

Name : _____

Index Number : _____

Class : _____

Clementi Town Secondary School
Mid-Year Examination 2008
Secondary 1 Express



Mathematics

Paper 1

Duration: 1 hour

CLEMENTI TOWN SECONDARY SCHOOL CLEMENTI TOWN SECONDARY SCHOOL CLEMENTI TOWN SECONDARY SCHOOL CLEMENTI TOWN SECONDARY SCHOOL
CLEMENTI TOWN SECONDARY SCHOOL CLEMENTI TOWN SECONDARY SCHOOL CLEMENTI TOWN SECONDARY SCHOOL CLEMENTI TOWN SECONDARY SCHOOL
CLEMENTI TOWN SECONDARY SCHOOL CLEMENTI TOWN SECONDARY SCHOOL CLEMENTI TOWN SECONDARY SCHOOL CLEMENTI TOWN SECONDARY SCHOOL
CLEMENTI TOWN SECONDARY SCHOOL CLEMENTI TOWN SECONDARY SCHOOL CLEMENTI TOWN SECONDARY SCHOOL CLEMENTI TOWN SECONDARY SCHOOL
CLEMENTI TOWN SECONDARY SCHOOL CLEMENTI TOWN SECONDARY SCHOOL CLEMENTI TOWN SECONDARY SCHOOL CLEMENTI TOWN SECONDARY SCHOOL

Instructions to candidates:

Write your name, registration number and class in the spaces provided 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, show it 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.

You should not spend too much time on any one question.

The total marks for this paper is **50**.

FOR EXAMINER'S USE
/50

Answer **all** the questions in the spaces provided.

1. Draw a number line to represent multiples of 3 which are ≥ 6 but < 21 . [1]

2. If $6174 = 2^a \times 3^b \times 7^c$, find the values of a , b and c .

Ans: $a =$ _____ [1]

Ans: $b =$ _____ [1]

Ans: $c =$ _____ [1]

3. Express the following numbers, correct to 2 significant figures.

(a) 0.39632

(b) 236.9303

Ans: (a) _____ [1]

Ans: (b) _____ [1]

4. Find the HCF and LCM of $2^3 \times 3^3 \times 7$ and $2^4 \times 3^2 \times 5$.

Ans: HCF = _____ [2]

Ans: LCM = _____ [2]

5. Arrange the following numbers in descending order

$$\frac{22}{7}, 3.142, 3\frac{3}{20}, 3.1\dot{4}$$

Ans: _____ [2]

6. Estimate, correct to one significant figure, the value of $\frac{\sqrt{37.997} \times 24.9078}{49.5346}$

Ans: _____ [2]

7. (a) Find the value of $\sqrt{\frac{147}{243}}$.

(b) Given that $\sqrt[3]{9.87} = 2.15$ and $\sqrt[3]{98.7} = 4.62$, find the value of $\sqrt[3]{9870}$.

Ans: (a) _____ [2]

Ans: (b) _____ [2]

8. Evaluate

(a) $2\frac{1}{10} - 3\frac{1}{3} \div \left(-2\frac{2}{3}\right)$

(b) $1\frac{3}{4} - 0.3 \times 1.8 + \frac{1}{25}$, leaving your answer as a fraction in its lowest terms.

Ans: (a) _____ [3]

Ans: (b) _____ [3]

9. Calculate the exact value of

(a) 13.5×2.1

(b) $86 + 24 \div 12 \times 7 - 16$

Ans: (a) _____ [1]

Ans: (b) _____ [2]

10. If $a = 2$, $b = 0$ and $c = -3$, evaluate

(a) $ac - 2c + 3abc$,

(b) $(2ac)^2 - ac^2$.

Ans: (a) _____ [2]

Ans: (b) _____ [2]

11. In an incubator of 400 eggs, it is expected that 85% of eggs should hatch.

(a) Find the number of eggs expected to hatch.

(b) A new incubator that can store 444 eggs was bought. What was the percentage increase in the number of eggs that can be stored in the incubator?

