Newington College

Discover what's possible

Mathematics Standard 2

2021 Trial HSC Examination Assessment point 4

General Instructions

- Reading time: n/a
- Total Working time: 150 Minutes
- Write using black or blue pen
- Attempt ALL questions
- Do NOT write in pencil
- Write your student number on the front of each exam writing booklet.

Section I – Multiple Choice
20 marks

Allow 30 minutes for this section

Questions 1-20	20 marks

Section II – Written (booklets)
40 Marks

Question 21	20 marks
Question 22	20 marks

Section III – Written (booklets)
40 Marks

Question 23	20 marks
Question 24	20 marks

Section I – Multiple Choice

20 marks
Attempt Questions 1 to 20
Allow 30 minutes for this section

Mark your answers on the answer grid provided.

Questions

1. What is the value of sin 50° correct to 2 decimal places?

A. 0.76

B. 0.77

C. 0.50

D. 45.58

2. The table shows the average energy used in kilojoules per kilogram of body mass, when cycling at two different speeds for 30 minutes.

Cycling speed	*Average energy used (kj/kg) in 30 minutes*
15 km/h	11.52
20 km/h	18.43

Jake weighs 62 kg.

If 1 calorie is equivalent to 4.184 kilojoules, approximately how many more calories wouldJake use, cycling at 20 km/h, than he would at 15 km/h during the 30 minutes?

A. 102

B. 264

C. 378

D. 478

3. A 140 cm television with an energy rating of 7 stars, consumes 213 kwh/yr.

The same size television with an energy rating of 3 stars, consumes 520 kwh/yr.

If energy costs are 28.55 cents/kwh, what is the approximate saving in energy over a 10 year period by using the 7star rated television, compared to the 3star rated television?

A. $876

B. $1020

C. $1142

D. $3500

4. A piece of artwork is currently valued at $18 500.

It is estimated that the artwork will increase at an annual rate of 5.5% over the next threeyears. Which of these calculations would give the estimated value of the artwork in 3 years' time?

A. $18500 \times 1.155 \times 3$

B. 18500×1.165

C. $18500 + 1.055^3$

D. 18500×1.055^3

5. Anna takes out a loan of $250 000 from her bank at an interest rate of 4.5% p.a with interest calculated monthly on the amount owing.

Anna makes monthly repayments of *$R* on her loan.

If Alma owes $249 737.50 after making her first repayment, what is the value of *R?*

A. $800

B. $900

C. $1200

D. $1250

6. The size of the angles in a triangle are in the ratio 2:3:5. What is the size of the largest angle?

A. 68°

B. 72°

C. 90°

D. 120°

7. The bearing of Isham's home from her friend Vanessa's home is 230°.

What is the bearing of Vanessa' home from Isham's home?

A. 040°

B. 050°

C. 120°

D. 140°

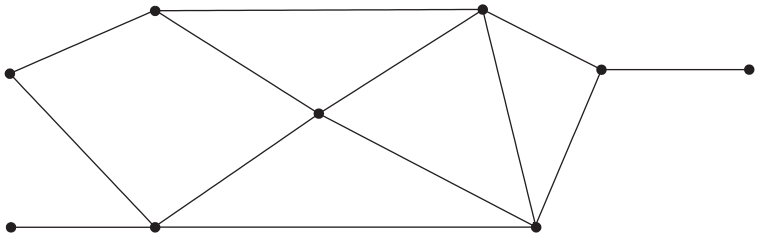
8. The growth of bacteria in a culture can be modelled by the equation:

$N = 75(1.05)^t$, where N is the number of bacteria after t hours.

What type of graph would represent this model?

A. Linear
B. Exponential
C. Hyperbolic
D. Parabolic

9. A network diagram is shown.



The number of vertices of even degree is

A. 2
B. 5
C. 6
D. 9

10. In a triangle ABC the length of the side AB is 9.1 cm and the length of the side BC is 7.4 cm. The $\angle B$ is 48° and $\angle A$ is an obtuse angle. The length of side AC is closest to:

A. 3.08 cm

B. 3.78 cm

C. 9.09 cm

D. 6.89 cm

11. An information technology support company charges \$540 for a 2 hour service and \$720 for a 5 hour service. The rule for the cost of the service is $c = a + b \times$ number of hours worked, where a is the call out fee and b is the rate per hour. The call out fee is

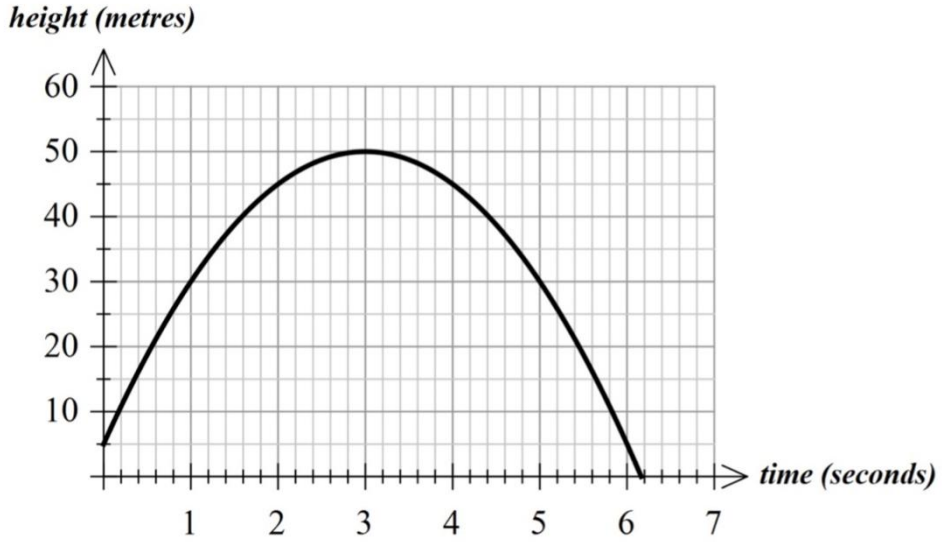
A. \$60

B. \$144

C. \$420

D. \$540

12. The graph showing the height for flight of an arrow is displayed below:



The average rate of increase in the height of the arrow in the first 3 seconds of the flight is closest to:

A. 3 m/s

B. 15 m/s

C. 17 m/s

D. 50 m/s

13. A community club is selling t-shirts with its logo as a fundraiser. There are 15 members in the club. The cost of printing the t-shirts is $145 plus $12 per t-shirt. Assuming that every member of the club buys a t-shirt, to make a profit of $65 the selling price of the t-shirts needs to be

A. $14

B. $21

C. $24

D. $26

14. A kite has a 24 m long string attached to an anchor point on the ground. The angle that the kite's string makes with the ground is 72 degrees. The height of the kite above the ground, correct to the nearest metre, is

A. 7 m

B. 6 m

C. 23 m

D. 29 m

15. Which of the following statements is true about crashing a project represented by an activity network?

A. If an activity on a critical path is increased in time by two hours, the time for the entire project will always increase by two hours.

