

CANDIDATE NAME	()	CLASS	
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**Anglo-Chinese School
(Parker Road)**

**END-OF-YEAR EXAMINATION
SECONDARY TWO EXPRESS**

**MATHEMATICS
PAPER 1**

1 HOUR 30 MINUTES

Candidates answer on the Question Paper.

READ THESE INSTRUCTIONS FIRST

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

Write in dark blue or black pen.

You may use an HB pencil for any diagrams or graphs.

Do not use staples, paper clips, glue or correction fluid.

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.

The use of an approved scientific calculator is expected, where appropriate.

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 60.

For Examiner's Use

This question paper consists of **15** printed pages and **1** blank page.

Mathematical Formulae*Compound interest*

$$\text{Total amount} = P \left(1 + \frac{r}{100} \right)^n$$

Mensuration

$$\text{Curved surface area of a cone} = \pi r l$$

$$\text{Surface area of a sphere} = 4\pi r^2$$

$$\text{Volume of a cone} = \frac{1}{3} \pi r^2 h$$

$$\text{Volume of a sphere} = \frac{4}{3} \pi r^3$$

$$\text{Area of triangle } ABC = \frac{1}{2} ab \sin C$$

$$\text{Arc length} = r\theta, \text{ where } \theta \text{ is in radians}$$

$$\text{Sector area} = \frac{1}{2} r^2 \theta, \text{ where } \theta \text{ is in radians}$$

Trigonometry

$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

$$a^2 = b^2 + c^2 - 2bc \cos A$$

Statistics

$$\text{Mean} = \frac{\sum fx}{\sum f}$$

$$\text{Standard deviation} = \sqrt{\frac{\sum fx^2}{\sum f} - \left(\frac{\sum fx}{\sum f} \right)^2}$$

- 1 Write these durations from the shortest to the longest.

308 minutes

5.1 hours

$5\frac{1}{6}$ hours

Answer _____, _____, _____ [1]

- 2 The table gives the lowest temperatures recorded in Beijing on each day of a week.

Day	Sun	Mon	Tue	Wed	Thu	Fri	Sat
Temperature (in °C)	2	3	0	-1	-3	-4	0

- (a) What was the difference between the lowest temperatures on Mon and Thu?

Answer _____ °C [1]

- (b) Between which two consecutive days was the change in temperature greatest?

Answer _____ and _____ [1]

- 3 By writing each number correct to 1 significant figure, estimate the value of

$$\frac{\sqrt{490 \times 0.763}}{4.49}$$

Show your working.

Answer _____ [2]

4 . Expand and simplify $(3a - 2b)(3a + b) + 3ab$.

Answer _____ [2]

5 (a) Solve $-4a + 2 \geq 17$.

Answer _____ [1]

(b) Find the largest integer satisfying $-4a + 2 \geq 17$.

Answer _____ [1]

- 6 Find the reflex angle formed by the minute hand and the hour hand of a clock at 1.30 pm.

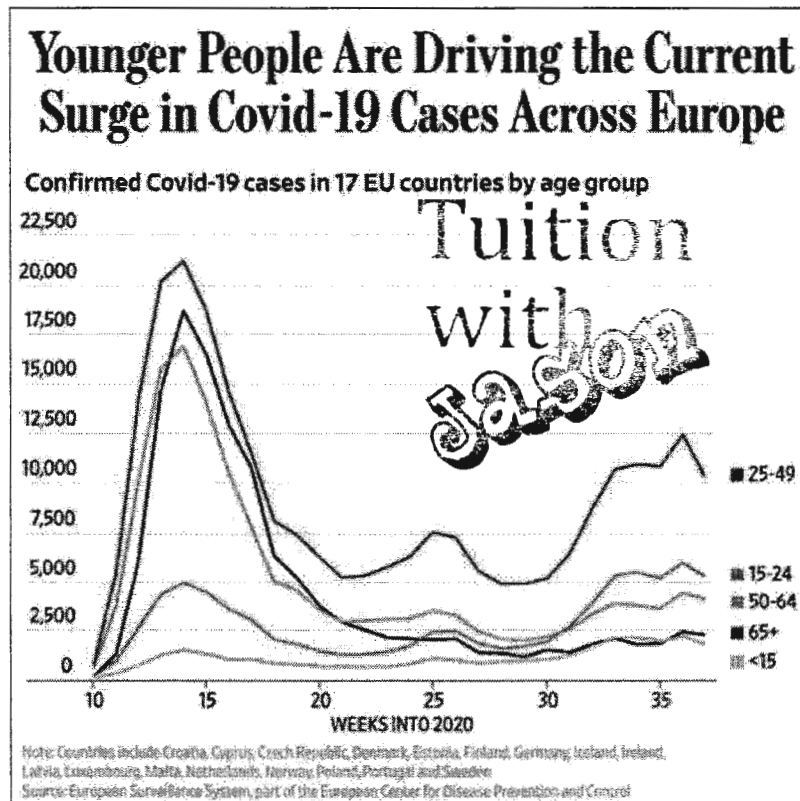
Answer _____° [2]

- 7 Two rectangles are geometrically similar. The first has adjacent sides of lengths 10 cm and 12 cm. The second one has one side of length 15 cm.

