



**ABBOTSLEIGH**

**AUGUST 2007**

**YEAR 12  
ASSESSMENT 4  
TRIAL HIGHER SCHOOL CERTIFICATE  
EXAMINATION**

# General Mathematics

## General Instructions

- Reading time – 5 minutes.
- Working time – 2 ½ hours.
- Write using blue or black pen.
- Calculators may be used.
- A Formulae sheet is provided with this paper.

**Total marks - 100**

### **Section I 22 Marks**

- Attempt Questions 1-22
- Allow about 30 minutes for this section.
- Give your answers on the multiple choice answer sheet.

### **Section II 78 Marks**

- Attempt Questions 23 - 28
- Allow about 2 hours for this section.
- Use a separate writing booklet for each question.

## Outcomes Assessed

### Preliminary course

- P2** applies mathematical knowledge and skills to solving problems within familiar contexts
- P3** develops rules to represent patterns arising from numerical and other sources
- P4** represents information in symbolic, graphical and tabular forms
- P5** represents the relationships between changing quantities in algebraic and graphical form
- P6** performs calculations in relation to two-dimensional and three-dimensional figures
- P7** determines the degree of accuracy of measurements and calculations
- P8** models financial situations using appropriate tools
- P9** determines an appropriate form of organisation and representation of collected data
- P10** performs simple calculations in relation to the likelihood of familiar events
- P11** justifies his/her response to a given problem using appropriate mathematical terminology

### HSC course

- H2** integrates mathematical knowledge and skills from different content areas in exploring new situations
- H3** develops and tests a general mathematical relationship from observed patterns
- H4** analyses representations of data in order to make inferences, predictions and conclusions
- H5** makes predictions about the behaviour of situations based on simple models
- H6** analyses two-dimensional and three-dimensional models to solve practical and mathematical problems
- H7** interprets the results of measurements and calculations and makes judgements about reasonableness
- H8** makes informed decisions about financial situations
- H9** develops and carries out statistical processes to answer questions which she/he and others have posed
- H10** solves problems involving uncertainty using basic principles of probability
- H11** uses mathematical argument and reasoning to evaluate conclusions drawn from other sources, communicating his/her position clearly to others

## SECTION I

22 Marks

Attempt Question 1 – 22

Allow about 30 minutes for this section.

Use the multiple-choice answer sheet.

Select the alternative A, B, C or D that best answers the question. Fill in the response oval completely.

**Sample:**  $2 + 4 =$  (A) 2 (B) 6 (C) 8 (D) 9  
A  B  C  D

If you think you have made a mistake, put a cross through the incorrect answer and fill in the new answer.

A  B  C  D

If you change your mind and have crossed out what you consider to be the correct answer, then indicate this by writing the word *correct* and drawing an arrow as follows:

A  B  C  D   
*correct*

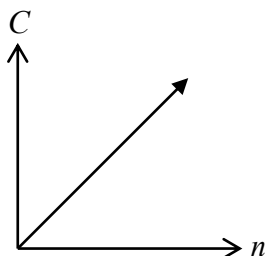
- 
- 1 The letters of the word 'barn' are rearranged to form another word (real or otherwise). What is the probability that the new word will start with 'n'?
- (A)  $\frac{1}{24}$  (B)  $\frac{1}{4}$  (C)  $\frac{1}{6}$  (D)  $\frac{1}{3}$
- 2 Su-Lin measures a piece of tubing for her HSC major work as 400 mm, correct to the nearest millimetre. What is the percentage error in her measurement?
- (A)  $\pm 0.125\%$  (B)  $\pm 0.0025\%$  (C)  $\pm 0.00125\%$  (D)  $\pm 0.25\%$
- 3 Blood flows through the kidneys at 20 mL/s. What is this rate in litres/hour?
- (A) 72 (B) 1.2 (C) 5.5 (D) 7.2
- 4 The results of a Mathematics examination were normally distributed. Lauren gained a Z-score of -1. What percentage of students scored a result better than Lauren?
- (A) 16% (B) 34% (C) 68% (D) 84%

5 A ship sails 9 nautical miles north, then 12 nautical miles east. What is the ship's bearing from its starting point?

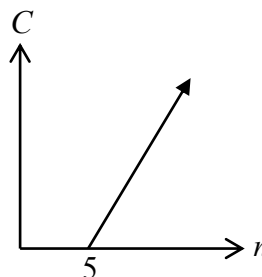
- (A)  $037^\circ$                       (B)  $053^\circ$                       (C)  $217^\circ$                       (D)  $233^\circ$

6 The cost,  $C$ , of producing textbooks is given by the formula  $C = 14n + 5$ . Which of the graphs below best represents this equation?

(A)

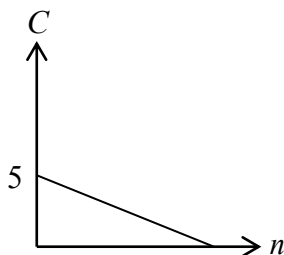


(B)

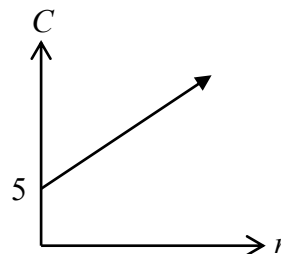


*Not to scale*

(C)



(D)



7 The value  $\$V$  of a diamond is proportional to its weight,  $w$  carats. If a diamond weighs 9 carats, it is worth  $\$18\,000$ .

Find the value of a 2.25 carat diamond.

