Killara High School
MATHEMATICS DEPARTMENT

Student Number

2026 **Year 12 Examination**

Mathematics Standard 2

Task 4 – Trial Examination

Date: As per Trial Timetable

General Instructions

- Reading time – 10 minutes
- Working time – 2 hours and 30 minutes
- Write using blue or black pen
- Calculators approved by NESA may be used
- A reference sheet is provided
- Show relevant mathematical reasoning and/or calculations
- No white-out may be used

Total Marks: 100

Section I - 15 marks

- Allow about 25 minutes for this section

Section II - 85 marks

- Allow about 2 hours and 5 minutes for this section

This question paper must not be removed from the examination room.

This assessment task constitutes 30% of the course.

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Section I

15 marks
Attempt Questions 1–15
Allow about 25 minutes for this section.

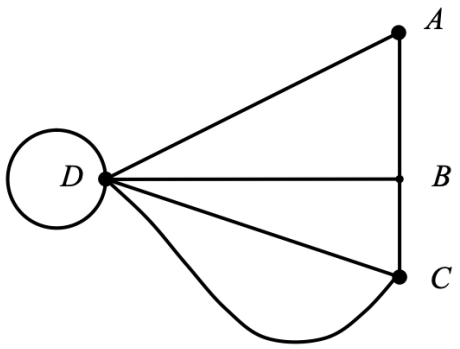
Use the multiple-choice sheet for Question 1–15.

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1 The population standard deviation of 30, 20, 28, 24, 11, and 17 is

A. 7.12
B. 8.10
C. 9.11
D. None

2 In the following network, what is the number of edges?



A. 5
B. 6
C. 7
D. 8

3 In a normal distribution, what is the approximate percentage of scores with a z-score less than 1?

A. 50%
B. 68%
C. 84%
D. 97.5%

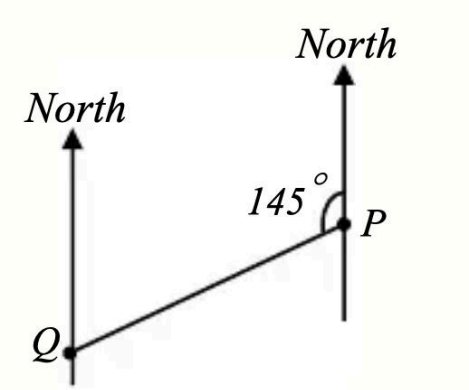
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4 A part-time retail assistant earns $942.50 per week. Their holiday loading is 17.5% of their normal weekly pay, and they take 3 weeks of annual leave.

What is their total holiday pay for this leave period?

A. 3770.00
B. 3322.31
C. 494.81
D. 2827.50

5 The following diagram shows the position of points P and Q. Find the compass bearing of point P from point Q.



A. N35°E
B. N55°W
C. S55°E
D. S35°E

6 A bag contains 5 red marbles, 3 green marbles, and 2 blue marbles. If a marble is picked at random 50 times and the relative frequency of picking a red marble is found to be 0.6, how many times was a red marble picked?