Find the two possible lengths of the adjacent side of the second rectangle.

Answer _____cm or _____cm [2]

- 8 The graph below shows the number of confirmed Covid-19 cases in 17 EU countries by age group, over approximately 40 weeks in the year 2020.



State one feature of the graph that may be misleading and explain why.

Answer _____

[2]

- 9 Given that p is inversely proportional to q^2 and that $p = 100$ when $q = 2$, find the value of p when $q = 5$.

Answer $p =$ _____ [3]

10 Express the following as a single fraction in its simplest form,

(a) $\frac{9m}{5} \div \frac{3m^2}{10},$

Answer _____ [1]

(b) $\frac{4}{x-3} - \frac{2}{(x-3)^2}.$

Answer _____ [2]

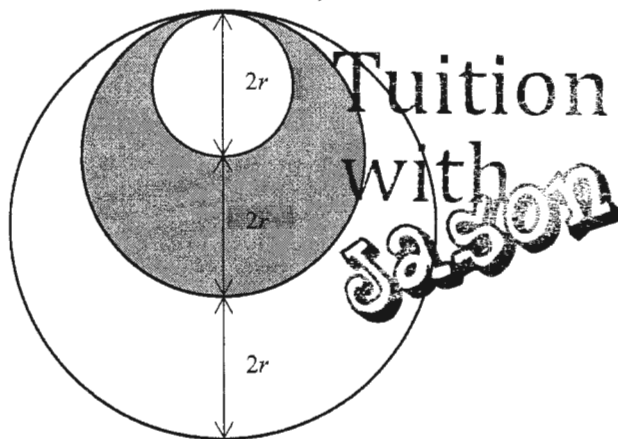
11 Solve the simultaneous equations

$$2x + 3y = 7$$

$$3x - y = 16.$$

Answer $x =$ _____ and $y =$ _____ [3]

- 12 The diagram shows three circles with diameters $2r$, $4r$ and $6r$.



Find the ratio of the area of the shaded part to the unshaded part.

Answer _____ : _____ [3]

- 13 A class has twice as many girls as boys. The mean mass of the girls is 52 kg and the mean mass of the boys is 61 kg. What is the mean mass of all the students in the class?

Answer _____ kg [2]

- 14 A rectangular display cabinet has width 120 cm and length 75 cm. It is going to be divided into smaller areas of congruent squares.

What is the smallest number of squares that can be attained, without leaving any parts of the cabinet out?

Answer _____ [4]

- 15 Diagram 1 shows a treadmill. Its running belt revolves around a running board, and the belt forms the shape shown in Diagram 2. ABC and EFG are semicircles with diameter 6 cm. $ACGE$ is a rectangle. The running belt has a lifespan of 750 000 revolutions before it needs to be replaced. Mr Tan uses the treadmill three times a week and he runs at 8 km/h for 30 minutes each time.

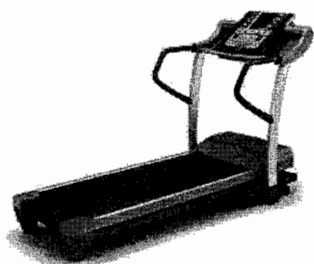


Diagram 1: Treadmill

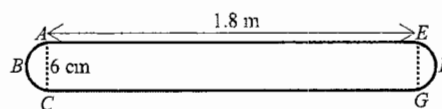


Diagram 2: Running Belt

Find the number of weeks before the treadmill belt needs to be replaced.
Give your answer correct to the nearest whole number.

Answer _____ weeks [4]

- 16 Candle A and Candle B were of the same height, and were lit at the same time.

It took Candle A three hours, and Candle B five hours to burn completely.

- (a) Write down the expressions, in terms of x , of the amount of candle that was burned after x hours, where $x < 3$.

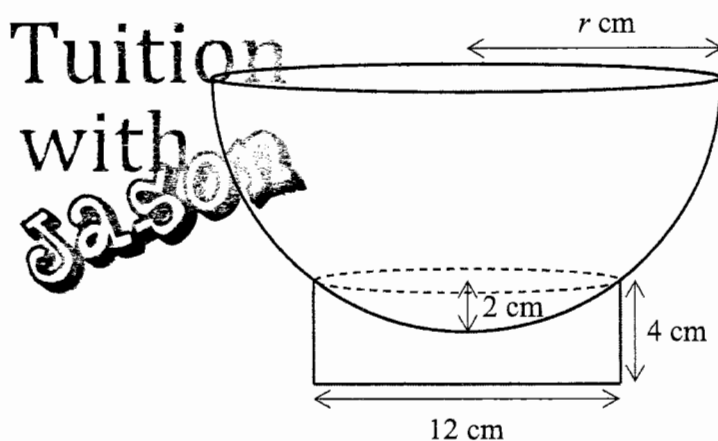
Answer Candle A: _____ of the candle

Candle B: _____ of the candle [1]

- (b) How long have the candles been burning when the ratio of their heights is 1 : 3?

Answer _____ hours [3]

- 17 The diagram below shows a hemispherical bowl of radius r cm, with a hollow cylindrical base. The base has a height of 4 cm and diameter of 12 cm. The lowest point of the hemisphere is 2 cm below the top of the cylinder.