- (A)  $\$4000$                       (B)  $\$4500$                       (C)  $\$6000$                       (D)  $\$9000$

8 A girl walks  $x$  kilometres in  $y$  minutes at a steady pace.

How many kilometres does she walk in 80 minutes, assuming she continues at the same pace?

- (A)  $\frac{x}{80y}$                       (B)  $\frac{xy}{80}$                       (C)  $\frac{80x}{y}$                       (D)  $80xy$

9 Cards numbered 1 to 20 are placed face down on a table. One card is selected at random.

What is the probability that the card chosen shows an even number or a number less than 5?

- (A)  $\frac{3}{4}$                       (B)  $\frac{3}{5}$                       (C)  $\frac{7}{10}$                       (D)  $\frac{13}{20}$

- 10 The force,  $F$ , on a particular moving object, moving with a velocity of  $V$ , is defined by the equation  $F = \frac{3V^2}{4}$

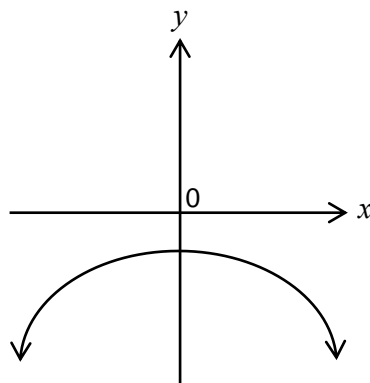
Which of the following could be a value for  $V$  if the value of  $F$  is 12?

- (A) 3                      (B) 4                      (C) 9                      (D) 16

- 11 Faye bought a small car three years ago for \$6500. Using the declining balance method for depreciation, she estimates its current value to be \$2400. What percentage rate of depreciation per year did she use? Answer to the nearest whole number.

- (A) 15%                      (B) 17%                      (C) 28%                      (D) 39%

12



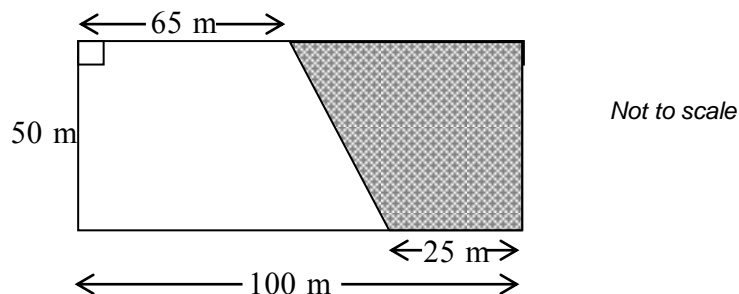
The parabola shown could have the equation

- (A)  $y = x^2 - 3$                       (B)  $y = -x^2 + 3$                       (C)  $y = -x^2 - 3$                       (D)  $y = x^2 + 3$

- 13 \$380 is borrowed from February 26 to March 26 inclusive in a non-leap year. The amount of interest charged is \$6.53. Find the annual rate of interest charged.

- (A) 6.1%                      (B) 21.6%                      (C) 22.4%                      (D) 49.8%

14



The diagram shows a yard that consists of a rectangle split into two trapezia.

Find the shaded area to the nearest square metre.

- (A) 1500                      (B) 2500                      (C) 3500                      (D) 5000

- 15 The following table lists the prices for second hand cars bought in Australia before and after the GST is introduced.

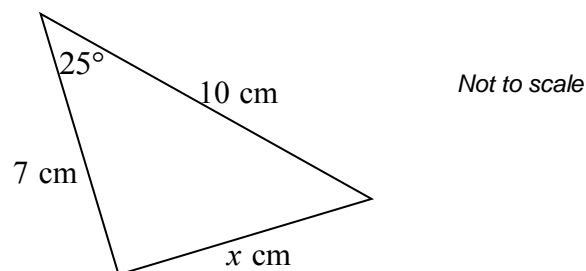
Model	Before GST	After GST
BMW 318Ti	41 950	38 175
Ford Capri Turbo	9 990	9 290
Commodore VS	18 300	16 290
Mercedes Benz 300E	25 990	22 870
Toyota RAV4	20 500	17 600

A Mercedes Benz 300E is purchased after the GST has been introduced. What is the percentage saving compared to its price before the GST?

- (A) 9.1%                      (B) 11.5%                      (C) 12.0%                      (D) 13.6%
- 16  $a = \frac{2Rn}{n+1}$  is a formula for finding the effective interest rate,  $a$ .  $R$  is the flat rate of interest and  $n$  is the number of instalments.

Find the effective interest rate on a loan of \$2000 at a flat rate of 9.5% pa, which will be repaid over 2 years by equal monthly instalments.

- (A) 0.18%                      (B) 18.24%                      (C) 0.2%                      (D) 20%
- 17



Which of the following equations should be used to find the value of  $x$  in the triangle above?

- (A)  $\tan 25^\circ = \frac{x}{10}$
- (B)  $x^2 + 7^2 = 10^2$
- (C)  $x^2 = 7^2 + 10^2 - 2 \times 7 \times 10 \times \cos 25^\circ$
- (D)  $\frac{x}{\sin 25^\circ} = \frac{7}{\sin 10^\circ}$

18 The back to back stem and leaf plot shows the marks obtained on a class assignment.

MARKS OBTAINED		
Girls		Boys
	0	8
6	1	7
7 4 3	2	0 4 7
9 8 8 5 3	3	2 4 4 6 9
7 5 5 2	4	1 3 5

What is the range of marks for this class assignment?