B. If an activity network has multiple critical paths, reducing any critical activity will reduce the time taken for the project.

C. Reducing the time taken for an activity not on the critical path alone may sometimes result in a reduction in time for a project.

D. Only the critical path needs to be considered when determining any time reduction due to crashing.

16. A company owns a number of earthmoving machines that they hire out to tradesmen. All their machines are depreciated using the straight line method and are then sold off when the book value first falls below $500. One machine is a digger that is depreciated by $125 for every eight hours of use. It will be sold when it has completed 3168 hours. The original price of the digger was

A. $25 344

B. $39 600

C. $49 500

D. $50 000

17. Dylan has a computer that he purchases for $5000. Because he uses the computer in his business, he depreciates it at 18% per annum using the reducing balance method. The amount of depreciation on Dylan's computer during the fourth year is closest to

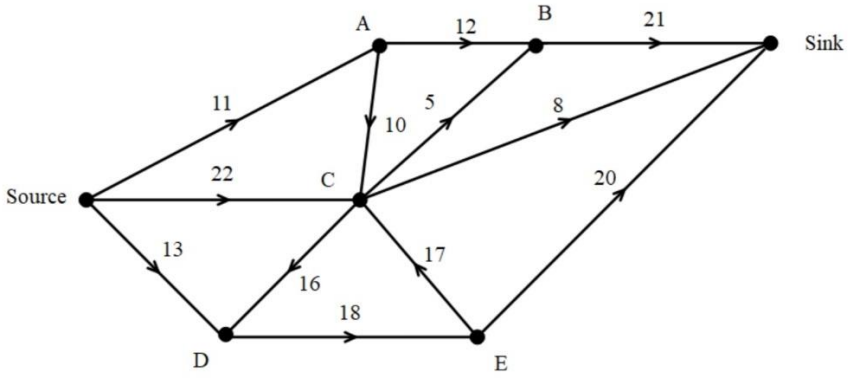
A. $406.91

B. $496.23

C. $605.16

D. $738.00

18. The flow of liquid through a series of pipelines, in litres per minute, is shown in the directed network below:



Which of the following statements are true?

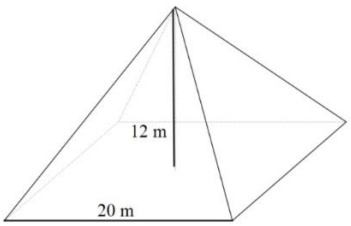
A. Increasing the capacity of the edge AB to 15 will increase flow

B. Increasing the capacity of the edge Source-A to 15 will increase flow

C. Increasing the capacity of the edge Source-D to 15 will increase flow

D. Increasing the capacity of the edge AC to 15 will increase flow

19. A square based pyramid has side lengths of 20m and a height of 12m.



The surface area of the pyramid, **not including the base**, is closest to

A. 156 m^2

B. 480 m^2

C. 625 m^2

D. 1025 m^2

20. Use the following table to calculate the future value of an annuity with $500 invested per quarter for 2 years, at an interest rate of 6% p.a. compounding quarterly would be:

Future value of $1							
Period	**1.0%**	**1.5%**	**2.0%**	**2.5%**	**3.0%**	**3.5%**	**4.0%**
1	1.000	1.000	1.000	1.000	1.000	1.000	1.000
2	2.010	2.015	2.020	2.025	2.030	2.035	2.040
3	3.030	3.045	3.060	3.076	3.091	3.106	3.122
4	4.060	4.091	4.122	4.153	4.184	4.215	4.246
5	5.101	5.152	5.204	5.256	5.309	5.362	5.416
6	6.152	6.230	6.308	6.388	6.468	6.550	6.633
7	7.214	7.323	7.434	7.547	7.662	7.779	7.898
8	8.286	8.433	8.583	8.736	8.892	9.052	9.214

A. $4216.50

B. $4000

C. $4607

D. $4796.92

END OF SECTION I

Section II

40 marks
Attempt Question 21 in one answer booklet and Question 22 in a separate answer booklet
Allow 60 minutes for this section.

Write your answers in the writing booklets supplied. Additional writing booklets are available.
Your responses should include relevant mathematical reasoning and/or calculations.

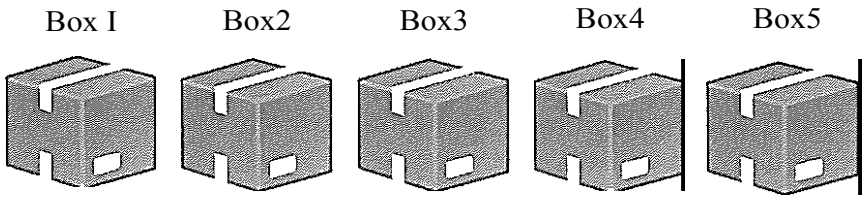
Question 21 (20 Marks) (Start a new Answer booklet) **Marks**

(a) $40 000 is invested in an account paying an annual flat rate of 3.5% interest. What is the future value of this investment at the end of 4 years? **2**

(b) A photocopier was purchased new for $8500. Using the declining balance method of depreciation, the photocopier loses value at an annual rate of 18.25%. What would be the value of the photocopier at the end of 5 years of use? **2**

(c) 6 yellow birds and 4 blue birds live in an aviary and feed from a barrel. What is the probability that when two birds are feeding from the barrel, at least one bird is yellow? **2**

(d) Five boxes with varying weight are arranged from lightest to heaviest, left to right **3**



The following data is given about the boxes.