- (a) Show that $r = 10$.

Answer

- (b) The **inside** surface of the bowl is coated with a layer of non-stick material. Calculate the area that the non-stick material will be applied on, leaving your answer in terms of π .

[2]

Answer _____ cm^2 [2]

- 18 20 members of a football supporters club were asked how many matches they had been to during the previous season.

The stem-and-leaf diagram below shows the responses.

0	6	8							
1	0	8	9						
2	0	3	6	7	8	9			
3	5	6	6	7	8	8	8	8	8

Key
2 5 means 25

- (a) Find the median number of matches.

Answer _____ [1]

- (b) Find the modal number of matches.

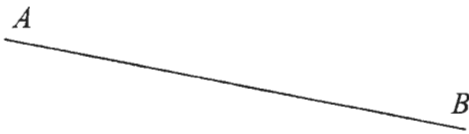
Answer _____ [1]

- (c) Members who attended less than 10 matches a year would have to give up their membership the following season. Find the percentage of the members surveyed who have to give up their membership.

Answer _____ % [2]

- 19 $ABCD$ is a rhombus where $\angle ABC = 108^\circ$. AB is drawn below.
 (a) Complete the rhombus.

Answer



[2]

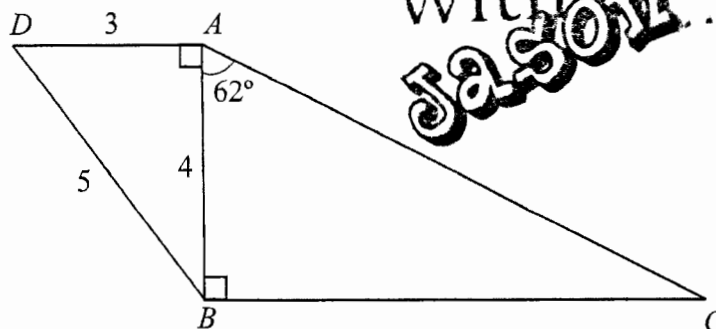
- (b) Measure and write down the length of the diagonal BD .

Answer $BD =$ _____ cm [1]

- (c) Construct the perpendicular bisector of AB . [1]

- (d) Mark with "X", a point which is nearer to AB than to BC , and $AX > BX$. [1]

- 20 In the diagram below, ABC and ABD are right-angled triangles.
 $AB = 4$ cm, $AD = 3$ cm, angle $BAC = 62^\circ$.



- (a) State the value of $\sin \angle ABD$.

Answer _____ [1]

- (b) Find $\angle ABD$.

Answer _____ $^\circ$ [1]

- (c) Find BC .

Answer _____ cm [2]

- (c) X is a point on AC . Find the shortest possible distance of AX .

Answer _____ cm [2]

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1 A map is drawn to a scale of 1 : 20 000.

- (a) This scale can be expressed as 1 cm represents n km. Find n .

Answer $n =$ _____ [1]

- (b) The distance between two towns is 4.8 km. Find the distance on the map, in cm, between the two towns.

Answer _____ cm [1]

- (c) A lake has an area of 7 cm^2 on the map. Find the actual area, in square kilometers, of the lake.

Answer _____ km^2 [2]

2 (a) Factorise completely $18x^2 - 2y^2$.

Answer _____ [2]

- (b) Simplify $\frac{18x^2 - 2y^2}{3ax + ay - 6bx - 2by}$.

Answer _____ [2]

- 3 The members in a family of chemical compounds are made up of carbon atoms and hydrogen atoms. The number of carbon atoms and hydrogen atoms of the first four members in the family are given in the table below.

Member Number	Number of Carbon Atoms	Number of Hydrogen Atoms	Total Number of Atoms
1	3	4	7
2	4	6	10
3	5	8	13
4	6	a	16
$\vdots$	$\vdots$	$\vdots$	$\vdots$
n	$n + 2$	$2n + 2$	b

- (a) Find the value of a and an expression, in terms of n , for b .

Answer $a =$ _____

$b =$ _____ [2]

- (b) If the k th member of the family has 21 carbon atoms, find the value of k .

Answer $k =$ _____ [1]

- (c) If the $(p+q)$ th member of the family has 36 Hydrogen atoms, where p is a prime number and q is a composite number,

- (i) find the sum of p and q ,

Answer _____ [1]

- (ii) find a possible pair of values of p and q .

Answer $p =$ _____ and $q =$ _____ [1]

4 Solve the following equations.

(a) $\frac{2}{y+3} = 4$

Answer $y =$ _____ [2]

(b) $2x^2 - x - 3 = 0$

Answer _____ [3]

- 5 Mavis carried out a survey with a group of students on the number of hours spent on their mobile phones each day.

These are the results.

Number of hours, x	Frequency
$0 \leq x < 1$	3
$1 \leq x < 2$	4
$2 \leq x < 3$	10
$3 \leq x < 4$	8
$4 \leq x < 5$	5

- (a) Find the total number of students surveyed.

Answer _____ [1]

- (b) Calculate an estimate of the mean number of hours.

Answer _____ hours [2]

- (c) If these results were represented by a pie chart, calculate the angle for the sector representing less than 1 hour of usage each day.