- (A) 31                      (B) 35                      (C) 37                      (D) 39

19 An Olympic archer hits the target in 47 out of 50 attempts. The relative frequency of him hitting the target is

- (A) 0.03                      (B) 0.47                      (C) 0.50                      (D) 0.94

20 The water from a flat rectangular roof 12 metres by 15 metres is collected in a cylindrical tank of diameter 2.2 metres. What rise in water level in the tank is caused by rainfall of 1 cm ?

- (A) 0.12 m                      (B) 0.47 m                      (C) 12 m                      (D) 47 m

21 After six History tests, Amy’s mean score is 71. She hopes to raise her mean score to 75 after the next test.

What mark will Amy need to achieve on her seventh test if her mean mark is to be 75?

- (A) 75                      (B) 79                      (C) 95                      (D) 99

22 The Australian income tax rates are shown in the table below:

Taxable Income	Tax on Taxable Income
\$1 - \$ 6000	Nil
\$ 6001 - \$25 000	15c for each \$1 over \$6000
\$25 001 - \$75 000	\$A plus 30c for each \$1 over \$25 000
\$75 001 - \$150 000	\$17 850 plus 40c for each \$1 over \$75 000
\$150 001 and over	\$47 850 plus 45c for each \$1 over \$150 000

The value of A is

- (A) \$6000                      (B) \$2850                      (C) \$50 000                      (D) \$ 1800

**SECTION II**

**78 Marks**

**Attempt Questions 23-28**

**Answer each question in a SEPARATE writing booklet.  
Show all necessary working**

**QUESTION 23 (13 marks)**

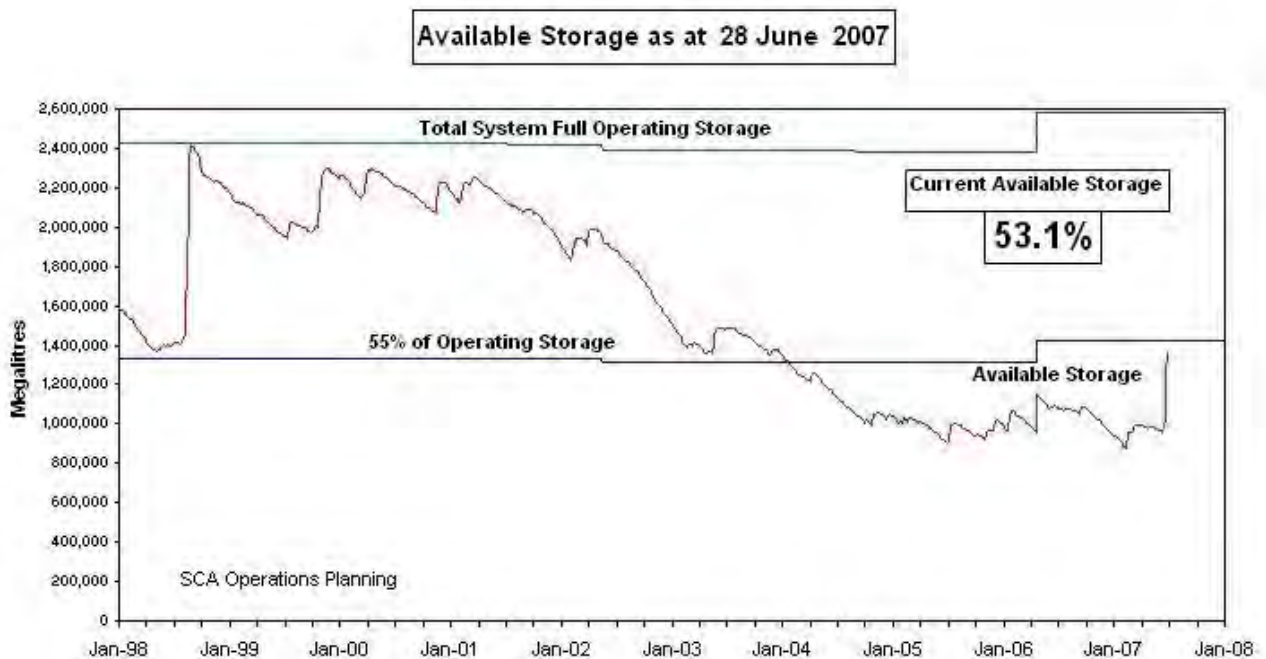
**Use a SEPARATE writing booklet**

**Marks**

(a) Simplify  $\frac{c^2d}{e} \times \frac{3e}{4c}$ .

**2**

(b) The graph below shows the available storage supplies of water at Warragamba dam.



(i) At what time(s) was the available water storage 1 700 000 ML?

**1**

(ii) Each person in Australia uses an average of 258 L of water per day. Our target is to reduce water consumption by 15%.

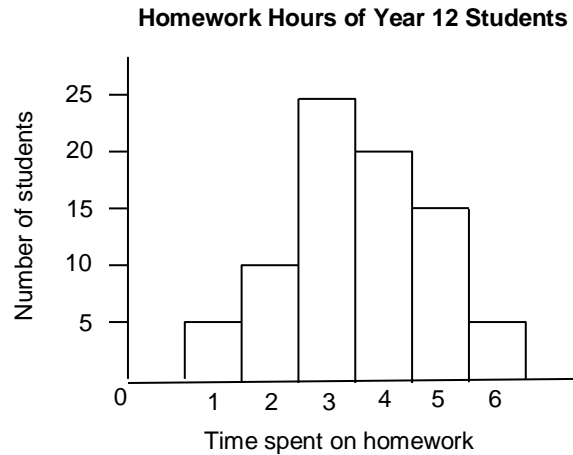
Calculate the maximum amount of water each person should be using so that this target is achieved.