Mode: 0.6 kg Mean: 1.2 kg Median: 0.9 kg Range:

1.5 kgWhat is the weight of the contents of box 4?

Section II continues over the page

(e) The emergency stopping distance, (SD), in metres required by a motorist on dry surfaces consists of the reaction distance (*R)* plus the braking distance (*B),* both in metres, given by theformulas:

$$R = 0.7v$$

$$B = 0.01v^2$$

$$SD = R + B$$

where v is the speed of the vehicle (in km/h).

(i) Show that when a motorist is travelling at 70 km/h on a dry surface, the braking distance and the reaction distance are equal. **2**

(ii) What is the stopping distance when travelling at 70 km/h? **1**

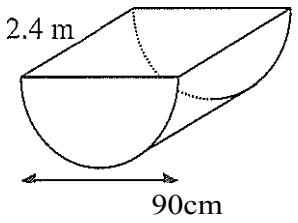
(iii) If $0.01v^2 = 25$, calculate the speed and new stopping distance **2**

(f) 40 people were surveyed, 95% of them had between 42 and 54 hours of sleep per week. Results were found to be normally distributed.

(i) How many hours of sleep per week would correspond to a Z-score of 1.5 in this survey? **2**

(ii) A participant, James, had 56 hours sleep per week. Explain why it is likely that out of the 40 people, James's Z-score would have been the highest. **1**

(g) A timber log of length 2.4 m and diameter 90 cm, has been cut in half producing the semicircular section, as shown below. **3**



What is the surface area (in square metres) of the semicircular piece of timber? (Give your answer correct to 1 decimal place.)

End of Question 21. Section II continues over the page

Question 22 (20 Marks) (Start a new Answer booklet) **Marks**

(a) A total of $1.60 was charged for 29 days interest, calculated on a credit card balance. **3**
If the bank has an annual credit card interest rate of 18.25%, what was the credit card balance when the charge was calculated?

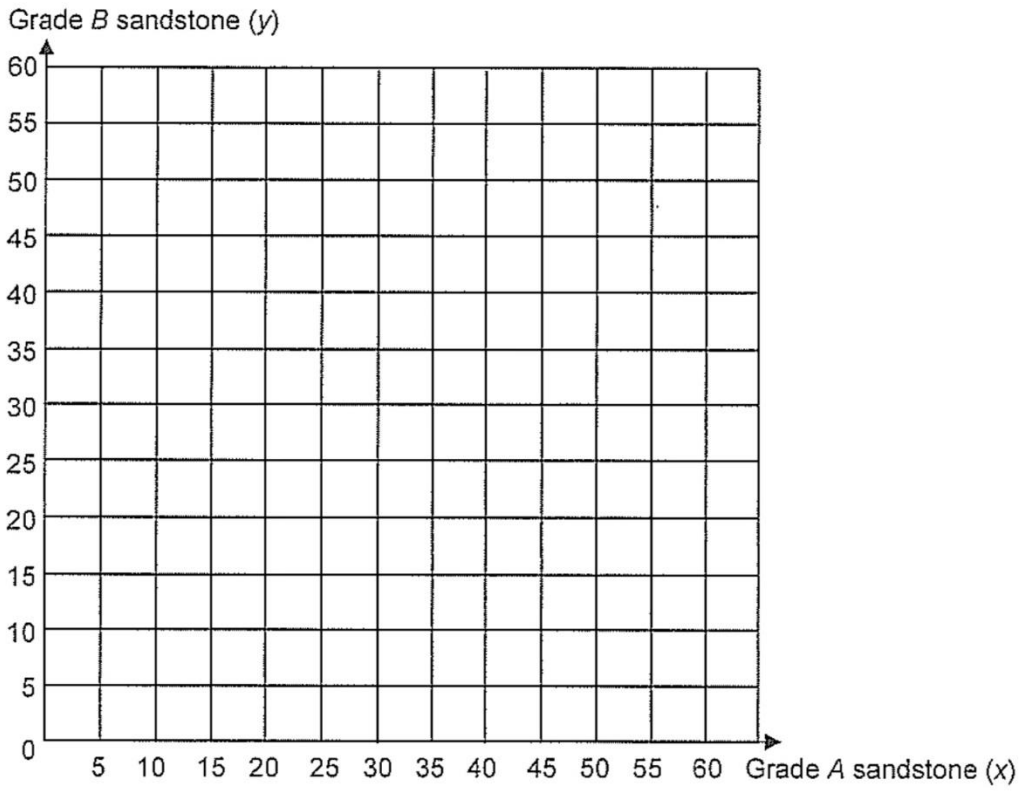
(b) A company stocks two different grades of sandstone paving blocks. **3**

Grade A sells for $60 per square metre. Grade B sells for $40 per square metre.
A landscaper purchases 50 square metres of sandstone blocks, including some of each grade. Total cost was $2400.

Let x represent the number of square metres of Grade A sandstone blocks and y represent the number of square metres of Grade B sandstone blocks purchased.

Write down two equations for x and y, and solve these simultaneous equations graphically on the provided grid paper marked Question 22 (b). Use your graphs to determine how many square metres of each grade of sandstone block were purchased.

This diagram has been provided for you on an additional answer sheet labelled Section II Q22 b



Section II Q22 continues over the page

(c) The table below shows the six activities in a project. The predecessors and the durations in hours for each activity is also listed.

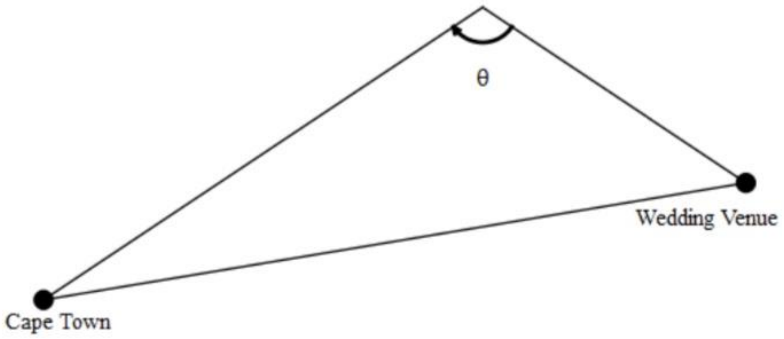
Activity	Predecessor(s)	Duration (hours)
A	-	3
B	A	7
C	A	5
D	A	5
E	B, C	4
F	D, E	6

(i) Draw the activity network diagram in your answer booklet, labelling all edges and vertices **2**

(ii) Calculate the EST and LST for each activity **2**

(iii) Write down the critical path of this project **1**

(d) Jim is going to a wedding in South Africa. He drives 45 km from Cape town on a bearing of $056°$ and then a further 27km on a bearing of $124°$ Copy the incomplete diagram below in your working booklet.