Answer _____ ° [2]

- 6 A restaurant owner pays a waiter an amount of $\$A$ per week. The amount is made up of a basic wage of $\$120$ plus 40 cents for each of the n customers he serves. The formula connecting A and n is $A = 120 + 0.4n$.

- (a) Calculate the amount of money the waiter received in a week when he served 180 customers.

Answer \$_____ [1]

- (b) At the end of another week, the waiter received $\$176$. How many customers did he serve?

Answer \$_____ [2]

- (c) The owner of the restaurant decides to decrease the waiter's basic wage to $\$100$ but to increase the pay per customer to 45 cents. Write down the new formula connecting A and n .

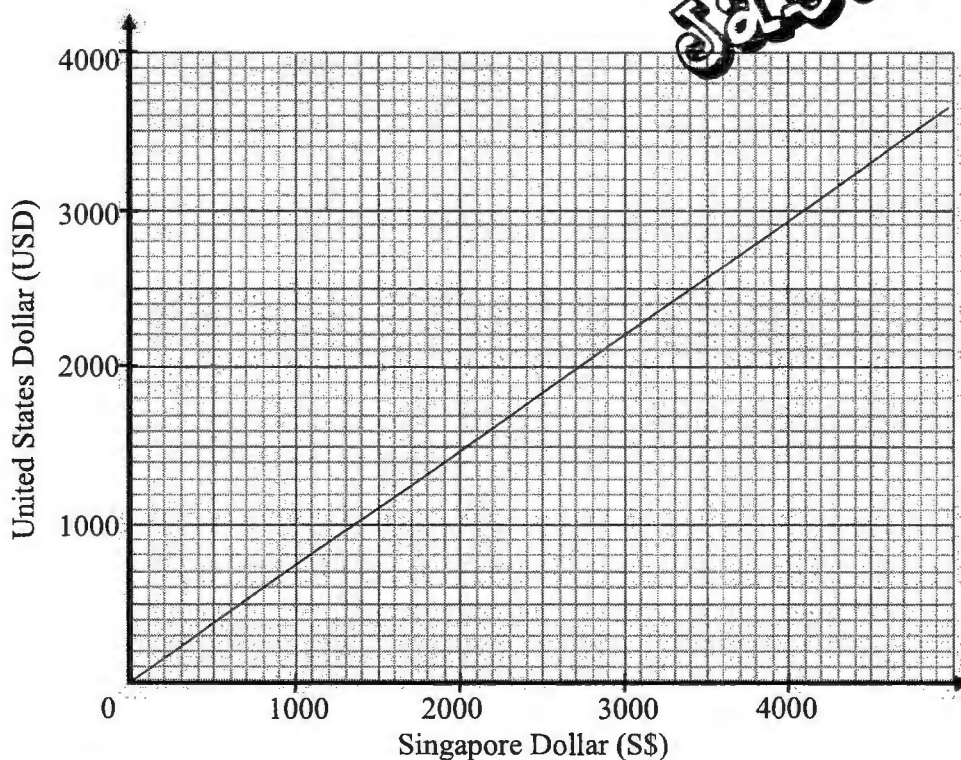
Answer _____ [1]

- (d) Find the number of customers the waiter would have to serve in a week for him to receive the same amount of money, whichever way he is paid.

Answer _____ [2]

- 7 Gillian just returned to Singapore from the United States.

- (a) She has exchanged USD2500 for Singapore dollars. The graph below shows the exchange rate between the two currencies.



After exchanging the USD into Singapore dollars, she decides to place this money in a bank for 5 years with a rate of 2.4% p.a. simple interest.

What is the total amount of money she would receive after 5 years?

Answer \$ _____ [3]

- (b) She visited a restaurant and the bill amounted to S\$98.00++.

This meant that she would have to add a service charge of 10% to a basic cost of \$98.00. In addition, she would have to pay a Goods and Services Tax (GST) of 7% on the total, i.e. the sum of the basic cost and service charge.

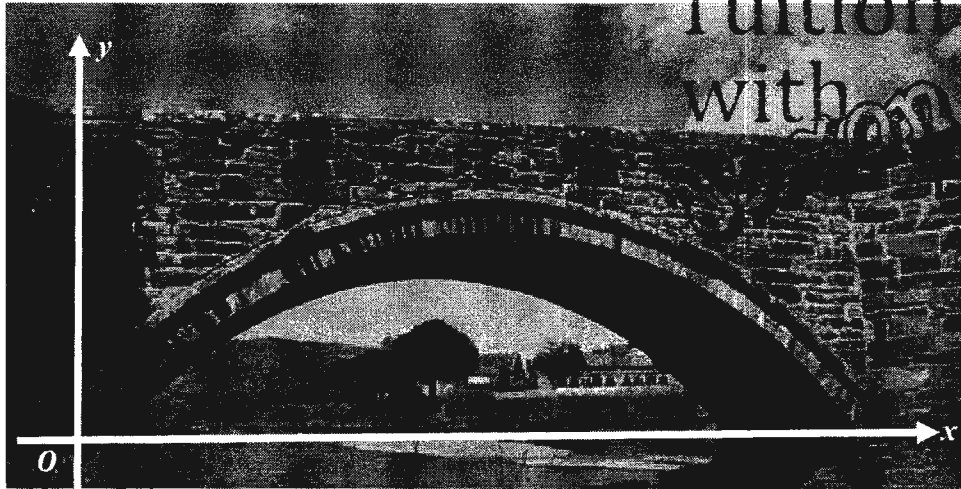
- (i) Calculate the amount Gillian would have to pay at the restaurant.

