SCHOOL OF SCIENCE AND TECHNOLOGY, SINGAPORE

SECONDARY 1
END-OF-YEAR EXAMINATION 4048/1

MATHEMATICS
Paper 1

12 Oct 2016 (Friday) **1 hour**

CANDIDATE NAME

CLASS

INDEX NUMBER

READ THESE INSTRUCTIONS FIRST

Do not turn over the page until you are told to do so.
Write your name, class and index number in the spaces above.
Write in dark blue or black pen.

You may use a pencil for any diagrams or graphs.

Do not use paper clips, highlighters, glue or correction fluid/tape.

INFORMATION FOR CANDIDATES

Answer all the questions.

Write your answers in the space provided.

Give non-exact numerical answers correct to 3 significant figures, or 1 decimal place in the case of angles in degrees, unless a different level of accuracy is specified in the question.

The use of a scientific calculator is expected, where appropriate.

You are reminded of the need for clear presentation in your answers.

At the end of the examination, fasten all your answer scripts securely together.

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

The total number of marks for this paper is **40**.

For Examiner's Use		
Q1	1	
Q2	2	
Q3	2	
Q4	2	
Q5	3	
Q6	3	
Q7	4	
Q8	5	
Q9	6	
Q10	6	
Q11	6	
Total		/ 40

For Examiner's use

For Examiner's use

1. Write the following in order of size, starting with the smallest:

$$2\frac{1}{11} \quad -0.\dot{2} \quad 2 \quad \sqrt{2} \quad -\frac{1}{2}$$

Answer: _____ [1]

2. Rain trees are planted every 15 metres apart along a road pavement. Bougainvillea bushes are planted every 1.6 metres apart along the same pavement.

A rain tree and bougainvillea bush are planted at a common point A along the pavement. Find the distance from A to the next point where a rain tree and bougainvillea bush are planted together.

Answer: _____ metres [2]

For Examiner's use

3. Given that 1 pound = 0.454 kilogramme, find the mass (in pounds) of a student who weighs 60 kilogrammes, correct to 1 decimal place.

*Answer:*_____ pounds [2]

4. Evaluate without the use of a calculator $\dfrac{7-2.5(5+3)}{2-\sqrt[3]{-8}}$.

Answer: _____ [2]

For Examiner's use

For Examiner's use

5. Given $\frac{a}{\sqrt{b}-c}=15$, find, without using a calculator, the value of

(a) $\frac{100a}{\sqrt{b}-c}$

(b) $\frac{a}{\sqrt{100b}-10c}$.

Answer: (a) _____ [1]

(b) _____ [2]

6. A restaurant offers two modes of payment – by cash or credit card. Payment by cash includes a 10% service charge on the total bill. Payment by credit card includes a 15% discount and an additional 20% transaction fee on the discounted bill.

On a bill of $48, find

(a) the amount paid by cash mode of payment,

(b) the amount paid by credit card.

Answer: (a) _____ [1]

(b) _____ [2]

For Examiner's use

For Examiner's use

7. Expressed as a product of their prime factors, $572 = 2^2 \times 11 \times 13$ and $4680 = 2^3 \times 3^2 \times 5 \times 13$.

(a) Find the highest common factor of 572 and 4680, leaving your answer as a product of its prime factors.

(b) Find the smallest positive integer n such that $\frac{572n}{4680}$ is an integer.

Answer: (a) _____ [2]

(b) _____ [2]

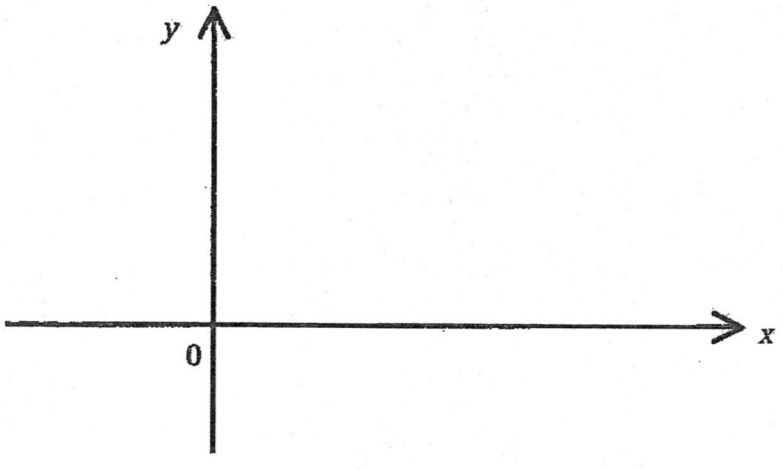
8. A straight line has a y-intercept of 4 and a gradient of $-\frac{2}{3}$.

