)

25.∵|x|=4，$|y|=\frac{1}{2}$，∴$x=\pm4$，$y=\pm\frac{1}{2}$. （6 points）

∵x+y＜0，∴$x=-4$，$y=\pm\frac{1}{2}$.

∴$x+y=-4+\frac{1}{2}=-\frac{7}{2}$ or $x+y=-4-\frac{1}{2}=-\frac{9}{2}$. (2 points)

26. Original equation=-2 x^2+x-6

When x = -1, Original Equation = -9 (Solution 6 points, result 2 points)

27.（1）$(2a+2b-4)$ meters^2. （3 points）

（2）When a = 30，b = 20,

30×20-(2×30+2×20-4)=600-96=504 (m^2) .

Answer: The area of the shaded area is 504 m^2. （7 points）

28. （1）9000 · $50(x-30)$；8100 · $45x$. （4 points）

（2）Plan ①：$9000+50\times(50-30)=10000$（dollars）·

Plan ②：$8100+45\times50=10350$（dollars）· （8 points）

∵10000 < 10350 ·

∴ Plan ① is more cost-efficient. （9 points）

（3）It is possible, if using Plan ① to buy 30 suits, and then using Plan ② to buy 20 ties (10 points)

The money charged would be $300\times30+50\times90\%\times20=9990$（dollars）.

∴The total amount of money would be 9990 dollars. （12 points）