Answer \$ _____ [2]

- (ii) Express the increase in cost due to the service charge and GST, as a percentage of the basic cost of the meal.

Answer _____ % [2]

- 8 A curved arch that supports a bridge can be modelled by a quadratic function $y = -\frac{1}{5}x^2 + \frac{11}{5}x$, where x m is the horizontal distance from O and y m is the height of the arch above the surface of the water. The arch is 11 m wide at its base.



The table below shows some values of x and the corresponding values of y .

x	0	2	4	5	7	8	10	11
y	0	3.6	5.6	6	5.6	p	2	0

- (a) Calculate the value of p .

Answer $p =$ _____ [1]

- (b) On the grid provided on the following page, draw the graph of

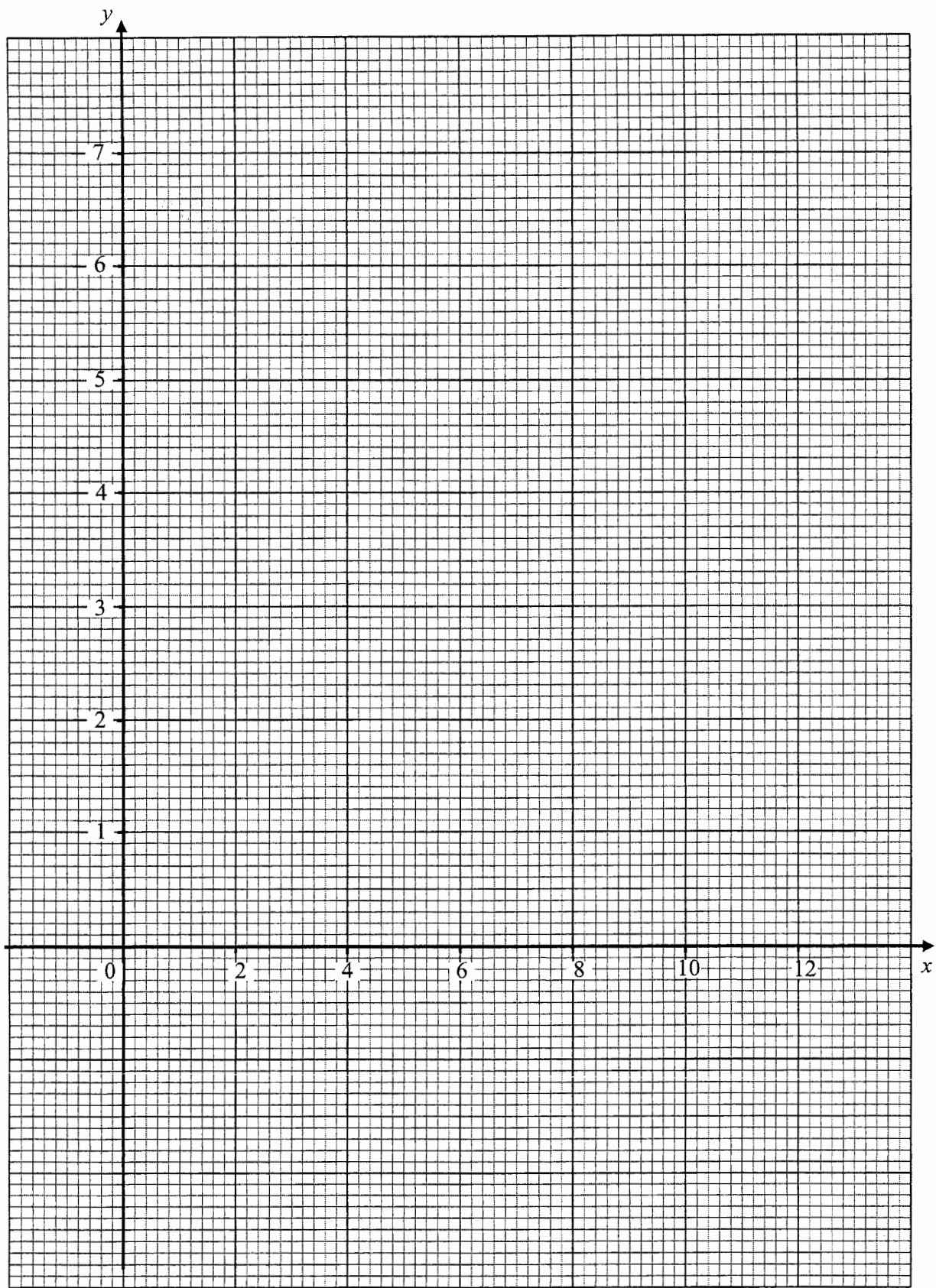
$$y = -\frac{1}{5}x^2 + \frac{11}{5}x \text{ for } 0 \leq x \leq 11. \quad [3]$$

- (c) Use your graph to determine the maximum height of the arch above the surface of the water.