(i) Show that the angle $\theta = 112°$ **2**

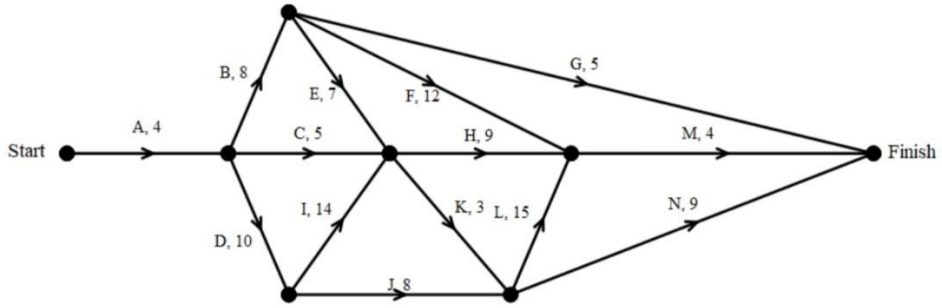
Tim, the groom, flies directly from Cape Town to the wedding venue.

(ii) Find the direct distance in kilometres and round to the nearest 100m **2**

(iii) To the nearest degree, what bearing will Tim need to take to get to the wedding venue? **1**

Section II Q22 continues over the page

(e) The activity network below shows the individual activities and the duration in days to complete a project



(i) What is the minimum completion time, in days, for this project as all activities must be completed? **2**

(ii) What is the latest starting time for activity C that will not delay the project? **1**

(iii) In order to speed up the entire project additional staff are employed to reduce the time taken for activity I. Each day of reduction will cost $500 so the aim is maximum reduction at minimum cost. By how many days should activity I be reduced? **1**

End of Section II

Section III

40 marks
Attempt Question 23 in one answer booklet and Question 24 in a separate answer booklet
Allow 60 minutes for this section.

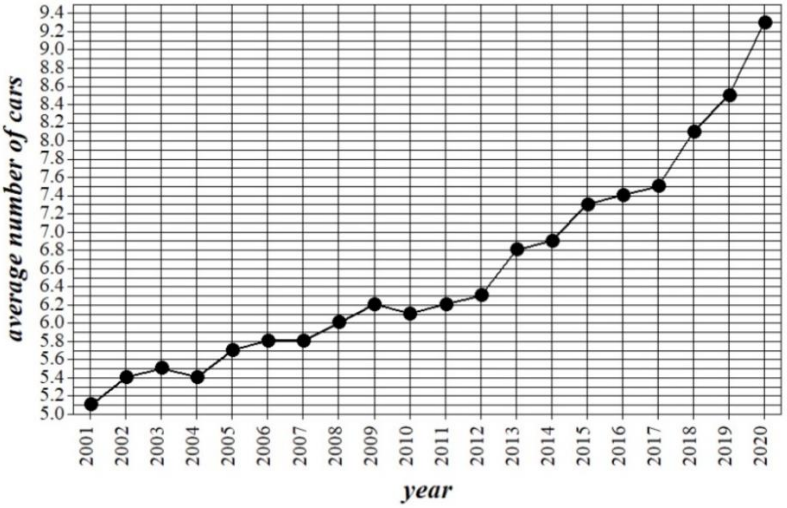
Write your answers in the writing booklets supplied. Additional writing booklets are available.
Your responses should include relevant mathematical reasoning and/or calculations.

Question 23 (20 Marks) (Start a new Answer booklet) **Marks**

(a) The beachside council has been recording the average number of cars per minute during daylight hours on a particular road during January each year from 2001 through to 2020.

The results of this survey are shown below and the associated time series plot are shown below.

year	*average number of cars*
2001	5.1
2002	5.4
2003	5.5
2004	5.4
2005	5.7
2006	5.8
2007	5.8
2008	6.0
2009	6.2
2010	6.1
2011	6.2
2012	6.3
2013	6.8
2014	6.9
2015	7.3
2016	7.4
2017	7.5
2018	8.1
2019	8.5
2020	9.3



(i) Describe the trend in the average number of cars during this time period. **2**

(ii) When a least-squares line of best fit is added to this time series plot the equation correct to significant figures is:

$$average = -361 + 0.183 \times year$$

This diagram has been provided for you on an additional answer sheet labelled Section III Q23a

Draw this line of best fit on the time series graph provided **2**

(iii) Using the equation of the line given above, what would the average number of cars be in 2025? **1**

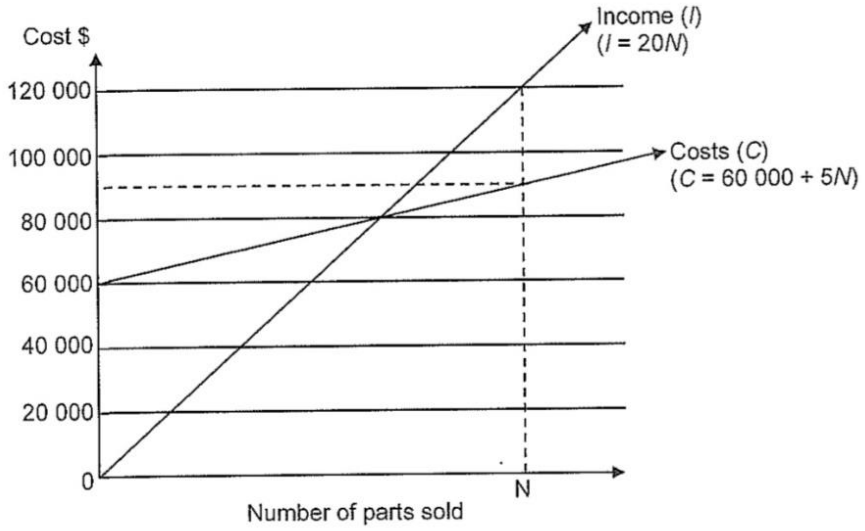
(b) Arianne compares her 50 metre swimming times in freestyle and breaststroke. In freestyle she swam 31seconds and the average was 34 seconds with a standard deviation of 3. In breaststroke she swam 38 seconds, the average was 42 with a standard deviation of 5. **3**
In which event did Arianne do better? You must justify your answer