**1**



Question 23 (cont)

(c)



The graph above shows the distribution of homework hours of Year 12 students on a given night.

- (i) How many students were surveyed? 1
- (ii) Find the probability that a student, chosen at random, spends more than four hours on homework. 1

(d) The exchange rate between Australia and the USA is \$A1.00 = \$US0.7335.

Anneke buys a pair of shoes in Los Angeles for \$US48.50. How much is this in Australian currency? 2

(e) Tomatoes are sprayed with a pesticide-fertilizer mix. The figures below give the yield of tomatoes per bush for various spray concentrations.

Spray concentration (ml), $x$	3	5	6	8	9	11
Yield of tomatoes per bush, $y$	65	90	103	120	124	150

**Use the grid at the end of this paper for the following:**

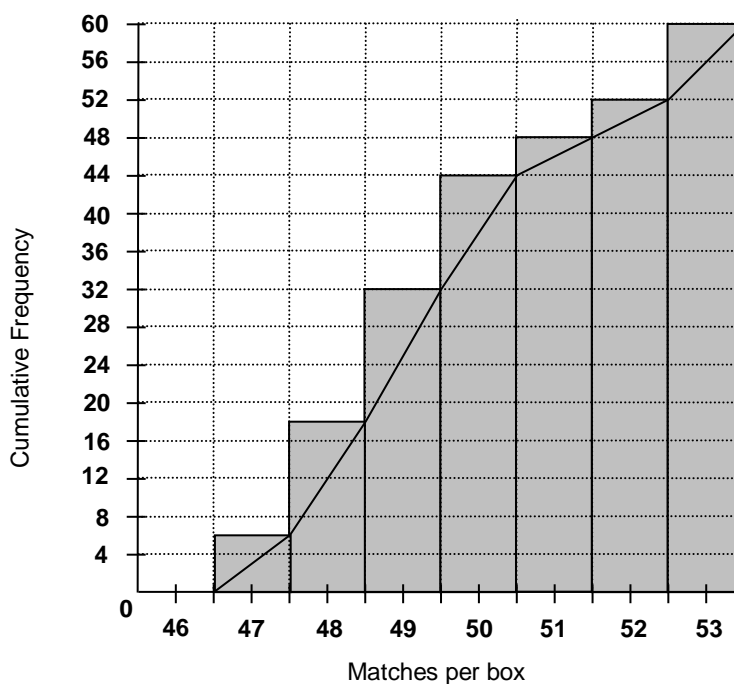
- (i) Draw a scatter diagram of the data on the graph paper provided. 2
- (ii) Referring to your scatter diagram, describe the relationship. 1
- (iii) On the graph, draw a straight line which is a good fit for these results. 1
- (iv) If 40 ml spray concentration was used, would this guarantee a large tomato yield? Explain your answer. 1

**QUESTION 24 (13 marks)**  
**Use a SEPARATE writing booklet**

**Marks**

- (a) (i) A water tank has a volume of  $10.2 \text{ m}^3$ . Calculate the number of litres of water required to fill the tank ( $1 \text{ m}^3 = 1000 \text{ L}$ ). **1**
- (ii) The tank is to be filled using a garden hose. The hose delivers 10 litres of water to the tank in 25 seconds. Calculate, to the nearest hour, the time required to fill the tank. **2**
- (b) The **Matchmaker** match factory states the average number of matches per box to be 50.

The graph below is a cumulative display of the number of matches per box in a sample taken from the factory.

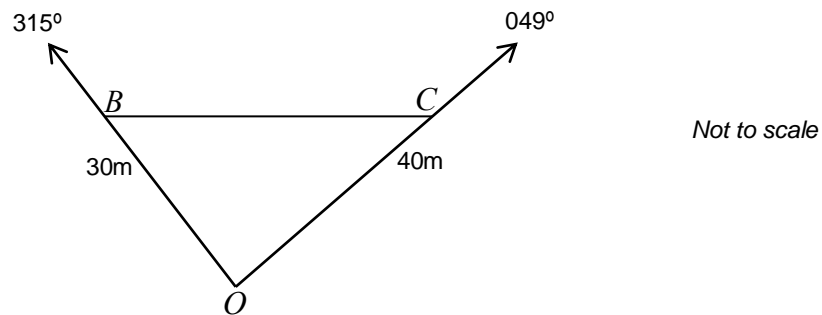


- (i) Use the graph above to draw an accurate box and whisker plot to represent the data. **3**
- (ii) In a sample of 500 boxes, how many boxes would you expect to contain more than 51 matches? Justify your answer. **2**

**Question 24 (Cont)**

**Marks**

(c) A farmer has had a survey made of a land area as shown below.