(c) On a certain day, a stallholder sold 130 chicks which were 4% more than he had expected. Calculate the number of chicks he had expected to sell.

Ans: (a) _____ [2]

Ans: (b) _____ [2]

Ans: (c) _____ [2]

12. A school bought n boxes containing packets of paper files. Each box contains 4 packets of paper files. Write an expression, in terms of n , for
- (a) the number of packets of paper files bought by the school,
 - (b) the number of packets of paper files each department received if 9 departments in the school shared the packets of files equally.

Ans: (a) _____ [1]

Ans: (b) _____ [1]

13. A man and a woman shared a lucky draw prize of \$6 000 in the ratio 2 : 3. The woman divides her share among her mother, her two daughters and herself in the ratio 3 : 1 : 1 : 5. How much will her mother get?

Ans: _____ [3]

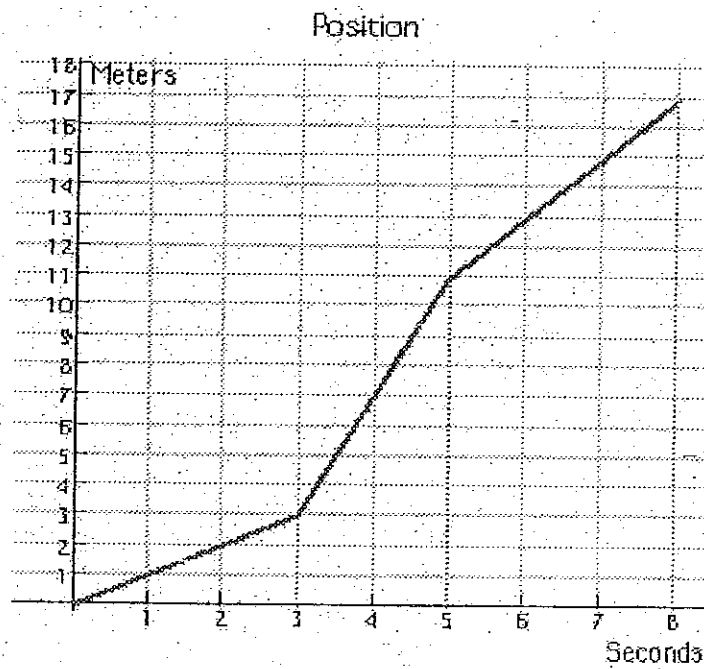
14. A cyclist cycles at an average speed of 28 km/h for 1 hour. He then cycles for 12 km at an average speed of 24 km/h. Calculate the average speed of the cyclist for the entire journey.

Ans: _____ [3]

15. $2*$ and $4*$ are both 2 digit numbers. If $\frac{2*}{4*} + \frac{5}{12} = 1$, what does the digit $*$ represent?

Ans: _____ [2]

16. The position of a grasshopper is noted every second as it starts moving along a straight line. The following is the position-time graph of the grasshopper.



Calculate the average speed of the grasshopper for the first 7 seconds. Express your answer in km/h.

Ans: _____ [3]

End of Paper

Name : _____

Index Number : _____

Class : _____

Clementi Town Secondary School
Mid-Year Examination 2008
Secondary 1 Express



Mathematics

Paper 2

Duration : 1 hour 30 minutes

Additional Materials provided : Writing Paper

CLEMENTI TOWN SECONDARY SCHOOL CLEMENTI TOWN SECONDARY SCHOOL CLEMENTI TOWN SECONDARY SCHOOL CLEMENTI TOWN SECONDARY SCHOOL
CLEMENTI TOWN SECONDARY SCHOOL CLEMENTI TOWN SECONDARY SCHOOL CLEMENTI TOWN SECONDARY SCHOOL CLEMENTI TOWN SECONDARY SCHOOL
CLEMENTI TOWN SECONDARY SCHOOL CLEMENTI TOWN SECONDARY SCHOOL CLEMENTI TOWN SECONDARY SCHOOL CLEMENTI TOWN SECONDARY SCHOOL
CLEMENTI TOWN SECONDARY SCHOOL CLEMENTI TOWN SECONDARY SCHOOL CLEMENTI TOWN SECONDARY SCHOOL CLEMENTI TOWN SECONDARY SCHOOL
CLEMENTI TOWN SECONDARY SCHOOL CLEMENTI TOWN SECONDARY SCHOOL CLEMENTI TOWN SECONDARY SCHOOL CLEMENTI TOWN SECONDARY SCHOOL

Instructions to candidates :

Write your name, registration number and class in the spaces at the top of this page.