(c) The height of a group of students is normally distributed with a mean of 172cm and a standard deviation of 3cm

(i) What percentage of students would be expected to be taller than 181cm? Explain your answer **2**

(ii) What percentage of the students would be between 163cm and 184cm? **1**

(d) Parsche spends $60 000 for a machine that produces a part of their engines.
The graphs and equations below show their costs (C) and income (I) from the sale of these parts.

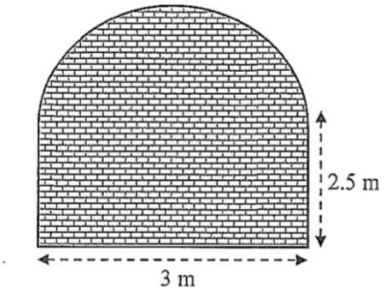


(i) How many parts need to be sold to break even? **1**

(ii) What profit is made when N parts are sold? **2**

Section III Q23 continues over the page

(e) A tunnel entrance is bricked up and consists of a rectangle and a semicircle as shown below



(i) Calculate the area of the entrance to the nearest square metre **2**

(ii) Use 2 applications of the trapezoidal rule to calculate the approximate area, to 2 decimal places **3**

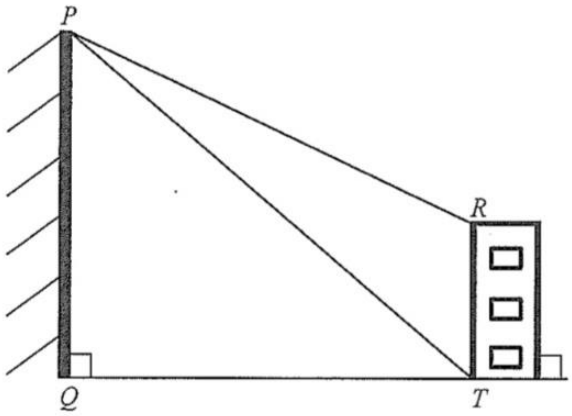
(iii) Calculate the percentage difference is there between your two answers and explain why this? **1**

End of Question 23. Section III continues over the page

Question 24 (20 Marks) **(Start a new Answer booklet)** **Marks**

(a) The diagram below shows a vertical pole PQ and a building RT, both standing on level ground. From the top of the pole the angle of depression of the top of the building is $32°$ and of the base of the building is $68°$. PT is 55 metres long.

This diagram has been provided for you on an additional answer sheet labelled Section III Q24a



(i) Complete the diagram above on the additional answer sheet provided **1**

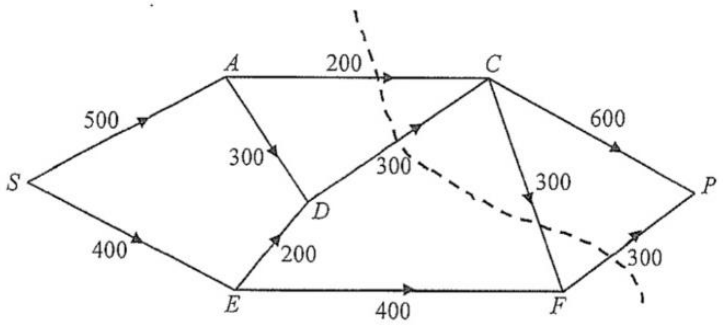
(ii) Show that $\angle PRT = 122°$ **2**

(iii) Use the Sine rule to calculate the height of the building RT to the nearest metre **2**

(iv) How much taller is the pole than the building? **2**

Section III Q24 continues over the page

(b) The diagram below shows a network of directed roads on which vehicles travel from a shopping centre at S to a car park at P. The maximum capacity (vehicles per hour) is shown, and the minimum cut is shown as the dashed line.



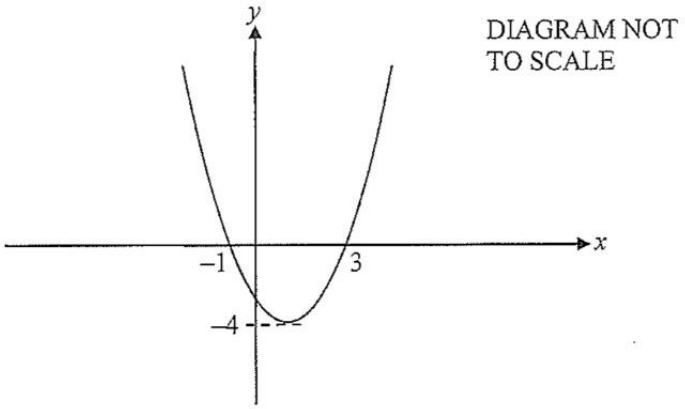
(i) How many possible paths are there through the network of roads from S to P? **1**

(ii) Explain why the capacity of the minimum cut is 800 vehicles per hour **1**

(iii) What is the maximum flow of vehicles per hour through the network? **1**

(iv) Would the construction of a road directly from E to P with a capacity of 500 vehicles per hour improve the maximum flow? Justify your answer **1**

(c) The graph of a quadratic is shown below:



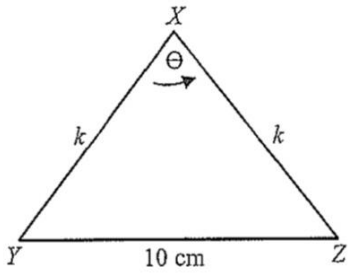
(i) What are the coordinates of the turning point of the function? **1**

(ii) What are the x-intercepts **1**

(iii) What is the axis of symmetry? **1**

Section III Q24 continues over the page

(d) The diagram below shows an isosceles triangle *XYZ,* where $XZ = XY = k, YZ = 10cm$ and $\angle YXZ = \Theta$



(i) Based on what you know about the area of a non right-angled triangle, show that **3**

$$\sin\Theta = \frac{10\sqrt{k^2 - 25}}{k^2}$$

(ii) Given that the area of the triangle is 60cm^2, find the size of Θ to the nearest minute **3**

End of Section III
End of Examination

SOLUTIONS

Student Number_____

Student Name_____

Class Teacher (Please circle): RTR GMA KST PWL JIO

Newington College

Discover what's possible

Mathematics Standard 2 (Section I)

Assessment Point 4 (25th August 2021)

Sample: 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 the correct answer by writing the word *correct* and drawing an arrow as follows.