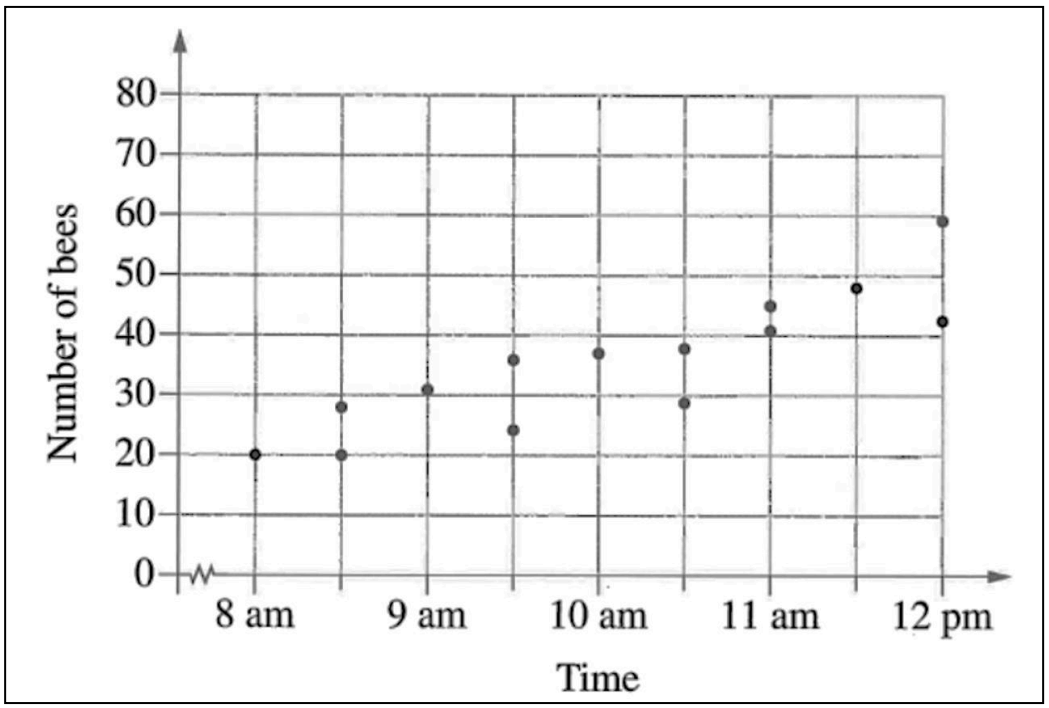
A. 20
B. 25
C. 30
D. 35

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7 Over the course of 14 days, researchers tracked and counted how many bees exited a beehive at various times each morning (from 8 am to 12 pm).

The scatter plot below displays the collected data.

What is the approximate value of the correlation coefficient for this dataset?



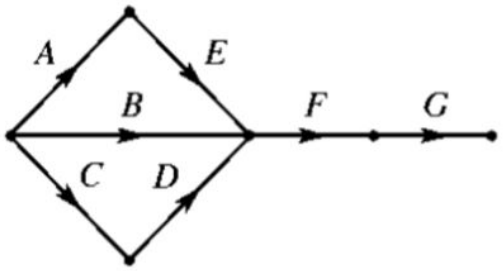
A. -0.8
B. -0.2
C. 0.2
D. 0.8

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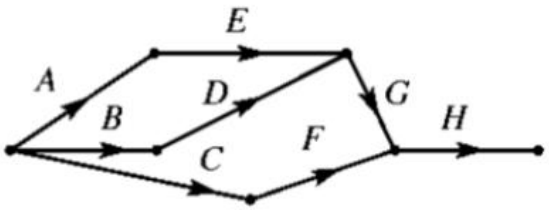
8 Which of the network diagrams represents the activity chart shown?

Activity	**Immediate predecessors**
A	-
B	A
C	A
D	C
E	B
F	D, E
G	F
H	G

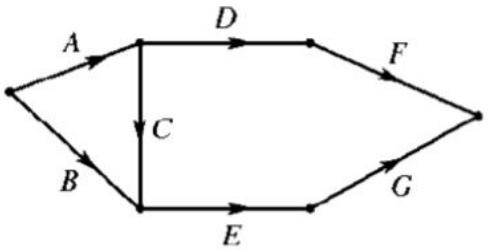
A.



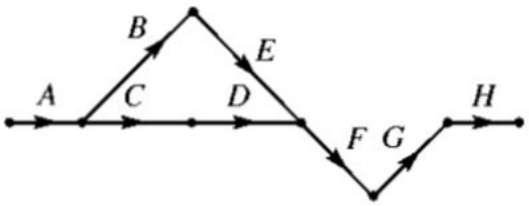
B.



C.