(a) State the equation of the straight line.

(b) Find the x-intercept of the line.

(c) Sketch the line in the space provided, labelling both intercepts.

(d) Determine if the point (3, 1.5) lies on the line, justifying your answer.



(c) [1]

Answer: (a) _____ [1]

(b) _____ [1]

(d) _____ [2]

For Examiner's use

For Examiner's use

9. The pressure P is inversely proportional to the volume V of a given mass of gas. When pressure is 450 Pascals, volume is 20 cm^3.

(i) Find an equation connecting P and V.

(ii) Evaluate the value of x when volume is 25 cm^3.

(iii) Find the volume when the pressure in **(ii)** is halved.

Answer: (i) _____ [2]

(ii) _____ Pascals [2]

(iii) _____ cm^3 [2]

For Examiner's use

For Examiner's use

10. Three points A, B and D are shown below. Answer (a), (b), (d) and (e) on the given diagram.

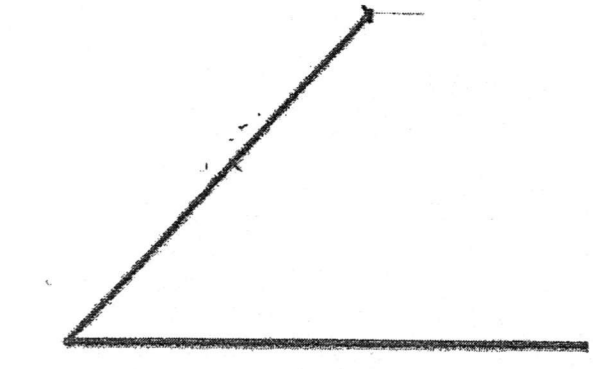
(a) Construct a parallelogram $ABCD$. [2]

(b) Construct the perpendicular bisector of CD. [1]

(c) Determine if the perpendicular bisector of CD passes through B. [1]

(d) Construct the bisector of reflex angle CDA. [1]

(e) Construct an isosceles triangle CDE, where E lies along the bisector of reflex angle CDA. [1]



Answer: (c)_____ [1]

For Examiner's use

For Examiner's use

11. The house colours of 18 students are shown below.

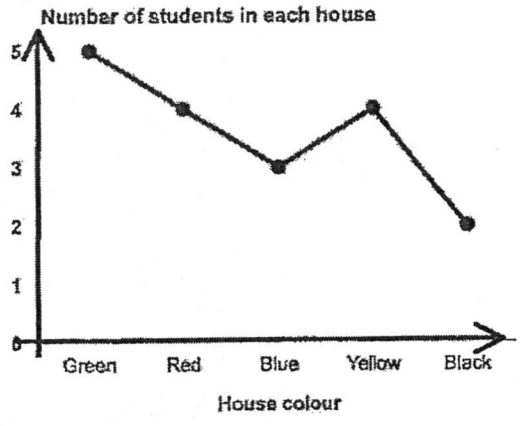
Green	Red	Blue	Blue	Yellow	Red	Black	Green	Red
Yellow	Blue	Yellow	Green	Yellow	Black	Red	Green	Green

(a) Comment on the appropriateness of the line graph below.

(b) Find the percentage of students in Black House.

(c) Write out the ratio of students in Blue : Red : Green.

(d) Assuming that the ratio of students in this sample size is accurate for the population of 792 students, find the total number of students in Blue house, giving your answer to the nearest whole number if applicable.



Answer: (a) _____ [2]

(b) _____ [1]

(c) _____ [1]

(d) _____ [2]

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