A● B○ C~~●~~ ← correct D○

1.	A○	B●	C○	D○	**11.**	A○	B○	C●	D○
2.	A●	B○	C○	D○	**12.**	A○	B●	C○	D○
3.	A●	B○	C○	D○	**13.**	A○	B○	C○	D●
4.	A○	B○	C○	D●	**14.**	A○	B○	C●	D○
5.	A○	B○	C●	D○	**15.**	A○	B○	C○	D●
6.	A○	B○	C●	D○	**16.**	A○	B○	C●	D○
7.	A○	B●	C○	D○	**17.**	A○	B●	C○	D○
8.	A○	B●	C○	D○	**18.**	A○	B○	C●	D○
9.	A○	B●	C○	D○	**19.**	A○	B○	C●	D○
10.	A○	B○	C○	D●	**20.**	A●	B○	C○	D○

Section II Q 21 + 22 (40 marks)

Q21 (a) $I = PRN$

$I = 5600$ ✓

$P + I = 45600$ ✓

1 mark
1 mark

(b) $V_0(1-r)^n = 85000(0.8175)^5$ ✓ 1 mark correct substitution.

$= \$3103.54$ ✓

(c) $P(\text{at least 1 yellow}) \neq P(\text{not both blue})$

$1 - P(\text{both blue}) = 1 - \frac{4}{10} \times \frac{3}{9}$ ✓ Or similar working.

$= \frac{13}{15}$ ✓

(d) Median = 0.9 so box 3

Mode = 0.6 so boxes 1 and 2 ✓

Range = 1.5 so 2.1 − 0.6 ✓

2 marks for median, mode + range.

$\therefore$ Mean $= 1.2 \times 5 - (0.6 + 0.6 + 0.9 + 2.1)$

$= 1.8$ kg. ✓

(e) (i) z-score of 1 = 51 and z-score of 2 = 54 ✓

$\therefore$ z-score 1.5 = 52.5 ✓

(ii) As a score of 56 is more than 3 SDs from mean only 2.5% of population are above 54. 2.5% of 40 is 1 so James is that 1 person. ✓

(f) $2.4 \times 0.9 + \pi \times 0.45^2 + \pi \times 0.45 \times 2.4$ ✓

$= 2.16 + 0.63617... + 3.3929$ ✓

$= 6.189$ m ✓

$\doteq 6.2 m^2$

Subtract 1 per error.

* Do not penalise rounding.

Section II Q 21 (cont'd)

(c) (i) $B = 0.01 \times 70^2$

$= 49m$ ✓

$R = 0.7 \times 70$ ✓

$= 49m$

(ii) $49 + 49 = 98m$ ✓ (or whatever answers to (i) were)

(iii) $0.01V^2 = 25$

$V^2 = \frac{25}{0.01}$

$V = \sqrt{\frac{25}{0.01}}$ ✓

$V = 50 km/h$ ✓

$SD = 0.7 \times 50 + 25$ ✓

$= 60m$

Question 22

(a) $1.6 \div 29 = 0.0055$ ✓

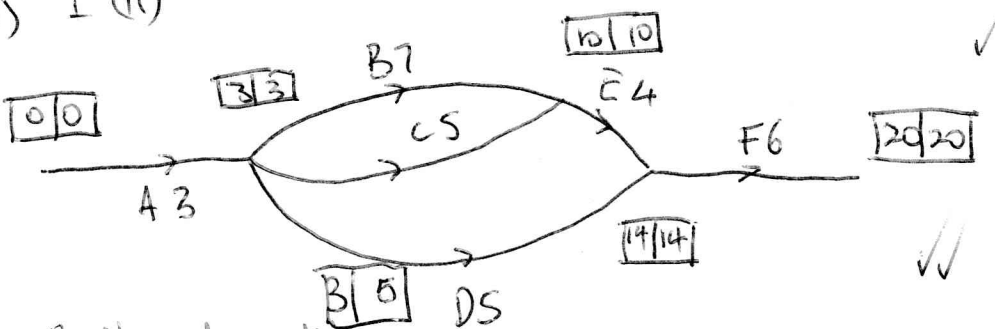
$18.25\% \div 365 = 0.0005$ ✓

$\therefore 0.55 \div 0.05\% = \$110$ ✓

If no rounding of working $= \$110.34$

(b) Seperate diagram page

(c) (i) + (ii)



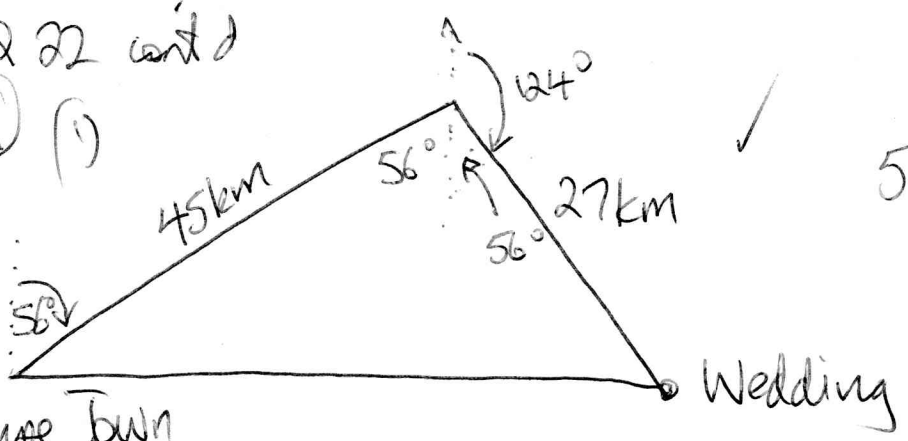
2 for diagram
✓✓ Subtract one per error.
✓✓ 2 for EST/LST

(ii) Critical path ABEF

(iii) Minimum completion is 20 hours.