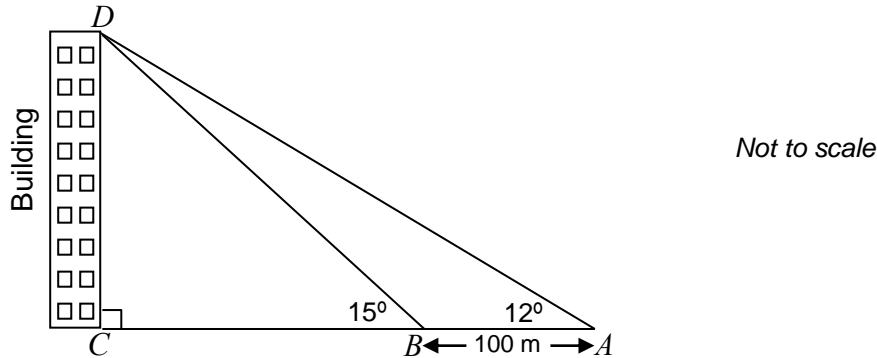


- (i) Find the size of  $\angle BOC$  and hence calculate the area of the field. Answer to the nearest  $\text{m}^2$ . **3**
- (ii) The farmer wants to make a dam in this area and needs the capacity to be 1 megalitre. Is the area suitable? Justify your answer. **2**

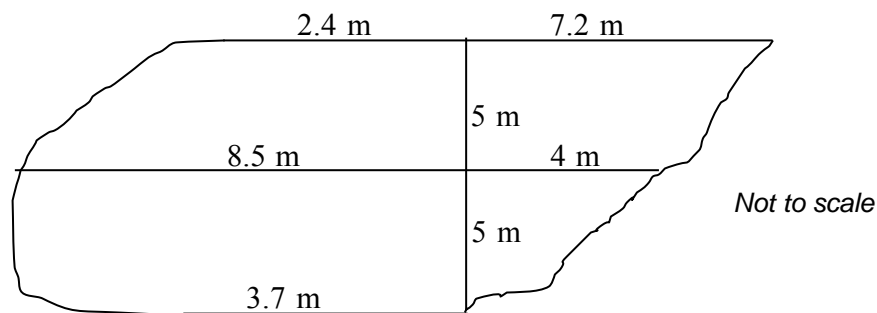
**QUESTION 25 (13 marks)**  
**Use a SEPARATE writing booklet**

**Marks**

- (a) Solve the equation  $\frac{1-7p}{3} = \frac{1}{2}$ . **2**
- (b) To measure the height of a building, Ben took two angles of elevation from points  $A$  and  $B$ , 100 metres apart in a straight line. The angle of elevation of the top of the building from  $A$  was  $12^\circ$  and from  $B$  it was  $15^\circ$ .



- (i) Explain why  $\angle ADB = 3^\circ$  **1**
- (ii) Calculate the length of  $BD$ . **2**
- (iii) Find the height of the building, correct to the nearest metre. **2**
- (c) Two metal spheres of radius 3 mm and 6 mm are melted down and formed into a single cube. What would be the side length of the cube correct to 2 significant figures? **3**
- (d) As part of the Ku-ring-gai Project to beautify the area, the council committee is considering the construction of a man-made fish pond, as seen below.



- (i) Using Simpson's Rule, calculate the area of the pond's surface. **2**
- (ii) The pond has an even depth of 1.6 metres. A special type of fish will be placed in the pond. Each of these fish requires  $1.75 \text{ m}^3$  of water.
- What is the maximum number of fish that should be in the pond at any one time? **1**

**QUESTION 26 (13 marks)**  
**Use a SEPARATE writing booklet**

**Marks**

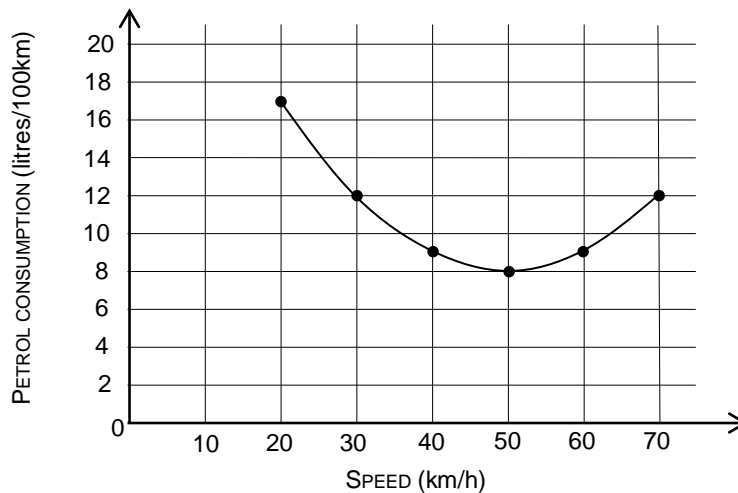
- (a) Michael is a pharmaceutical sales person. He is paid a basic wage of \$320 per week. Last week he earned a total of \$660 after receiving a commission for selling \$1350 worth of pharmaceuticals.

Find

- (i) his commission.  
 (ii) the percentage rate of commission (to 1 decimal place).

**1**  
**2**

- (b) A car was test driven at different speeds and the petrol consumption is recorded. The results are shown in the graph.



- (i) What was the petrol consumption recorded at 60 km/h? **1**
- (ii) During the test, the car was driven at 30 km/h for 20 km. How many litres of petrol did it consume? **2**

The graph is modelled by the formula  $C = 0.01S^2 - S + 33$  for speeds from 20 km/h to 80 km/h, where  $C$  is the petrol consumption in litres per 100 km, and  $S$  is the speed in km/h.

- (iii) Use this formula to calculate the petrol consumption at a speed of 80 km/h. **1**
- (iv) The formula  $C = 0.01S^2 - S + 33$  is a good model for speeds between 20 km/h and 80 km/h. Why would this formula NOT be useful for  $S = 0$ ? **1**

**Question 26 (Cont)**

**Marks**

(c) David and Margaret each use their credit cards to buy holiday packages to Bali. The cost of each package is \$1500.

