Class	Index Number

Candidate Name: ....

HUA YI SECONDARY SCHOOL

MID-YEAR EXAMINATION 2008
SECONDARY ONE EXPRESS

MATHEMATICS

Part 1

Candidates answer on the Question Paper.

Hua Yi Secondary School Hua Yi Secondary School

8 May 2008 **1 hour 15 minutes**

INSTRUCTIONS TO CANDIDATES

Write your Name, Class and Index Number in the spaces at the top of this page.

Answer **all** questions.

Write your answers in the spaces provided on the question paper.

If working is needed for any question it must be shown in the space below that question.

Omission of essential working will result in loss of marks.

ELECTRONIC CALCULATORS MUST NOT BE USED IN THIS PAPER.

INFORMATION FOR CANDIDATES

The number of marks is given in brackets [ ] at the end of each question or part question.

The total of the marks for this paper is 50.

FOR EXAMINER'S USE
50

Set by: Wong May Qi

For Examinaer's Use

1 **(a)** Find the largest multiple of 7 that is less than $5^2 + 6^3 + \sqrt{169}$.

(b) Given that 11 is a prime factor of a four-digit number, '$310a$', determine the digit 'a'.

*Answer (a)*_____ [3]

*(b)*_____ [1]

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2 Given the set of numbers $\sqrt[3]{27}$, $0.\dot{3}$, $\sqrt[3]{64}$, $\frac{-4}{-2}$, $\sqrt{2}$

(a) write down the prime numbers,

(b) find the difference between the smallest rational number and the largest rational number,

(c) write down the irrational number/(s).

*Answer (a)*_____ [1]

*(b)*_____ [1]

*(c)*_____ [1]

For Examiner's Use

3 **(a)** Express 2744 as a product of its prime factors in index notation.

(b) Hence find $\sqrt[3]{2744}$.

Answer (a) ..... [2]

(b) ..... [1]

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4 Express $100 \times \frac{5}{11}$ as a repeating/recurring decimal.

Answer ..... [2]

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5 Write

(a) 532.0043 correct to the nearest hundredth,

(b) 293.12 cm correct to the nearest m,

(c) 9 162 708 correct to the nearest 1000.

Answer (a) ..... [1]

(b) ..... m [1]

(c) ..... [1]

For Examiner's Use

6 Evaluate the following.

(a) $0.9^2 - 3 \times 2$,

(b) $[-8 + (-9) \times 2] \div [-(-23) - 5 \times 2]$.

Answer (a) _____ [2]

(b) _____ [3]

---

7 **(a)** Express, correct to 2 significant figures

(i) 253.78,

(ii) 0.03985,

(iii) 0.999.

(b) Hence, estimate, correct to 1 significant figure, the value of $\frac{253.78}{0.03985 \times 0.999}$.

Answer (a) (i) _____ [1]

(ii) _____ [1]

(iii) _____ [1]

(b) _____ [2]

124

For Examiner's Use

8 Given that $a = -2$, $b = 1$ and $c = 5$, evaluate

(a) $(a + 2c)(b - 2a)$,

(b) $\dfrac{abc}{(3a)^2}$.

*Answer (a)*_____ [2]

*(b)*_____ [2]

9 **(a)** Factorise $bx - by$,

(b) Hence, calculate $138 \times 74.19 - 128 \times 74.19$. Show all working clearly.

*Answer (a)*_____ [1]

*(b)*_____ [2]

For Examinaer's Use

10 Simplify $23mn^2 - 16mn^3 \div 2n$.

Answer ..... [2]

11 Solve

(a) $2x+4=10$,

(b) $\frac{1}{3}x - \frac{2}{9} = \frac{3}{2}$.

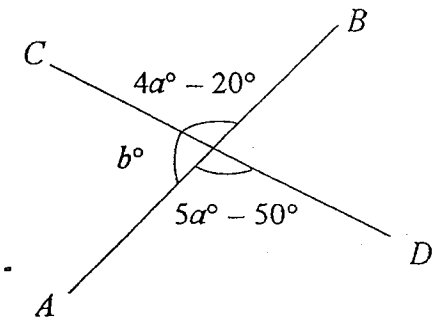
Answer (a) ..... [1]

(b) ..... [2]

/ 30

For Examinaer's Use

12 In the figure, AB and CD are straight lines. Find the value of a and of b. State your reasons clearly in your working.



Answer $a =$ ..... [2]

$b =$ ..... [2]

13 Find, in its simplest form, the fraction which is exactly halfway between $\frac{3}{5}$ and $\frac{4}{7}$.

Answer ..... [2]

131

For Examiner's Use

14 Evaluate the following, leaving each answer as a fraction in its lowest terms.

(a) $\sqrt[3]{\frac{8}{27}} - \sqrt{\frac{81}{36}}$,

(b) $-2\frac{2}{3} \times \frac{5}{7} + \frac{2}{7}$,

(c) $\left[-\frac{1}{5} - \left(-\frac{5}{6}\right)\right] \div \left(-\frac{1}{2} - \frac{1}{3}\right)$.