Q 22 cont'd

(d) (i)



✓ $56 + 56 = 112°$ ✓

Use angle sum, alternate angles, supplementary or otherwise to confirm angle = 122°.

(ii) $x^2 = 45^2 + 27^2 - 2(45)(27)\cos 112°$ ✓

$x \doteq 60.5\text{km}$ ✓ (Follow through if using a different angle from Q(i))

(iii) $\frac{\sin C}{27} = \frac{\sin 112}{60.5}$ ✓

$C = 24.4°$

$\therefore$ Bearing $= 56 + 24.4$

$= 80°$ ✓

(e) (i) ADIKLM = 50 days ✓

(ii) 23 days (28 − 5) ✓

(iii) 9 days as any more changes the critical path without reducing time ✓

Section III Q 23 + 24 (40 marks)

Q23 (a) (i) Strong positive trend, particularly in last 3 years. ✓✓

(ii) Answer on diagram. ✓✓

(iii) $\hat{x} = -361 + 0.183 \times 2025$

$= 9.575$ cars ✓

(b) $\frac{31-34}{3} = -1$ ∴ freestyle is better as further below the average.

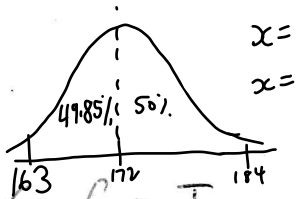
$\frac{38-42}{5} = -0.8$ ✓

(c) (i) $> 181 = > 3$SDs from mean so 0.15% ✓

(ii) $x = 184$ $z = 4$

$x = 163$ $z = -3$

$50 + 49.85 = 99.85\%$



(d) (i) $C = I$

$20N = 60000 + 5N$

$15N = 60000$

$N = 4000$ ✓

(ii) FROM GRAPH:

$I = 120000$

$C = 90000$ ✓

PROFIT $= 120000 - 90000$

$= \$30000$ ✓

OR ALGEBRAICALLY:

PROFIT $= I - C$

$= 20N - (60000 + 5N)$ ✓

$= 20N - 60000 - 5N$ ✓

PROFIT $= 15N - 60000$

(e) (ii) $\frac{1.5}{2}(2.5 + 2.5 + 1.5) + \frac{1.5}{2}(4 + 2.5) = 9.75 m^2$ ✓✓

(i) $3 \times 2.5 + \frac{1.5^2 \times \pi}{2} = 11.03429 m^2$

$= 11 m^2$ ✓✓

(iii) $11 - 9.75 = 1.25$

$\frac{1.25}{11} \times 100 = 11.4\%$ under as it only estimates the area. ✓

Question 24

(a) (i) Separate answer sheet. ✓ + (ii) ✓✓

(iii) $\frac{RT}{\sin 36} = \frac{55}{\sin 122}$

$RT = \frac{55 \sin 36}{\sin 122}$ ✓

$RT = 38m$ ✓

(iv) $\triangle PQT \Rightarrow \sin 68 = \frac{PQ}{55}$ ✓✓

$PQ = 55 \sin 68$

$PQ = 51m$

$\therefore 51 - 38 = 13m$ (or answer from (ii))

(b) (i) 7 possible paths ✓

(ii) Minimum cut = 200(AC) + 300(DC) + 300(FP) ✓

= 800 vehicles

(iii) Minimum cut = maximum flow

$\therefore$ = 800 ✓

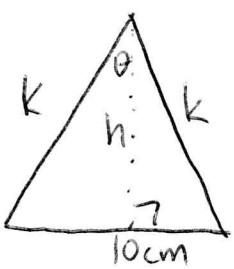
(iv) Increases maximum flow by 100 to 900 per hour as SEP = 400, SACP = 200 and SADCP = 300. ✓

(c) (i) Turning point = (2, −4) ✓

(ii) (−1, 0) and (3, 0) ✓

(iii) $x = 2$ ✓

(d) Isosceles so use Pythagoras to find height ✓



$h^2 = k^2 - 5^2$ ✓

$h = k^2 - 25$ ✓

$A = \frac{1}{2}bh$ and $\frac{1}{2}ab\sin C$

$\therefore \frac{1}{2}k^2 - 25 = \frac{1}{2}k^2 \sin\theta$ ✓

$\therefore \sin\theta = \frac{10\sqrt{k^2-25}}{k^2}$

(ii) $A = 60\ cm^2$

$5 \times 12 = 60$

$\therefore h = 12$ ✓

$k^2 - 25 = 12$

$k^2 = 169$

$k = 13$ ✓

$A = \frac{1}{2} ab \sin\theta$

$60 = \frac{1}{2} 13 \times 13 \sin\theta$

$\sin\theta = \frac{60}{84.5}$ ✓

$\theta = 45°$ ✓

* Find marks for any progress in both these questions.