Answer **All** questions.

Write your answers and working on the writing paper provided.

If you use more than one sheet of paper, fasten the sheets together.

All working must be clearly shown.

Omission of essential working will result in loss of marks.

INFORMATION FOR CANDIDATES

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

The total marks for this paper is **50**.

You are expected to use an electronic calculator to evaluate explicit numerical expressions.

If the degree of accuracy is not specified in the question and if the answer is not exact, give the answer to three significant figures. Give answers in degrees to one decimal place.

For π , use either your calculator value or 3.142, unless the question requires the answer in terms of π .

Answer **all** the questions.

1. Evaluate

(a) $45.2^2 - \pi \times \sqrt[3]{21.45 + 2.31} + 5.1$, giving your answer correct to 2 significant figures. [1]

(b) $\frac{3.54^3 \times 2.67}{9.12 - \sqrt{12.5}}$, giving your answer correct to 3 decimal places. [1]

(c) $-2\frac{1}{3} \times \left(-\frac{3}{10}\right) + \frac{1}{6} \div \left(-\frac{1}{2}\right)^2$, giving your answer correct to the nearest integer. [1]

(d) $\frac{2}{3} + \frac{(-0.85) + \left(-1\frac{1}{2}\right)}{\frac{5}{6} \times 1\frac{3}{4}}$, giving your answer correct to 3 significant figures. [1]

2. While climbing Mount Titi, Chris discovers that the air temperature decreases by 2°C whenever he climbs a height of 400 m. The air temperature at the bottom of the mountain is 20°C .

(a) Find the air temperature after Chris climbed a height of 5 km from the bottom of Mount Titi. [2]

(b) Find the height that Chris had climbed from the bottom of Mount Titi if the air temperature is -13°C . [3]

3. (a) 56 boys and 49 girls signed up for a hairstyling enrichment course. The number of girls is increased in the ratio $9 : 7$, while the number of boys is decreased in the ratio $5 : 8$.

(i) What is the new number of girls? [1]

(ii) What is the new number of boys? [1]

(iii) What is the new ratio of boys to girls? [1]

- (b) A sum of money is divided among David, Eugene and Fablo in the ratio 15 : 8 : 3. If Eugene has \$9.50 more than Fablo, find the original sum of money. [2]
4. (a) (i) If $x = \frac{2yz - w}{y^3}$, find the value of x when $w = -4$, $y = -3$ and $z = 2$. [2]
(ii) If $p = \sqrt{(q-r)(q-8)(r-2)}$, find the value of p when $q = -1$ and $r = 3$. [2]
- (b) In 2008, Gerald is k years old. His sister is 2 years younger. His father is thrice their average age. Find, in terms of k , the age of
- (i) his sister in year 2005; [1]
(ii) his father in year 2008. [1]
5. "Famous" bookstore sells some identical files at 45 cents each and pens at \$1.20 each. It gives a discount of 10% to its members with a minimum purchase of \$10.
- (a) Andy is a member of "Famous" bookstore. He wants to buy 5 pens and some files. Find the maximum number of files Andy can buy if he has \$15 in his wallet. [4]
(b) Beatrice who is also a member of "Famous" bookstore wants to buy 3 pens and 10 files. If she saves \$1.50 per week, estimate the number of weeks Beatrice will take to save up enough to buy the 3 pens and 10 files. [3]
6. (a) Three traffic lights along a street turn red at regular intervals of 1 minute, 1 minute 10 seconds and 1 minute 18 seconds respectively. If all the traffic lights turned red at the same time at 0830 hr, find the next time when this occurs again. [3]
(b) Joseph distributed the same number of sweets and same number of biscuits to each of his classmates at his birthday party. He gave out 220 sweets and 300 biscuits in total. Find the largest possible number of classmates at the party. [2]
(c) The numbers 168 and 324, written as the products of their prime factors are
- $$168 = 2^3 \times 3 \times 7$$
- $$324 = 2^2 \times 3^4$$
- Find the largest integer which is a factor of both 168 and 324. [2]