(i) The charge of David's credit card is 1% interest per month on the unpaid balance. David pays \$700 at the end of 1 month and another \$700 at the end of the next month to his credit card company.

After the second payment, how much does he still owe for his holiday? **2**

(ii) Margaret's credit card company charges no interest in the first month and 1.5% interest per month on the unpaid balance from then on. She pays \$700 at the end of 1 month and another \$700 at the end of the next month to her credit card company.

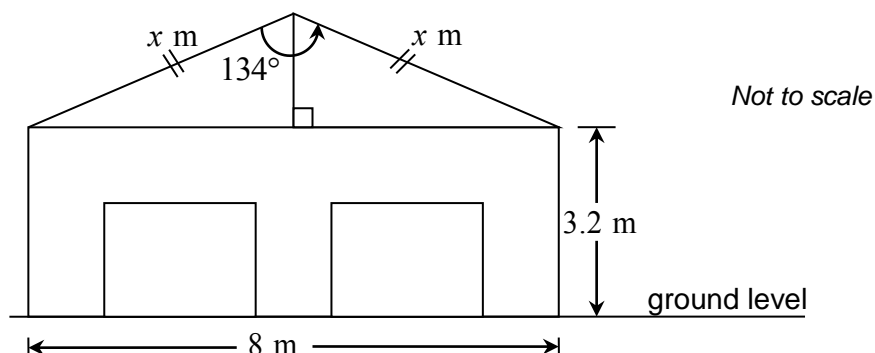
How much does she still owe for her holiday after the second payment? **2**

(iii) Who has the better credit card? Explain your answer. **1**

**QUESTION 27 (13 marks)**  
**Use a SEPARATE writing booklet**

**Marks**

- (a) A double garage has a triangular roof frame. The two sections of the roof meet at an angle of  $134^\circ$ . The garage is 8 m wide and 3.2 m high.



- (i) What is the length,  $x$  of each section of the roof. Answer correct to 2 decimal places. **2**
- (ii) Calculate the height of the top of the roof above the ground. Answer correct to 2 decimal places. **2**
- (b) Claudine leaves Sydney (longitude  $150^\circ\text{E}$ ) at 5pm on the 2<sup>nd</sup> January, 2007, to begin her gap year in England. She is scheduled to land at Heathrow Airport in London, England, (longitude  $0^\circ$ ) 22 hours later.
- She promises to call her parents as soon as she can after landing.
- (i) What time and date would it be in Sydney when her parents would be expecting to receive the call? (Assume she is able to use her phone 30 minutes after landing.) **2**
- (ii) Her plane makes an unexpected landing in Hong Kong which delays her arrival in England by 3 hours. What time is it in England when Claudine makes the call? (Remember she must wait 30 minutes before she can use her phone.) **2**
- (iii) On a midterm break, Claudine has the chance to fly to Rome in Italy. She knows that the time in Rome is 1 hour ahead of London. What meridian of longitude is used to calculate the time in Rome? **1**
- (c) Judith bought 2000 BMP shares for \$2.80 each and sold them for \$3.25 each. She paid a brokerage fee of 3.5 cents per share and stamp duty of 2% of the value of the shares.
- (i) How much did Judith receive from the sale of her shares? **2**
- (ii) Calculate the percentage return on her original investment. **2**

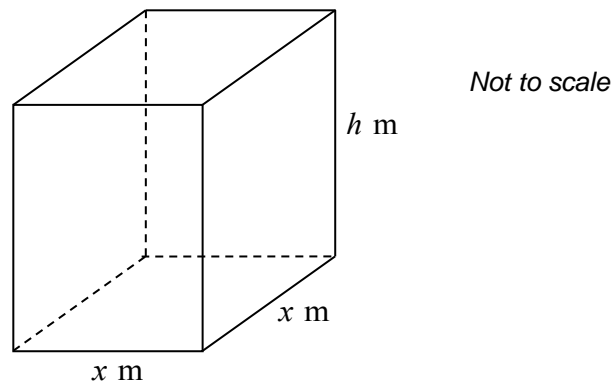
**QUESTION 28 (13 marks)**  
**Use a SEPARATE writing booklet**

**Marks**

- (a) A die is biased so that a six is twice as likely to occur as the other numbers. What is the probability of rolling an odd number on this die?

**1**

- (b) A closed box has square ends and dimensions as shown below.



- (i) The volume ( $V$ ) of the box is  $8 \text{ m}^3$ . Write an expression for  $h$  in terms of  $x$ .
- (ii) Draw a neat sketch of a graph which could result, if the values of  $h$  were plotted on the horizontal axis and the values of  $V$  were plotted on the vertical axis.

**2**

**1**

- (c) Sue and Mike both bought cars to use in their businesses. Both cars were originally valued at \$20 000. Sue used the straight-line method of depreciation at 12% p.a. and Mike used the declining-balance method at 20% p.a.

- (i) How much can Mike claim on his tax return at the end of the 2<sup>nd</sup> year for depreciation?
- (ii) What is the salvage value of Sue's car after 4 years?
- (iii) When will Mike's car have the same salvage value? (Answer to the nearest month.)

**2**

**1**

**2**



**Question 28 (Cont)****Marks**

(d) The table below shows the monthly repayments per \$1000 on a bank home loan.