Newington College

Discover what's possible

Student Number_____

Student Name_____

Class Teacher (Please circle): RTR GMA KST PWL JIO

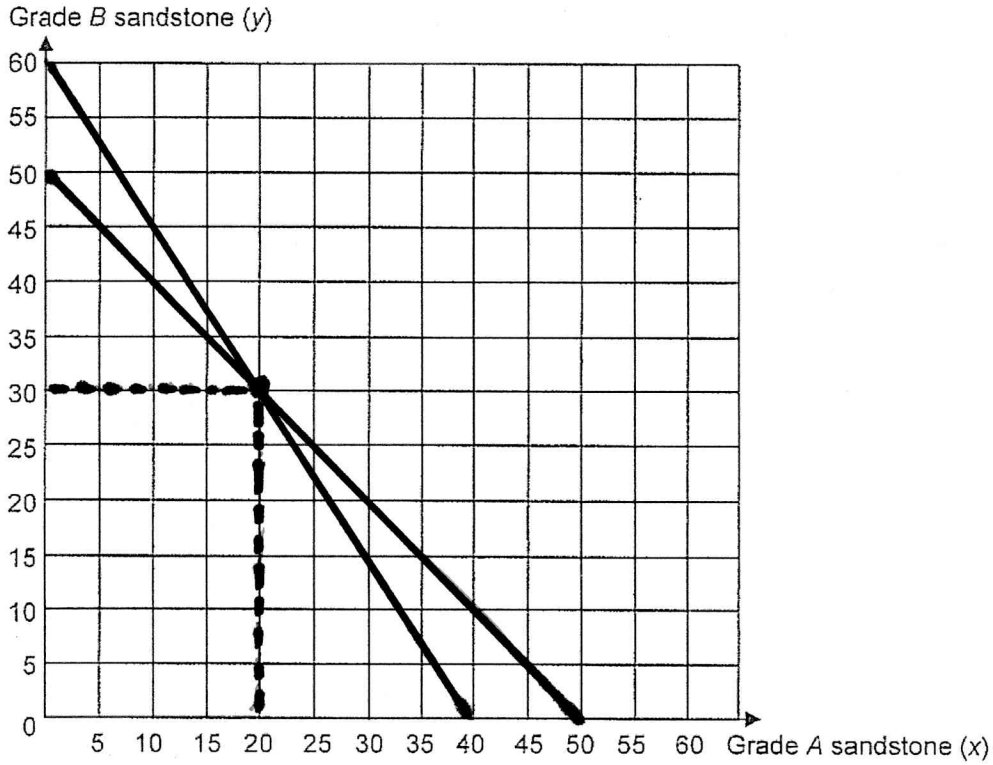
Section II Q22 b

Complete all of your working out and graph your solution using the axis below:

$x+y=50$

$60x+40y=2400$

Intersection is (20,30) so 20 grade A blocks and 30 grade B blocks are sold.



Newington College

Discover what's possible

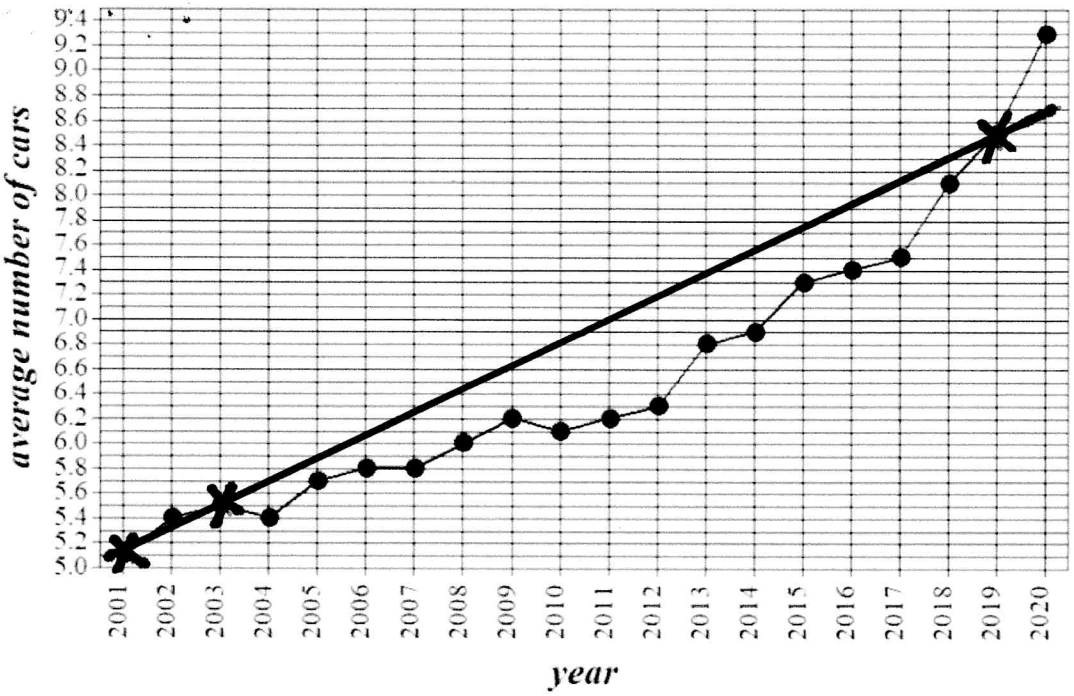
Student Number_____

Student Name_____

Class Teacher (Please circle): RTR GMA KST PWL JIO

Section III Q23 a

year	*average number of cars*
2001	5.1
2002	5.4
2003	5.5
2004	5.4
2005	5.7
2006	5.8
2007	5.8
2008	6.0
2009	6.2
2010	6.1
2011	6.2
2012	6.3
2013	6.8
2014	6.9
2015	7.3
2016	7.4
2017	7.5
2018	8.1
2019	8.5
2020	9.3



2 marks if all 3 points + line

Subtract - 1 if 2

No marks if line not accurate

Newington College

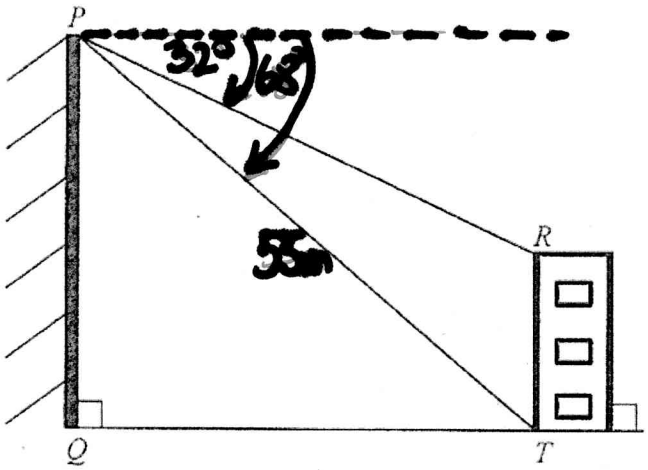
Discover what's possible

Student Number_____

Student Name_____

Class Teacher (Please circle): RTR GMA KST PWL JIO

Section III Q24 a



ΔPTQ $\angle PTQ = 68°$ (alternate $\angle EPT$)

ΔPRT $\angle PTR = 90 - 68$

$= 22°$

$\angle RPT = 68 - 32$

$= 36°$

$\therefore \angle PRT = 180 - (36 + 22)$

$= 122°$