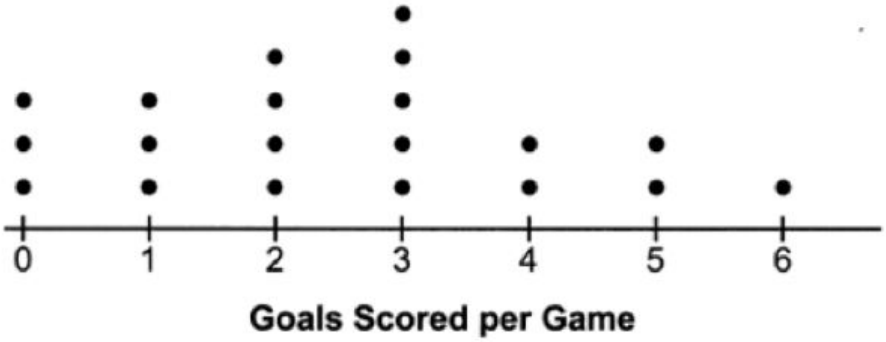


D.



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9 The dot plot below shows the number of goals Jessica scored in each lacrosse game last season.



Which statement about the dot plot is correct?

A. mean > mode
B. mode = median
C. mean = median
D. median > mean

10 Darlington Taxi's calculate the cost of a journey using the formula $C = \frac{m+450}{5}$ where m is the number of miles travelled and C is the cost.

Rearrange the formula to make the number of miles travelled the subject.

A. $m = \frac{C + 450}{5}$
B. $m = 5C - 450$
C. $m = \frac{C - 450}{5}$
D. $m = 5C + 450$

11 Considering back to the dividend yield formula, which of the following would be a reason for a stock's dividend yield to decrease (assuming all other variables remained constant)?

A. Increase in share price
B. Decrease in share price
C. Increase in annual dividend
D. None of above

Do NOT write in this area.

12 A car travels 560 km on 42 L of fuel. What is the fuel consumption of the car?

A. 5.8 L/100 km
B. 6.3 L/100 km
C. 7.5 L/100 km
D. 8.0 L/100 km

13 The following spreadsheet can be used to calculate the annual cost of running a car.

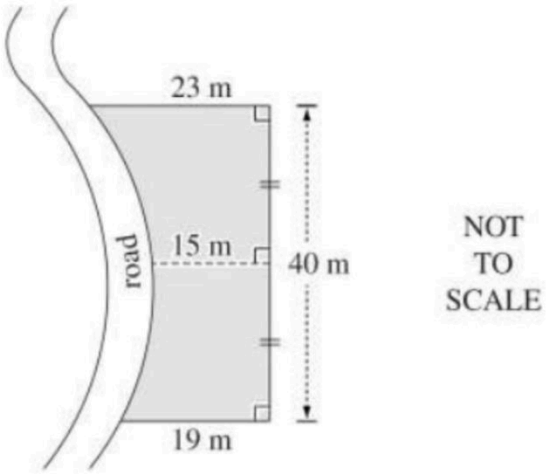
	A	B
1		**Annual Costs**
2	**Fuel**	X
3	**Tyres**	$213.00
4	**Green Slip**	$540.00
5	**Other Insurance**	$675.00
6	**Fines and Tolls**	$180.00
7		
8	**Total**	$4,179.93
9		
10		

What is the value of X, the total annual fuel cost?

A. $2571.93
B. $1608.00
C. $5787.93
D. $2784.93

Do NOT write in this area.

14 The shaded region represents a block of land bounded on one side by a road.



What is the approximate area of the block of land, using the Trapezoidal rule.

A. $720\ m^2$
B. $880\ m^2$
C. $1140\ m^2$
D. $1440\ m^2$

15 The length and width of a rectangle are measured to be 8 cm and 5 cm respectively, to the nearest centimetre.

What are the lower and upper bounds for the area of the rectangle?

A. $28\ cm^2\ and\ 54\ cm^2$
B. $36\ cm^2\ and\ 42\ cm^2$
C. $38.25\ cm^2\ and\ 41.25\ cm^2$
D. $33.75\ cm^2\ and\ 46.75\ cm^2$

End of Section I

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Do NOT write in this area.