<b>Term of Loan (years)</b>	<b>6.00%</b>	<b>6.25%</b>	<b>6.50%</b>	<b>6.75%</b>	<b>7.00%</b>	<b>7.25%</b>	<b>7.50%</b>
5	\$19.33	\$19.45	\$19.57	\$19.68	\$19.80	\$19.92	\$20.04
10	\$11.10	\$11.23	\$11.35	\$11.48	\$11.61	\$11.74	\$11.87
15	\$8.44	\$8.57	\$8.71	\$8.85	\$8.99	\$9.13	\$9.27
20	\$7.16	\$7.31	\$7.46	\$7.60	\$7.75	\$7.90	\$8.06
25	\$6.44	\$6.60	\$6.75	\$6.91	\$7.07	\$7.23	\$7.39

The Harrison family borrow \$200 000 at 7.50% p.a. over a 20 year term while the Wright family borrow the same amount at 7% p.a. over a 25 year term.

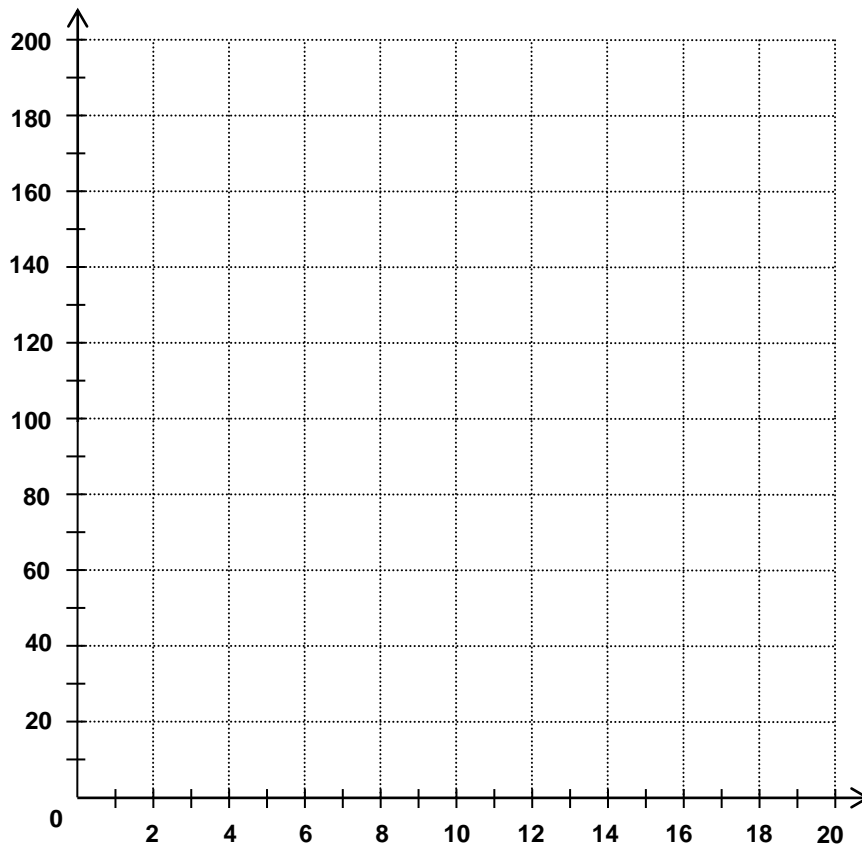
- (i) What is the total amount paid by the Harrison family over 20 years? **2**
- (ii) Which family pays more interest and by how much? **2**

**End of Paper**

Name \_\_\_\_\_

**QUESTION 23 (e), (i) and (iii)**

**This page is to be detached, completed and attached to your answer booklet.**



Abbotsleigh Trial HSC  
August 2007

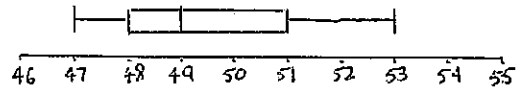
I Multiple Choice

1. B                      7. B  $k = \frac{18000}{3^2}$   $V = 2000 \times 1.5^2$     13. B  $6.53 = 380 \times \sqrt{60} \times \frac{29}{305}$   
 2. A  $\frac{0.5}{400} \times 100\%$     8. C                      14. A  $\frac{30}{2}(25+35)$   
 3. A  $\frac{20 \times 3600}{1000}$       9. B                      15. C  $\frac{3120}{2.5740} \times 100$   
 4. D                      10. B                      16. B  $n = 24$   
 5. B  $\sin^{-1} \frac{12}{9}$       11. C  $2400 = 6500(1 - \frac{r}{100})^3$     17. C  
 6. D                      12. C                      18. D  
                                  19. D  
 20. B  $12 \times 15 \times 0.01 = \pi \times 1.1^2 \times h$   
 21. D  $75 = \frac{71 \times 6 + x}{7}$   
 22. B  $(25000 - 6000) \times 0.15$

II Question 23

- (a)  $\frac{3cd}{4}$   
 (b) (i) July/Aug 1998, Sept/Oct 2002  
 (ii)  $\frac{85}{100} \times 252 = 214.3L$   
 (c) (i)  $5 + 10 + 25 + 20 + 15 + 5 = 80$   
 (ii)  $\frac{15 \times 15}{80} = \frac{1}{4}$   
 (d)  $48.50 \div 0.7335 = \$66.12$   
 (e) (i) see graph  
 (ii) +ve, linear correlation coefficient close to 1  
 (iii) see graph  
 (iv) no, because the correlation will not necessarily continue in this way.

Question 24

- (a) (i)  $10.2 \times 1000 = 10200L$   
 (ii)  $\frac{10200 \div 10 \times 25}{3600} = 7.08h$   $\therefore$  8 hrs to fill the tank.  
 (b) (i)  
  
 (ii)  $500 \times \frac{25}{100} = 125$  boxes  
 because more than 51 correlates to the top quartile of the data.

