

*“Elite Maths Challenge Cup”  
International Mathematics Competition*



Secondary 2

Mock Paper

Time allowed: 20 minutes

Registration Number	
Name	
Score (Marker Only)	

# “Elite Maths Challenge Cup” International Mathematics Competition

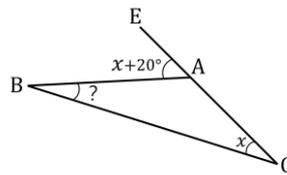
## Secondary 2 – Mock Paper

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

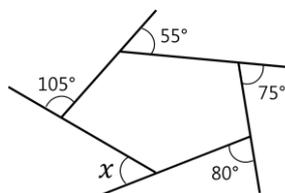
Part A: Multiple Choices Questions (10 questions, 5 points each)

1. (     ) Calculate :  $a^3 \times a^4 \div a^2 = ?$   
 A.  $a^3$                       B.  $a^4$                       C.  $a^5$                       D.  $a^6$
  
2. (     ) Which of the following is correct?  
 A.  $2 + \sqrt{2} = 2\sqrt{2}$                       B.  $\sqrt{2} + \sqrt{5} = \sqrt{7}$   
 C.  $\sqrt{2} + \sqrt{3} = \sqrt{6}$                       D.  $\sqrt{8} + \sqrt{18} = 5\sqrt{2}$

3. (     ) As shown in the figure below, what is the angle of  $\angle B$ ?



- A.  $20^\circ$                       B.  $30^\circ$                       C.  $45^\circ$                       D.  $60^\circ$
  
4. (     ) In a class, the ratio of the number of boys to the number of girls is 3:2. If there are 14 girls in the class, what is the total number of students in the class?  
 A. 32 人                      B. 35 人                      C. 40 人                      D. 42 人
  
5. (     ) Solve the system of equations  $\begin{cases} 2x + 5y = 10 \\ 3x + 5y = 20 \end{cases}$ , What are the values of  $x$  and  $y$ ?  
 A.  $\begin{cases} x = 5 \\ y = 2 \end{cases}$                       B.  $\begin{cases} x = -5 \\ y = -2 \end{cases}$                       C.  $\begin{cases} x = -10 \\ y = 2 \end{cases}$                       D.  $\begin{cases} x = 10 \\ y = -2 \end{cases}$
  
6. (     ) If  $a^m = 6$ ,  $a^n = 2$ , Then  $a^{2m-2n} = ?$   
 A. 3                      B. 4                      C. 9                      D. 18
  
7. (     ) Find the angle of  $x$  in the following diagram.



- A.  $45^\circ$                       B.  $50^\circ$                       C.  $55^\circ$                       D.  $60^\circ$

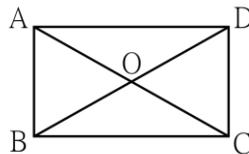
8. ( ) Calculate :  $8\sqrt{6} \div 2\sqrt{2} = ?$   
 A.  $2\sqrt{2}$       B.  $2\sqrt{3}$       C.  $4\sqrt{2}$       D.  $4\sqrt{3}$
9. ( ) Which of the following figures cannot be determined to be an axially symmetric figure?  
 A. Right angle    B. Line segment    C. Triangle      D. Isosceles trapezoid
10. ( ) Which of the following is correct?  
 A.  $\frac{x^6}{x^3} = x^2$     B.  $\frac{x+y}{x+y} = 0$     C.  $\frac{-x+y}{x-y} = -1$     D.  $\frac{m+x}{n+x} = \frac{m}{n}$

\* Marker Only \*

Part A	Score
5 points each	

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

11. In the figure below, the diagonals of rectangle ABCD intersect at point O.  $\angle AOB = 60^\circ$  and  $AB = 2$ . What is the length of diagonal AC of the rectangle?



Answer : ( )

12. Suppose 1 US dollar can be exchanged for 7.74 Hong Kong dollars, and 72 Hong Kong dollars can be exchanged for 1000 Japanese yen. How many Japanese yen can 1 US dollar be exchanged for?

Answer : ( )

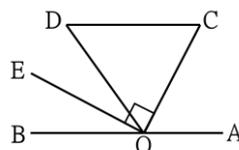
13. If the fraction  $\frac{2}{x-1}$  and 1 are opposite numbers, what is the value of  $x$ ?

Answer : ( )

14. Given that :  $|a - 3| + \sqrt{b + 2} = 0$  , Then  $ab = ?$

Answer : ( )

15. In the figure below, it is known that  $\angle C = \angle AOC = 63^\circ$ , OC bisects  $\angle AOD$ , and  $OC \perp OE$ . Find the angle of  $\angle D$ .



Answer : ( )

\* Marker Only \*

Part B	Score
5 points each	

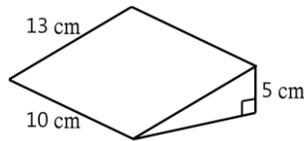
**Part C: Challenging Questions (5 questions, 20 points each)**

16. Given that  $|x + y - 5| + (xy - 6)^2 = 0$ , find the value of  $x^2 + y^2$ .  
Answer : ( )

17. A hamburger costs \$11 and an ice cream cone costs \$4. John buys some hamburgers and ice cream cones with \$56. If he buys a total of 7 items, how many hamburgers did he buy?

Answer : ( )

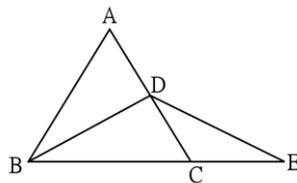
18. The figure below shows a right triangular prism. What is its volume?



Answer : ( )

19. In the figure below, triangle ABC is an equilateral triangle, D is the midpoint of AC, and  $CE = CD = 1$ . What is the length of DE?

Answer : ( )



20. After school, A and B walk home from school at the same time, heading due north and due east respectively. Both of them walk at a speed of 40 meters per minute. A arrives home in 20 minutes, and B arrives home in 15 minutes. What is the distance between their homes?

Answer : ( )

\* Marker Only \*

Part C	Score
20 points each	

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