

SHATIN TSUNG TSIN SECONDARY SCHOOL
2010–2011 S.1 FIRST EXAMINATION
MATHEMATICS
ANSWER SHEET

Date: 14 – 12 – 2010

Time allowed: 75 min.

Full mark: 100

S.1 _____ Name: _____ () Marks: _____ / 100

Instructions:

1. Answer ALL questions in Section A on the Multiple Choice Answer Sheet provided.
2. Answer ALL questions in Sections B and C on the Answer Sheets provided.
3. Electronic calculators or calculator watches are not allowed.
4. Unless otherwise specified, numerical answers should either be exact or correct to 2 decimal places.
5. The figures in the paper are not necessarily drawn to the scale.

Section A: Multiple Choice (15 marks)

Choose the best answer and mark it on the Multiple Choice Answer Sheet provided. Each question carries 1 mark. No mark will be given for more than one choice. No mark will be deducted for wrong answers.

1.D 2.D 3.C 4.C 5.B 6.D 7.B 8.B 9.B 10.A 11.A 12.B 13.D 14.C 15.C

Section B: Short Questions (25 marks)

Write down the answers in the spaces provided below. No working step is required.

1) $2 \times 3^2 \times 5$ (2 marks)	2) $2^2 \times 3 \times 5^2$ (2 marks)	3) 8°C (2 marks)
4a) 6 (2 marks)	4b) -243 (2 marks)	5) $x = -\frac{11}{3}$ (2 marks)
6a) $-13, -17$ (2 marks)	6b) $7 - 4n$ or $-4n + 7$ (2 marks)	7) 66 (3 marks)
8) 25 (3 marks)	9) 80 kg (3 marks)	

Section C: Long Questions (60 marks)

Show all your working steps clearly. Marks will be deducted for poor presentation of material.

1) Evaluate the following. (10 marks)

<p>(a) (i) $(-5)^2 + 2(-3)(4) + 3^2$ $= 25 + (-24) + 9$ (1A + 1A + 1A) $= 25 - 24 + 9$ $= 10$ (1A)</p>	<p>(ii) $2^3 - (-2)^3 - 3(2)^2(-2) + 3(5)(-2)^2$ $= 8 - (-8) - (-24) + 60$ (1A + 1A + 1A) $= 8 + 8 + 24 + 60$ $= 100$ (1A)</p>
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(b) By using the results in parts (a)(i) and (a)(ii), evaluate the following expression.

$$\frac{(-5)^2 + 2(-3)(4) + 3^2}{2^3 - (-2)^3 - 3(2)^2(-2) + 3(5)(-2)^2} = \frac{10}{100} = \frac{1}{10} \quad (1M + 1A)$$

- 2) In a Mathematics competition, there are 32 questions of equal marks. 8 marks are given to each correct answer, 5 marks are deducted for a wrong answer and 2 marks are deducted for each unanswered question. Jimmy answers 20 questions correctly, y questions wrongly and leaves the rest unanswered, find the value of y if he gets 112 marks. (6 marks)

$$20(8) - 5y - 2(32 - 20 - y) = 112 \quad (1A+1A+1A+1A)$$

$$160 - 5y - 2(12 - y) = 112$$

$$160 - 5y - 24 + 2y = 112 \quad (1A)$$

$$136 - 3y = 112$$

$$-3y = -24$$

$$y = 8 \quad (1A)$$

- 3) Sammy originally had $\$(16x + 268)$ pocket money. After buying $(8x - 3)$ sweets, \$21 were left. Given that the price of each sweet is \$3.

- (a) Find the value of x . (5 marks)

$$16x + 268 - 3(8x - 3) = 21 \quad (1A+1A+1A)$$

$$16x + 268 - 24x + 9 = 21 \quad (1A)$$

$$-8x + 277 = 21$$

$$-8x = -256$$

$$x = \underline{\underline{32}} \quad (1A)$$

- (b) How much did Sammy originally have? (3 marks)

$$16x + 268 = 16(32) + 268 \quad (1M)$$

$$= \$780 \quad (1A)$$

Sammy had \$780 originally. (1P)

- 4) Solve the following equations. (6 marks)

a) $5(m - 4) - 2[8 - 3(m - 2)] = 4(3 - 5m) + 2$

$$5m - 20 - 2(8 - 3m + 6) = 12 - 20m + 2 \quad (1A+1A+1A)$$

$$5m - 20 - 2(14 - 3m) = 14 - 20m$$

$$5m - 20 - 28 + 6m = 14 - 20m \quad (1A)$$

$$11m - 48 = 14 - 20m$$

$$31m = 62 \quad (1A)$$

$$m = 2 \quad (1A)$$

- 4 b) $\frac{2}{3}(n - 5) + \frac{1}{4}(7 - 3n) = 2n + 8$ (8 marks)

$$\frac{2n - 10}{3} + \frac{7 - 3n}{4} = 2n + 8$$

$$12\left(\frac{2n - 10}{3}\right) + 12\left(\frac{7 - 3n}{4}\right) = 12(2n) + 12(8) \quad (1A)$$

$$4(2n - 10) + 3(7 - 3n) = 24n + 96 \quad (1A+1A)$$

$$8n - 40 + 21 - 9n = 24n + 96 \quad (1A+1A)$$

$$n - 19 = 24n + 96$$

$$-115 = 25n \quad (1A+1A)$$

$$n = -\frac{23}{5} \quad (1A)$$

- 5) Father's age is 8 years more than twice his son's age. Four years ago, father's age was three times that of his son. Find the present age of his son. (Solve the problem by setting an equation). (6 marks)

Let x be the present age of his son. (1P)

$$2x + 8 - 4 = 3(x - 4) \quad (1A+1A+1A)$$

$$2x + 4 = 3x - 12$$

$$x = 16 \quad (1A)$$

The present age of his son is 16. (1P)

- 6) The length and width of a rectangle are 24 cm and 16 cm respectively. If the length is increased by 30% and the width is decreased by 20%, find the percentage increase in the perimeter of the rectangle. (8 marks)

$$\text{New length} = 24(1+30\%) = 31.2 \text{ cm} \quad (1M+1A)$$

$$\text{New width} = 16(1-20\%) = 12.8 \text{ cm} \quad (1M+1A)$$

$$\text{Original perimeter} = 2(24 + 16) = 80 \text{ cm} \quad (0.5A)$$

$$\text{New perimeter} = 2(31.2 + 12.8) = 88 \text{ cm} \quad (0.5A)$$

$$\text{Percentage increase in perimeter} = \frac{88-80}{80} \times 100\% \quad (1M)$$

$$= \underline{\underline{10\%}} \quad (1A) \quad (1P)$$

- 7) Benny buys some cakes, where $\frac{1}{4}$ of them are cheese cakes of \$25 each, $\frac{1}{2}$ of them are chocolate cakes of \$28 each, and the rest are cream cakes of \$10 each. If he pays \$455, find the total number of cakes he buys. (Solve the problem by setting an equation). (8 marks)

Let x be the number of cakes Benny buys. (0.5P)

$$25\left(\frac{x}{4}\right) + 28\left(\frac{x}{2}\right) + 10\left(x - \frac{x}{4} - \frac{x}{2}\right) = 455 \quad (1A+1A+1A+1A)$$

$$25\left(\frac{x}{4}\right) + 28\left(\frac{x}{2}\right) + 10\left(\frac{x}{4}\right) = 455 \quad (1A)$$

$$25x + 56x + 10x = 1820 \quad (1A)$$

$$91x = 1820 \quad (1A)$$

$$x = 20 \quad (1A)$$

Benny buys 20 cakes. (0.5P)