Question 24 (continued)

- (a) (i) LBOC =  $(360 - 315) + 49$   
 $= 94^\circ$   
 $A = \frac{1}{2} \times 30 \times 40 \times \sin 94$   
 $= 598.53 m^2$   
 $= 599 m^2$   
 (ii) i HL =  $10^6 L$   
 $10^6 L = 10^3 m^3 = 1000 m^3$   
 $\frac{1000 m^3}{599 m^2} \approx 1.7 m$  deep  
 $\therefore$  yes he could build a dam in this area because 1.7m is not too deep to dig.

Question 26

- (a) (i) Commission =  $660 - 320$   
 $= \$340$   
 (ii)  $340 = \frac{x}{100} \times 1350$   
 $x = \frac{340 \times 100}{1350}$   
 $x \approx 25.2\%$   
 (b) (i)  $9L/100km$   
 (ii)  $12L/100km$   
 $\frac{12}{5} L / 20km$   
 $2.4L$   
 (iii)  $C = 0.01(80)^2 - 80 + 33$   
 $C = 17L/100km$   
 (iv)  $S = 0, C = 33$   


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 would not use any petrol stopped at lights  $\therefore$  gives an invalid answer.  
 (c) (i)  $1500 + (\frac{100}{100} \times 800) - 700 = 808$   
 $808 - 700 + \frac{100}{100} \times 108 = \$109.08$   
 (ii)  $1500 - 1400 + \frac{1.5}{100} \times 100 = \$101.50$   
 (iii) Margaret's card is better because she has only \$101.50 to pay after 2 months.

Question 25

- (a)  $\frac{1-7p}{3} = \frac{1}{2}$   
 $2(1-7p) = 3$   
 $2 - 14p = 3$   
 $-14p = 1$   
 $p = -\frac{1}{14}$   
 (b) (i) LDBA =  $180 - 15$  (str. line)  
 $= 165$   
 $LDBA = 180 - 165 - 12$  ( $\triangle$  sum)  
 $= 3^\circ$   
 (ii)  $\frac{BD}{\sin 12} = \frac{100}{\sin 3}$   
 $BD = \frac{100 \sin 12}{\sin 3}$   
 $BD = 397.3 m$   
 (iii)  $\sin 15 = \frac{CD}{397.3}$   
 $CD = 397.3 \times \sin 15$   
 $= 103 m$   
 (c)  $\frac{4}{3} \pi \times (x^3 + 6^3) = x^3$   
 $x = \sqrt[3]{324\pi}$   
 $x = 10 mm$   
 (d) (i)  $A \approx \frac{\pi}{3} (2.4 + 4(8.5) + 3.7) + \frac{\pi}{3} (7.2 + 4(4) + 0)$   
 $= 66.8 + 38 \frac{2}{3}$   
 $= 105.6 m^2$   
 (ii)  $V = 105.5 \times 1.6$   
 $= 168.8$   
 number of fish =  $\frac{168.8}{1.75}$   
 $= 96.45$   
 $\therefore$  96 fish

Question 27

(a) (i)  $\sin 67 = \frac{4}{x}$

$x = \frac{4}{\sin 67}$

$x = 4.35 \text{ m}$

(ii)  $h^2 = 4.35^2 - 4^2$

$h = \sqrt{2.88} + 3.2$

$h = 4.90 \text{ m}$

(b) (i) 5pm 2<sup>nd</sup> Jan + 22½ hrs

$= 3:30 \text{ pm } 3^{\text{rd}} \text{ Jan}$

(ii) time difference is  $150 \times 4$

$= 600 \text{ mins} = 10 \text{ hrs}$

$3:30 \text{ pm} - 10 \text{ hrs} + 3 \text{ hr delay} = \underline{8:30 \text{ am } 3^{\text{rd}} \text{ Jan}}$

(c) (i)  $2000 \times 3.25 - 2000 \times 0.035$

$= 6500 - 70$

$= \underline{\$6430}$

(ii) original value  $6430 - 5670$

$= 760$

$\text{return} = \frac{6430 - 5670}{5670} \times 100\% = \underline{13.4\%}$

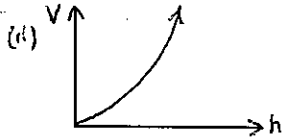
Question 28

(a)  $P(\text{odd}) = \frac{3}{7}$

(b) (i)  $V = x^2 h$

$8 = x^2 h$

$\therefore h = \frac{8}{x^2}$



(c) (i)  $A = 20000 \left(1 - \frac{20}{100}\right)^2$

$= \$12800 \therefore \text{Mike can claim } 16000 - 12800 = \underline{\$3200}$

(ii)  $SV = 20000 - 20000 \times \frac{12}{100} \times 4$

$= \underline{\$10400}$

(iii)  $10400 = 20000 (0.8)^n$

$\frac{10400}{20000} = 0.8^n$

$0.8^n = 0.52$

$n = \underline{2 \text{ yrs } 11 \text{ months or } 35^{\text{th}} \text{ Month}}$

(d) (i)  $8.06 \times 200 \times 20 \times 12 = \underline{\$386880}$

(ii)  $7.07 \times 200 \times 25 \times 12 = \underline{\$424200}$

$\therefore \text{Harrison's pay } 424200 - 386880 = \underline{\$37320 \text{ more interest}}$

## QUESTION 23 (d), (i) and (iii)

This page is to be detached, completed and attached to your answer booklet.

