

Candidate Name _____

Class	Index Number

YUHUA SECONDARY SCHOOL
End-of-Year Examination 2011
Secondary One Express



MATHEMATICS
PAPER 1

4016/01

TIME 1 hour 15 minutes

Candidates answer on the Question Paper

READ THESE INSTRUCTIONS FIRST

Write your name, class and index number on the work you hand in.

Write in dark blue or black pen.

You may use a pencil for any diagrams or graphs.

Answer **all** questions.

If working is needed for any question it must be shown with the answer.

Omission of essential working will result in loss of marks.

You are expected to use a scientific 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

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	
Total	50

This question paper consists of 10 printed pages.

[TURN OVER

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1. (a) Without using a calculator, estimate the value of $\frac{9.954 \times 2.703}{0.152}$ correct to one significant figure.

Answer: (a) _____ [2]

- (b) Estimate the value of $\frac{\sqrt{9.8}}{\sqrt[3]{9}}$.

Answer: (b) _____ [2]

-
2. Arrange the following numbers in ascending order:

$$-0.525, -0.5, \frac{1}{3}, 0.333$$

Answer: _____ [1]

3. (a) Express 56 as a product of its prime factors.

Answer: (a) _____ [1]

- (b) Find the highest common factor, *HCF* and the lowest common multiple, *LCM* of 6, 14 and 56.

Answer: (b) *HCF* = _____ [1]

LCM = _____ [1]

4. Simplify

(a) $5ab - 3bc + 2ba + 7cb$,

Answer (a) _____ [1]

(b) $\frac{7}{gh^2} \div \frac{21}{g^3h^4}$,

Answer (b) _____ [2]

5. Given $a = 5$, $b = -6$ and $c = 1$, find the value of $\frac{-b + \sqrt{b^2 - 4ac}}{2a}$.

Answer: _____ [1]

6. Factorise the following expressions.

(a) $-2cd^2 + 8dc$,

Answer: (a) _____ [1]

(b) $a - b - ak + bk$.

Answer: (b) _____ [2]

7. (a) Find the possible values of y for which $2y \leq 18$ if y is a square number.

Answer: (a) _____ [1]

- (b) Find the possible values of x for which $\frac{2}{3}x > -2$ if x is a negative integer.

Answer: (b) _____ [1]

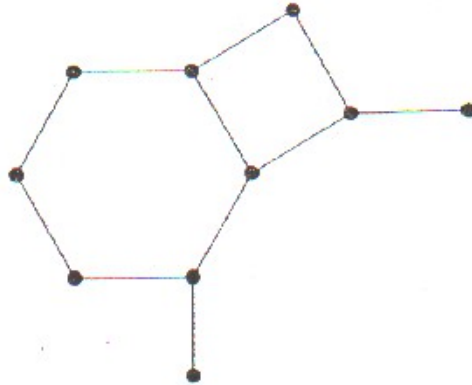
8. (a) Solve the equation $\frac{3x}{4} - \frac{2+x}{2} = 1$.

Answer: (a) $x =$ _____ [3]

(b) If $\frac{5x+y}{3x-2y} = \frac{6}{7}$, find the value of $\frac{x}{y}$.

Answer: (b) $\frac{x}{y} =$ _____ [3]

9. The diagram shows a regular hexagon, a square and an incomplete regular polygon of n sides.



- (a) Find the value of one interior angle of the regular hexagon.

Answer: (a) _____ ° [1]

- (b) Find the value of n .

Answer: (b) $n =$ _____ [3]

10. (a) Express $1.25 : \frac{3}{16}$ in its simplest form.

Answer: (a) _____ : _____ [1]

- (b) The ratio of the number of bookmarks Tom has to what Dick has is 3 : 4.
The ratio of the number of bookmarks Dick has to what Harry has is 5 : 6.
If Tom and Dick together have 595 bookmarks, how many bookmarks does Harry have?

Answer: (b) _____ bookmarks [2]

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11. The distance between Boon Lay MRT station and Simei MRT station is 35 km. A bus takes $\frac{7}{10}$ h to travel from Boon Lay MRT station to Simei MRT station.

- (a) Calculate the speed of the bus in
(i) km/h

Answer: (a) (i) _____ km/h [1]

- (ii) m/s

Answer: (a)(ii) _____ m/s [1]

- (b) If a car travels at an average speed of 80 km/h, how long will it take to travel between the 2 stations? (Give your answer in minutes.)

Answer: (b) _____ minutes [1]

12. Given the equation of a line is $-8x + 4y = 15$, find

- (a) the gradient of the line,

Answer: (a) _____ [2]

- (b) the y-intercept.

Answer: (b) _____ [1]

13. A sales promoter of an electronics shop is paid a commission of 5% for every computer set that he sells. The selling price of a computer set is \$2 420.

(a) In a particular month, the sales promoter sold 15 computer sets.

(i) Calculate the total commission received by the sales promoter.

Answer: (ai) \$ _____ [2]

(ii) In that month, after paying the sales promoter his commission, the shop owner gets to keep 8% of the remaining amount as his earnings. Find the total amount the shop owner earned from this sale.

