"Elite Maths Challenge Cup"
International Mathematics Competition

Secondary 1
Mock Paper
Time allowed: 20 minutes

Registration Number	
Name	
Score (Marker Only)	

"Elite Maths Challenge Cup"
International Mathematics Competition

Secondary 1 – Mock Paper

Note: There are 20 questions in total, with a full mark of 200 points.

Part A: Multiple Choices Questions (10 questions, 5 points each)

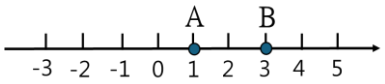
1. ( ) Calculate：$2^3 \times 4 \times 8 \times 16 =$?

   A. 2^8 B. 2^{10} C. 2^{12} D. 2^{14}

2. ( ) Calculate：$(-3)^4 \times 3^3 =$?

   A. -3^7 B. 3^7 C. -3^{12} D. 3^{12}

3. ( ) Points A, B, and C lie on a number line. Point C is to the right of point B. Point A represents the number 1 and point B represents the number 3 (as shown in the diagram below). If BC = 2AB, what number does point C represent?



   A. 5 B. 6 C. 7 D. 9

4. ( ) Given that $a<0$, which of the following expressions is true?

   A. $a^2 = (-a) \times a$ B. $a^2 = (-a)^2$ C. $a^3 = |a^3|$ D. $5a>4a$

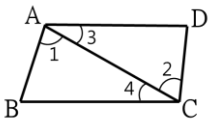
5. ( ) Calculate：$-2^2 \times 7 - (-3) \times 6 + 5 =$?

   A. -5 B. 15 C. -51 D. 51

6. ( ) $|x| = 6$，$|y| = 7$, and $xy<0$, then $x+y =$?

   A. 1 B. -1 C. ± 1 D. 13

7. ( ) In the figure below, AD // BC. Which of the following statements is true?



   A. ∠1=∠2 B. ∠3=∠4 C. ∠BAD=∠BCD D. ∠B=∠4

8. ( ) The altitudes of three locations, A, B, and C are 20 meters, -15 meters, and -10 meters, respectively. What is the difference in altitude between the highest and lowest locations?

   A. 10 B. 25 C. 35 D. 5

9. ( ) Which of the following is correct?

A. $a^3 \times a^4 = a^7$ B. $(a^3)^4 = a^7$

C. $a^{12} \div a^2 = a^6$ D. $2a^3 - a^3 = 2$

10. ( ) In California, USA, a bottle of orange juice costs \$3, but you can get a \$2 refund if you return the bottle. If you initially have \$10, what is the maximum number of bottles of orange juice you can buy?

A. 6 B. 7 C. 8 D. 9

＊ Marker Only ＊

Part A	Score
5 points each	

Part B: Short-Answer Questions (5 questions, 10 points each)

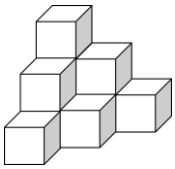
11. A shop bought 60 phone cases. During a sale, each case was sold for \$30. If the shop lost \$600 after selling all the cases, what is the percentage loss?

Answer: ( )

12. Given that $x^{2n} = 5$ ，find the value of x^{6n}. Answer: ( )

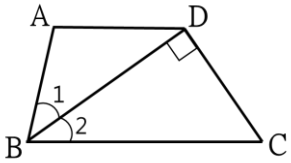
13. Cubes with an edge length of 1 are arranged to form the solid shown in the figure below. Find the surface area of the solid.

Answer: ( )



14. Given that $x^a \div x^b = x^6$ ，$x^{2a} \div x^b = x^{16}$ ，find the value of $a + b$. Answer: ( )

15. In the figure below, AD//BC, $\angle 1 = \angle 2$, $\angle A = 112^\circ$, and BD $\perp$ CD. Find the measure of $\angle C$.



Answer: ( )

＊ Marker Only ＊

Part B	Score
10 points each	

Part C: Challenging Questions (5 questions, 20 points each.

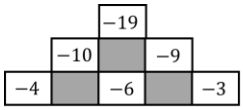
16. Solve the equation: $\frac{3k+5}{6} - \frac{k}{4} = 1$ Answer: ( )

17. Katie is half of Sally's age this year. Six years ago, their combined age was 12. Find Katie's age this year.

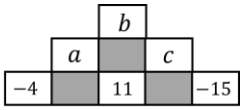
Answer: ( )

18. Find the pattern from figure (1) below. According to the pattern, find the values of a, b, and c in figure (2). What is $a + b - c$?

Answer: ( )



(1)



(2)

19. Calculate：$8^{33} \times (\frac{1}{4})^{50} =$? Answer: ( )

20. Given that $m + n = -5$ ， $mn = 3$ ，find the value of $m^2 + n^2$. Answer: ( )

＊ Marker Only ＊

Part C	Score
20 points each	

END OF PAPER