Answer (a) _____ [2]

(b) _____ [2]

(c) _____ [3]

END OF PART 1

For Examinaer's Use

Marking Scheme

1 (a) 252
(b) 2

2 (a) 2, 3
(b) $3\frac{2}{3}$
(c) $\sqrt{2}$

3 (a) $2^3 \times 7^3$
(b) 14

4 $45.\dot{4}\dot{5}$

5 (a) 532.00
(b) 3
(c) 9 163 000

6 (a) -5.19
(b) -2

7 (a) (i) 250
(ii) 0.040
(iii) 1.0
(b) 600

8 (a) 40
(b) $-\frac{5}{18}$

9 (a) $b(x-y)$
(b) 741.9

10 $15mn^2$

11 (a) $x = 3$
(b) $x = 5\frac{1}{6}$

12 $a = 30°$, $b = 80°$

13 $\frac{41}{35}$

5 (a) $-\frac{5}{6}$
(b) $-1\frac{13}{21}$
(c) $-\frac{19}{25}$

Class	Index Number

Candidate Name: ....

HUA YI SECONDARY SCHOOL

MID-YEAR EXAMINATION 2008
SECONDARY ONE EXPRESS

MATHEMATICS

Part 2

Candidates answer on the Question Paper.

Hua Yi Secondary School Hua Yi Secondary School

13 May 2008 **1 hour 15 minutes**

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FOR EXAMINER'S USE
50

Set by: Wong May Qi

35

For Examinaer's Use

1 Use a calculator to evaluate

(a) $\dfrac{31.87 + \left(78 \times 1.23^2\right)}{6.58}$, giving your answer correct to 2 decimal places,

(b) $\sqrt[3]{247 + \sqrt{123 - (-18)^3}}$, giving your answer correct to 3 significant figures.

*Answer (a)*_____ [1]

*(b)*_____ [1]

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2 Arrange the following numbers in ascending order.

$1.\dot{5}7\dot{1}\dot{4}$, 1.5714, $1.571\dot{4}$, 1.571, $\dfrac{11}{7}$

Answer _____ [2]

36

For Examiner's Use

3 Kenny bought 5 pens at \$1.82 each, 3 vanguard sheets for \$2.08 and 4 files at \$4.99 each.

(a) Estimate the total amount Kenny has to pay by rounding the prices to the nearest dollar.

(b) Calculate the difference between the actual amount to be paid and the estimated amount.

Answer (a) \$..... [2]

(b) \$..... [2]

4 Factorise

(a) $21ab - 7b - 14bd + 35bc$,

(b) $bx + 2x - by - 2y$.

Answer (a)..... [1]

(b)..... [2]

137

For Examiner's Use

5 Ahmad bought 3 kinds of lollipops at the supermarket. There were 120 chocolate flavoured lollipops, 109 orange flavoured lollipops and 85 cola flavoured lollipops. He ate one orange flavoured lollipop and one cola flavoured lollipop and packed the remaining lollipops into smaller packets. The packets are identical, each containing the same number of each type of lollipop.

Find the largest possible number of packets Ahmad could have packed and hence, the number of cola-flavoured lollipops there would be in each packet.

.....packets [2]

.....cola flavoured lollipops [1]

6 Amber hotel provides 3 free shuttle bus services to Orchard Road, the Zoo and the Esplanade. Bus A leaves the hotel at 12-minute intervals. Bus B leaves at 30-minute intervals. Bus C leaves at 1-hour intervals. The three bus services start at 0930. Find the time when the buses for the three services next leave the hotel at the same time.

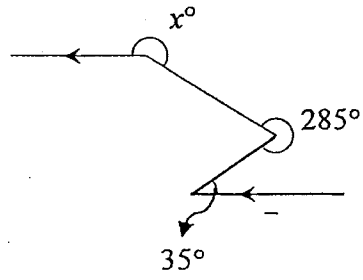
Answer ..... [2]

For Examinaer's Use

7 The average of 6 numbers is a. When a seventh number is added, the average is 9. Express the seventh number in terms of a.

Answer ..... [2]

8 Find the value of x in the figure below.



Answer $x =$ ..... [3]

9 Subtract $\left(4a^3 + 6a^2 - 5\right)$ from the sum of $\left(a^3 - 4a + 3\right)$ and $\left(3a - 6a^3 + 2\right)$.

Answer ..... [3]

135

For Examinaer's Use

10 Alex has one-dollar, fifty-cent and ten-cent coins in his piggy bank. There are x one-dollar coins and 20 more ten-cent coins than fifty-cent coins. The number of fifty-cent coins is two times the number of one-dollar coins.

(a) Write down an expression in terms of x, in the simplest form, for the
- **(i)** number of fifty-cent coins,
- **(ii)** number of ten-cent coins.

(b) If Alex has a total of \$68 in the piggy bank, form an equation in x and solve it.

(c) Find the number of ten-cent coins in the piggy bank.