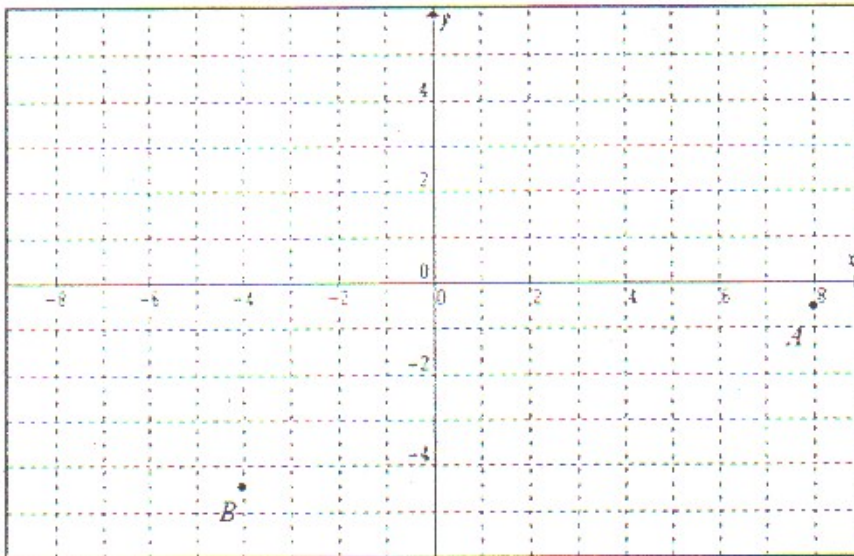
Answer: (aii) \$ _____ [2]

(b) The selling price of a computer set is inclusive of a 10% GST. Find the price of a computer set without the inclusion of GST.

Answer: (b) \$ _____ [2]

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14. On the diagram shown below, A , B and C are points on the grid.



- (a) Find the coordinates of A and B .

Answer: (a) $A = (7, -1)$, $B = (-4, -4)$, [2]

- (b) On the grid, mark the point $C(0, 5)$.

Answer: (b) shown in diagram [1]

- (c) Find the area of $\triangle BOC$.

Answer: (c) _____ sq. units [2]

- (d) Find the gradient of AB .

Answer: (d) _____ [2]

- (e) What is the value of p if the line AB passes through $(p, -1)$?

Answer: (e) $p =$ _____ [1]

End of Paper 1

Marking Scheme

No.	Working	Marks allocated
1.	(a) $\frac{10.0 \times 2.7}{0.15}$ $\approx \frac{27}{0.15}$ ≈ 180 (b) $\approx \frac{\sqrt{9}}{\sqrt[3]{8}}$ $\approx \frac{3}{2}$	A1 A1
2.	$-0.3, -0.323, 0.333, \frac{1}{3}$	B1
3.	(a) $56 = 2^3 \times 7$ (b) $HCF = 2; LCM = 168$	B1 A1, A1
4.	(a) $7ab + 4bc$ (b) $\frac{7}{gh^2} \times \frac{g^3h^4}{21}$ $= \frac{(gh)^2}{3}$	B1 M1 A1
5.	1	B1
6.	(a) $2cd(4-d)$ (b) $a(1-k) - b(1-k)$ $= (a-b)(1-k)$	B1 M1 A1

No.	Working	Marks allocated
7.	(a) $y \leq 9$ $\therefore y = 1, 4, 9$ (b) $x > -3$ $\therefore x = -2, -1$	B1 B1
8.	(a) $\frac{3x - 2(2 + x)}{4} = 1$ $\frac{3x - 4 - 2x}{4} = 1$ $\frac{x - 4}{4} = 1$ $x - 4 = 4$ $x = 8$ (b) $7(5x + y) = 6(3x - 2y)$ $35x + 7y = 18x - 12y$ $17x = -19y$ $\frac{x}{y} = \frac{-19}{17}$	M1 M1 A1 M1 M1 A1
9.	(a) $\text{int } \angle = \frac{(6-2)180}{6}$ $= 120^\circ$ (b) $\text{int } \angle = 360 - 90 - 120$ $= 150^\circ$ $\therefore \frac{(n-2)180}{n} = 150$ $180n - 360 = 150n$ $30n = 360$ $n = 12$	B1 B1 M1 A1

No.	Working	Marks allocated
10.	(a) 20: 3 (b) Dick's bookmark = $\frac{595}{7} \times 4$ $= 340$ Harry's bookmark = $\frac{340}{5} \times 6$ $= 408$	B1 M1 A1
11.	(a) (i) Speed = $35 \div \frac{7}{10}$ $= 50 \text{ km/h}$ $\frac{50 \text{ km}}{1 \text{ h}}$ (ii) = $\frac{50 \times 1000}{1 \times 3600}$ $= 13 \frac{8}{9} \text{ m/s}$ (b) Time taken = $\frac{35}{80} \times 60$ $= 26 \frac{1}{4} \text{ min.s}$	B1 B1 B1
12.	(a) $y = 2x + \frac{15}{4}$ gradient = 2 (b) y-intercept = $3 \frac{3}{4}$	M1 A1 B1

No.	Working	Marks allocated
13.	<p>(a)</p> <p>(i) Total commission $= \frac{5}{100} \times (2420 \times 15)$ $= \\$1815$</p> <p>(ii) Total amount $= \frac{8}{100} \times (36300 - 1815)$ $= \\$2758.80$</p> <p>(b) Price of computer $= \frac{2420}{110} \times 100$ $= \\$2200$</p>	<p>MI</p> <p>AI</p> <p>MI</p> <p>AI</p> <p>MI</p> <p>AI</p>
14.	<p>(a) $A(8, -0.5), B(-4, -4.5)$</p> <p>(c) Area of $\triangle BOC$ $= \frac{1}{2} \times 5 \times 4$ $= 10 \text{sq units}$</p> <p>(d) gradient of AB $= \frac{-0.5 + 4.5}{8 - 4}$ $= \frac{1}{3}$</p> <p>(e) $p=6$</p>	<p>B1, B1</p>

End of Paper 1