7. (a) Mr. Ho owns a car which has a 40-litres capacity petrol tank. He started the week with a full tank and during the week, he pumped in additional volumes of 18.4 litres and 32.6 litres, each time filling up the tank to its full capacity. At the end of the week, he found that he still has half a tank of petrol left. Calculate
- (i) the distance travelled by the car if its rate of petrol consumption is 12.8 km per litre; [2]
 - (ii) the cost of 1 litre of petrol if the total cost of petrol used in the week is \$205.19. [2]
- (b) In 2006, the price of one litre of petrol was \$2.30. In 2007, the price of one litre of petrol was \$2.53.
- (i) Calculate the percentage increase in the price of petrol from 2006 to 2007. [2]
 - (ii) The price of petrol in 2006 was 15% less than the price in 2005. Calculate the price of one litre of petrol in 2005, giving your answer correct to the nearest cent. [2]
8. (i) Mr. Ibrahim drove from his home to Clementi Town Secondary School at an average speed of 70 km/h. If he left his house at 6.44 am and arrived at Clementi Town Secondary School at 7.08 am, find the distance between his home and Clementi Town Secondary School. [3]
- (ii) Mr. Ibrahim continued his journey to his office at Jurong East which is 18 km from Clementi Town Secondary School. He travelled at 55 km/h for the first half of the journey and 80 km/h for the second half of the journey, find the total time taken for the whole journey from Clementi Town Secondary School to his office, giving your answer correct to the nearest minute. [2]
 - (iii) Find the average speed, in km/h, for the entire journey from his house to his office if Mr. Ibrahim stopped at Clementi Town Secondary School for 5 minutes, giving your answer correct to 3 significant figures. [3]

Clementi Town Secondary School
Mid-Year Examination 2008
Secondary 1 Express



Mathematics Paper 1 Answers

2. (a) 1
(b) 2
(c) 3
3. (a) 0.40
(b) 240
4. HCF = 72
LCM = 15120
5. $3\frac{3}{20}, 3.14, \frac{22}{7}, 3.142$
6. 3 -
-
7. (a) $\frac{7}{9}$
(b) 21.5
8. (a) $3\frac{7}{20}$ km
(b) $1\frac{1}{4}$ min
9. (a) 28.35
(b) 84
10. (a) 0
(b) 126
11. (a) 340
(b) 11%
(c) 125

12. (a) $4n$

(b) $\frac{4n}{9}$

13. \$1080

14. $26\frac{3}{3}$ km/h

15. 8

16. $7\frac{5}{7}$ km/h



Mathematics Paper 2 Answers

1. (a) 2000
(b) 21.210
(c) 1
(d) -0.945
2. (a) -5°C
(b) 6600 m or 6.6 km
3. (a) (i) 63
(ii) 35
(iii) 5 : 9
(b) 49.40
4. (a) (i) $\frac{8}{27}$
(ii) 6
(b) (i) $k - 2 - 3$
(ii) $3\left(\frac{k + k - 2}{2}\right)$
5. (a) Andy can only buy a maximum of 23 files.
(b) She needs 6 weeks to save up enough to buy the 3 pens and 10 files.

6. (a) The three traffic lights will next turn red at the same time at 1001 hr
- (b) The largest number of classmates at the party is 20.
- (c) 12
7. (a) (i) 908.8 km
- (ii) \$2.89
- (b) (i) 10 %
- (ii) \$2.71
8. (i) 28 km
- (ii) 17 min
- (iii) 60.6 km/h