Answer (a) (i) ..... [1]

(ii) ..... [1]

(b) $x =$ ..... [2]

(c) ..... ten-cent coins [1]

140

For Examinaer's Use

11 Simplify

(a) $22a \times a + 3a(b + 2a)$,

(b) $\frac{-2b}{3} - \frac{3(a-2b)}{5}$.

*Answer (a)*_____ [2]

*(b)*_____ [3]

141

For Examinaer's Use

12 A series of diagrams of squares is shown below.

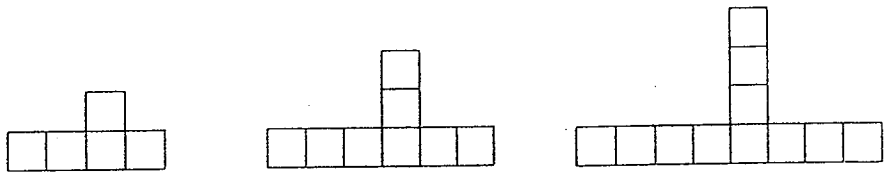


Diagram 1 Diagram 2 Diagram 3

(a) Draw Diagram 4 in the space below. [1]

Answer (a)

(b) Complete the following table. [2]

Diagram	**1**	**2**	**3**	**4**	**...**	**10**
Number of squares	$2+1\times3$ $=5$	$2+2\times3$ $=8$	$2+3\times3$ $=11$		...	

(c) Find an expression, in terms of N, for the number of squares for Diagram N.

(d) Diagram K has 65 squares. Find the value of K.

Answer (c) ..... squares [1]

(d) $K =$ ..... [1]

142

For Examiner's Use

13 Construct a triangle ABC such that $AB = 8.9$ cm, $AC = 5.7$ cm and $\angle BAC = 48°$. [2]

Measure and write down $\angle BCA$. [1]

On the same diagram, construct

(a) the perpendicular bisector of AB, [1]

(b) the angle bisector of $\angle ABC$. [1]

For Examinaer's Use

14 Solve

(a) $\frac{2x+3}{4} - \frac{x+3}{5} = 0,$

(b) $\frac{14}{2x+3} = \frac{4}{3}.$

Answer *(a)* $x =$ ..... [3]

(b) $x =$ ..... [3]

END OF PART 2

144

Marking Scheme

1 (a) 22.78
(b) 6.87

2 (a) $1.571, 1.5714, \frac{11}{7}, 1.5714\dot{}, 1.\dot{5}714\dot{}$

3 (a) \$36
(b) \$0.70

4 (a) $7b(3a-1-2d+5c)$
(b) $(b+2)(x-y)$

5 (a) 12 packets
(b) 7 cola lollipops

6 1030

7 $63-6a$

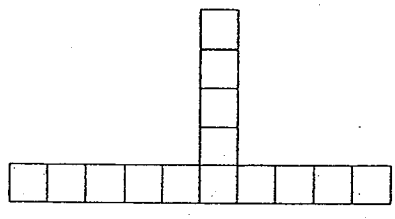
8 220°

9 $-9a^3-6a^2-a+10$

10 (a) (i) $2x$
(ii) $2x+20$
(b) $x=30$
(c) 80

11 (a) $28a^2+3ab$
(b) $\frac{8b-9a}{15}$

12 *(a)*



(b)

Diagram	**4**	**...**	**10**
Number of squares	$2+4\times3$ =14	...	$2+10\times3$ =32

(c) $2+(N\times3)$

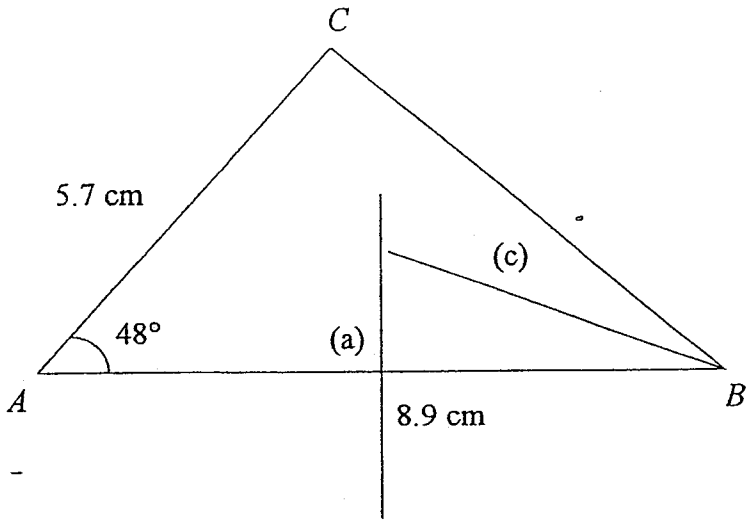
(d) 21

13 $\angle BCA = 92°$

For Examinaer's Use

Marking Scheme

13 $\angle BCA = 92°$



14 (a) $x = -\frac{1}{2}$

(b) $x = 3\frac{3}{4}$