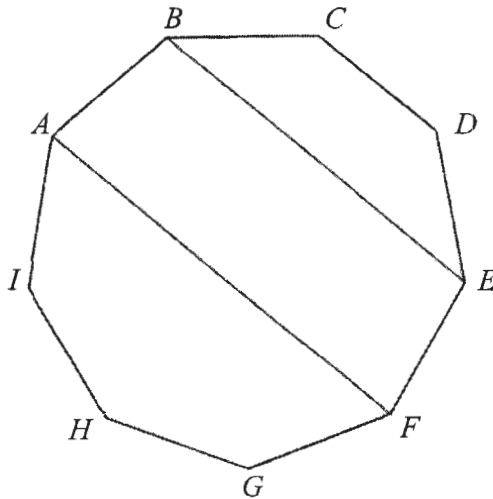
Answer _____ m [1]

- (d) A point on the arch is 4 m vertically from the surface of water. Using your graph, determine the width of the arch at this height.

Answer _____ m [2]



- 9 The diagram below shows a regular nonagon $ABCDEFGHI$.



Calculate

- (a) $\angle BCD$,

Answer _____° [2]

- (b) Explain why $\angle CBE = 40^\circ$.

Answer

[2]

- (c) Prove that $ABEF$ is a trapezium.

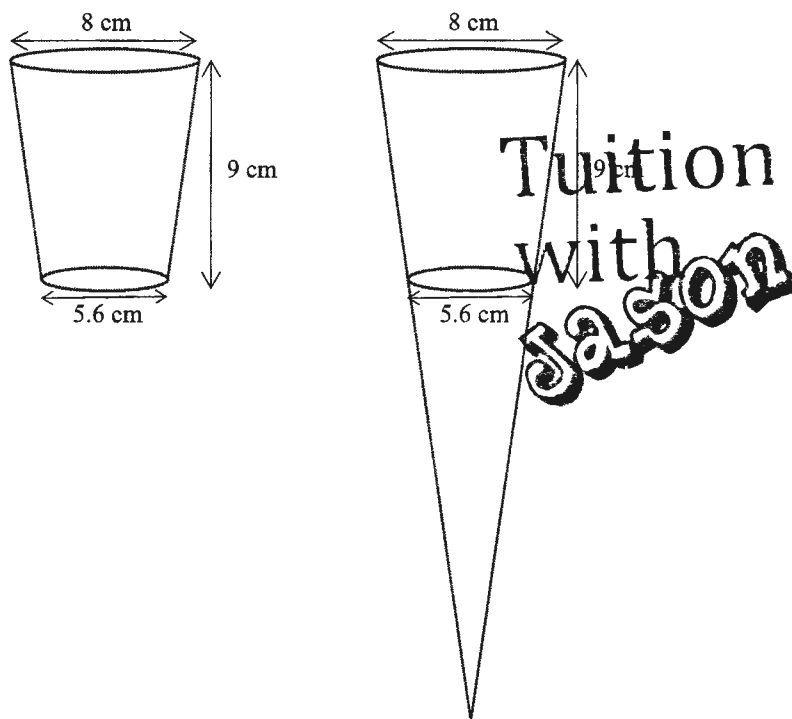
Answer

[3]

- 10 Lilian is in an organizing committee, which is planning a half marathon. She oversees the provision of water to the participants during the run as part of her role as a Logistics and Safety Manager.

At every hydration station, there will be volunteers who would pour bottled water into disposable cups for the runners.

- (a) The disposable cup is modelled after a **frustum of a right circular cone** as shown in the diagram below. The diameters of the top surface and base surface are 8 cm and 5.6 cm respectively. The height of the frustum is 9 cm.



Show that the volume of each cup is approximately 330 cm^3 .

Answer

[4]

- (b) A half marathon is approximately **21 kilometers** in length. **1200 people** are expected to participate in the run.

The safety guidelines state that there should be a hydration station **every 3 to 4 kilometers** during the run. Lilian estimates that it would be sufficient to cater **2 cups of water for each runner, at every hydration station**. The volunteers have been instructed to fill each cup to **approximately 80% of its capacity**.

There are also **80 working members and volunteers**, who are given **two** 600 ml bottles of water each for their own consumption during the event.

As the committee has been unsuccessful in obtaining a sponsorship for the drinks, Lilian has to include the cost of water in their overall operating budget. While she has to ensure that there is sufficient water for everyone, she is also mindful that she should be prudent and avoid wastage.

Costs of Water Supplies		
600 ml Bottle	1 Bottle	\$0.40
	1 Carton (24 Bottles)	\$6.80
1.5 litre Bottle	1 Bottle	\$0.75
	1 Carton (12 Bottles)	\$8

What is a reasonable amount that Lilian should include in the budget, for the purchase of bottled water?

Justify any decisions you make and show your calculations clearly.

Answer

Tuition
with
Jason

[6]

Continuation of working space for Question 10

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Marking Scheme
Secondary 2 Express
Mathematics Paper 1
End-of-Year Examination 2021

1		5.1 hours, 308 minutes, $5\frac{1}{6}$ hours			
2	(a)	6			
	(b)	Fri; Sat			
3		$\frac{\sqrt{500 \times 0.8}}{4}$ $= 5$			
4		$9a^2 - 6ab + 3ab - 2b^2 + 3ab$ $= 9a^2 - 2b^2$			
5	(a)	$a \leq -\frac{15}{4}$ or $a \leq -3\frac{3}{4}$			
	(b)	Largest integer = -4			
6		$45^\circ + 90^\circ$ or $180^\circ - 45^\circ$ $= 225^\circ$			
7		18 cm or 12.5 cm			
8		The age groups are not evenly distributed.			
		The 25-49 year category spans 25 years, which is the most number of years among the categories. Naturally it will contain the most cases than the other age groups that only span 10 or 15 years.			
9		$p = \frac{k}{q^2}$			
		$100 = \frac{k}{2^2}$			
		$k = 400$			
		$p = \frac{400}{q^2}$			
		When $q = 5$, $p = \frac{400}{5^2} = 16$			

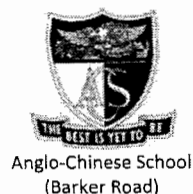


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Marking Scheme
Secondary 2 Express
Mathematics Paper 1
End-of-Year Examination 2021

10	(a)	$\frac{9m}{5} \times \frac{10}{3m^2}$			
		$= \frac{6}{m}$			
	(b)	$\frac{4-2(x-3)}{(x-3)^2}$			
		$= \frac{4-2x+6}{(x-3)^2}$			
		$= \frac{10-2x}{(x-3)^2}$			
11		$y = 3x - 16$			
		$2x + 3(3x - 16) = 7$			
		$2x + 9x - 48 = 7$			
		$11x = 55$			
		$x = 5$ and $y = -1$			
12		Shaded area $= \pi(2r)^2 - \pi(r)^2 = 3\pi r^2$			
		Unshaded area $= \pi(3r)^2 - \pi(2r)^2 + \pi(r)^2 = 6\pi r^2$			
		1 : 2			
13		Let the number of students be x .			
		Total mass $= 52(2x) + 61(x) = 165x$			
		Mean $= \frac{165x}{3x}$			
		$= 55$ kg			
14		$120 = 2^3 \times 3 \times 5$			
		$75 = 3 \times 5^2$			
		HCF $= 15$			
		Number of squares			
		$= (120 \div 15) \times (75 \div 15)$			
		$= 40$			

Tuition
with
Jason



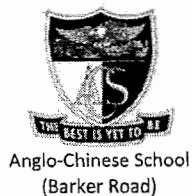
Marking Scheme
Secondary 2 Express
Mathematics Paper 1
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15		$\begin{aligned}\text{Perimeter of belt} &= \pi(0.06) + 1.8 + 1.8 \\ &= 3.78849 \text{ m}\end{aligned}$			
		$\begin{aligned}3 \text{ runs in a week} &= 3 \times 0.5 \times 8000 \text{ m} \\ &= 12000 \text{ m}\end{aligned}$			
		$\begin{aligned}\text{number of revolutions} &= \frac{12000}{3.78849} \\ &= 3167.484\end{aligned}$			
		$\begin{aligned}\text{number of weeks} &= \frac{75000}{3167.484} \\ &= 23.7\end{aligned}$			
16	(a)	Candle A: $\frac{x}{3}$ Candle B: $\frac{x}{5}$			
	(b)	$\begin{aligned}\frac{1 - \frac{x}{3}}{1 - \frac{x}{5}} &= \frac{1}{3} \\ 3\left(1 - \frac{x}{3}\right) &= 1 - \frac{x}{5} \\ 3 - x &= 1 - \frac{x}{5} \\ 3 - x &= 1 - \frac{x}{5} \\ \frac{4}{5}x &= 2 \\ x &= 2.5\end{aligned}$			
17	(a)	$\begin{aligned}(r-2)^2 + 6^2 &= r^2 \\ r^2 - 4r + 4 + 36 &= r^2 \\ 4r &= 40 \\ r &= 10\end{aligned}$			



Marking Scheme
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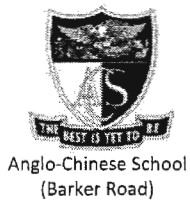
	(b)	$2\pi(10)^2$ $= 200\pi$			
18	(a)	28.5			
	(b)	38			
	(c)	Number of members = 2 Percentage of members = $\frac{2}{20} \times 100\% = 10\%$			
19	(a)	Construct a line BC with $\angle ABC = 108^\circ$ Construct a quadrilateral with sides of equal lengths			
	(b)	7.6 cm			
	(c)	Construction			
	(d)	Accept if BD not drawn			
20	(a)	$\frac{3}{5}$			
	(b)	36.9°			
	(c)	$\tan 62^\circ = \frac{BC}{4}$ $BC = 4 \tan 62^\circ$ $BC = 7.5229 = 7.52 \text{ cm (3 s.f.)}$			
	(d)	$\cos 62^\circ = \frac{AX}{4}$ $AX = 4 \cos 62^\circ$ $AX = 1.88 \text{ cm (3 s.f.)}$			



Marking Scheme
Secondary 2 Express
Mathematics Paper 2
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1	(a)	0.2			
	(b)	24 cm			
	(c)	$1 \text{ cm}^2 : 0.04 \text{ km}^2$ 0.28 km^2			
2	(a)	$2(9x^2 - y^2)$ $= 2(3x + y)(3x - y)$			
	(b)	$\frac{2(3x + y)(3x - y)}{(a - 2b)(3x + y)}$ $= \frac{2(3x - y)}{(a - 2b)}$			
3	(a)	10 $3n + 4$			
	(b)	$n + 2 = 21$ $n = 19$			
	(ci)	$2(p + q) + 2 = 36$ $2(p + q) = 34$ $p + q = 17$			
	(ii)	$\{2, 15\}, \{3, 14\}, \{5, 12\}, \{7, 10\}, \{11, 6\}$ or $\{13, 4\}$			
4	(a)	$\frac{1}{y+3} = 2$ $1 = 2y + 6$ $2y = -5$ $y = -\frac{5}{2}$			
	(b)	$(2x - 3)(x + 1) = 0$ $x = \frac{3}{2}$ or -1			

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5	(a)	30			
	(b)	$\frac{(3)(0.5) + (4)(1.5) + (10)(2.5) + (8)(3.5) + (5)(4.5)}{30}$ $= 2.77 \text{ (3 s.f.)}$			
	(c)	$\frac{3}{30} \times 360^\circ$ $= 36^\circ$			
6	(a)	$A = 120 + 0.4(180) = 192$			
	(b)	$120 + 0.4n = 176$ $0.4n = 56$ $n = 140$			
	(c)	$A = 100 + 0.45n$			
	(d)	$120 + 0.4n = 100 + 0.45n$ $0.05n = 20$ $n = 400$			
7	(a)	USD2500 = S\$3400 <u>A: Simple interest</u> $I = \frac{(3400)(2.4)(5)}{100} = 408$ Total amount = S\$3808			
	(bi)	$98 \times 1.1 \times 1.07$ $= \$115.35 \text{ (2 d.p.)}$			
	(ii)	$\frac{115.35 - 98}{98} \times 100\%$ $= 17.7\% \text{ (3 s.f.)}$			



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8	(a)	4.8			
	(b)	8 points plotted correctly Curve drawn passing through all points			
	(c)	6.05 or 6.1			
	(d)	$x = 2.3$ and $x = 8.7$ (theoretical values) Accept $2.1 \leq x \leq 2.5$ and $8.5 \leq x \leq 8.9$ Width of arch = $8.7 - 2.3 = 6.4$			
9	(a)	$\frac{(9-2) \times 180^\circ}{9}$ $= 140^\circ$			
	(b)	Because the perpendicular bisector of CD is a line of symmetry , $\angle CBE = \angle DEB$. Sum of angles in a quadrilateral = 360° $\angle CBE = \frac{360^\circ - 2(140^\circ)}{2} = 40^\circ$			
	(c)	Sum of angles in pentagon $AFGHI$ $= (5-2) \times 180^\circ = 540^\circ$ $\angle IAF = \frac{540^\circ - 3(140^\circ)}{2} = 60^\circ$ $\angle BAF = 140^\circ - 60^\circ = 80^\circ$ $\angle ABE = 140^\circ - 40^\circ = 100^\circ$ $\angle BAF + \angle ABE = 180^\circ$ The interior angles are supplementary, BE is parallel to AF, therefore $ABEF$ is a trapezium.			

10	(a)	Let the height of the large cone be h .			
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		$\frac{h}{8} = \frac{h-9}{5.6}$			
		$h = (h-9) \times \frac{8}{5.6}$ $h = (h-9) \times \frac{10}{7}$ $7h = 10h - 90$ $3h = 90$ $h = 30$			
		Volume of frustum			
		$= \frac{1}{3} \pi (4)^2 (30) - \frac{1}{3} \pi (2.8)^2 (21)$ $= 330.24 \text{ cm}^3 \text{ (5 s.f.)}$ $= 330 \text{ cm}^3 \text{ (3 s.f.)}$			
	(b)	Number of hydration stations $= \frac{21}{4} = 5.25$ Therefore, 6 stations. Number of cups of water $= 1200 \times 2 \times 6 = 14400$			
		Amount of water poured into the cups $= 14400 \times 80\% \times 330 \text{ ml}$ $= 3801600 \text{ ml}$			
		Number of 1.5 L bottles required $3801600 \div 1500 = 2534.4$ Number of cartons of 1.5 L bottles $2535 \div 12 = 211.25$ Minimum number of cartons (1.5 L) $= 211 + 3 \text{ bottles}$			
		Number of 600 ml bottles required $= 80 \times 2 = 160$ Number of cartons of 600 ml bottles $160 \div 24 = 6 \frac{2}{3}$ Minimum number of cartons (600 ml) $= 6 + 16 \text{ bottles}$			
		Expected cost of water $= 211 \times \$8 + 3 \times \$0.75 + 6 \times \$6.80 + 16 \times \$0.40 = \$1737.45$			
		Reasonable amount for the budget $= \$1800$			



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		Number of cartons should be slightly more than calculated value. / Reasonable amount for the budget should be $\geq$ expected cost.			