Killara High School
MATHEMATICS DEPARTMENT

Student Number

2026 **Year 12 Trial Examination**

Mathematics Standard 2

Section II Answer Booklet

07/08/26

Section II

85 Marks
Attempt Questions 16–37
Allow about 2 hours and 5 minutes for this section

Instructions

- Answer the questions in the spaces provided. These spaces provide guidance for the expected length of response.
- Your responses should include relevant mathematical reasoning and/or calculations.
- Extra writing space is provided on page 35 and 36.
  If you use this space, clearly indicate which question you are answering.

Please turn over

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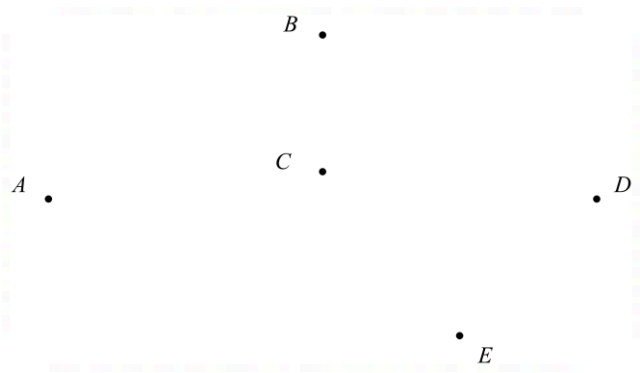
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Question 16 (4 marks)

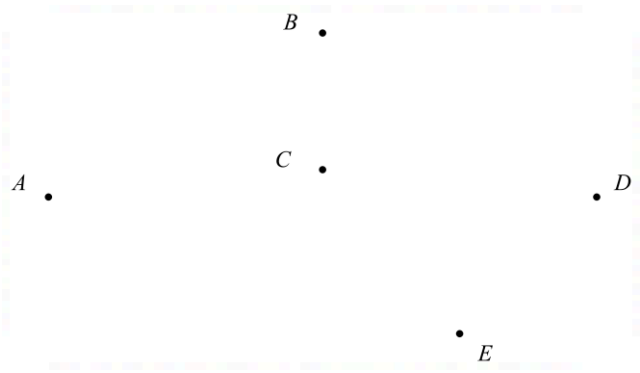
The table below shows the lengths, in metres, of pathways connecting five activity centres in a training facility.

	A	*B*	*C*	*D*	*E*
A	–	180			310
B	180	–	100	150	
C		100	–	220	200
D		150	220	–	350
E	310		200	350	–

(a) Draw a weighted graph to represent the training facility. **2**



(b) Draw a weighted minimum spanning tree for the training facility. **2**



Do NOT write in this area.

Question 17 (3 marks)

A new model washing machine has an energy consumption of 175 kWh per year, and uses an average of 9 900 L of water per year. **3**

Energy is charged at $0.42/kWh and the cost of water supply is $2.35/kL.

What is the annual running cost of the washing machine?

Question 18 (2 marks)

Interest on a particular credit card is charged at 0.052% compound interest per day, on the outstanding balances. **2**

How much interest will be charged on $480, outstanding on the credit card for 21 days?

Do NOT write in this area.

Question 19 (2 marks)

The following table shows the number of standard drinks for certain common beverages: **2**

Number of standard drinks					
wine		**beer**		**vodka**	
small glass	large glass	small glass	large glass	small shot	large shot
0.8	1.2	0.6	1	1	1.8

Sam, who weighs 75kg, goes to a party and drinks two small glasses of beer, a large glass of wine and two small shots of vodka between 8.30pm and 1am. Sam has a full driving licence.

The legal limit for Blood Alcohol Content in NSW on a full driving licence is under 0.05.

The formula for blood alcohol content is shown below:

$$BAC_{\text{Male}} = \frac{(10N - 7.5H)}{6.8M}$$

where N is the number of standard drinks consumed,

H is the number of hours drinking,

M is the person's mass in kilograms.

Sam would like to drive home from the party at 1am. Determine if he is legally safe to drive home. Justify your answer with appropriate calculations.

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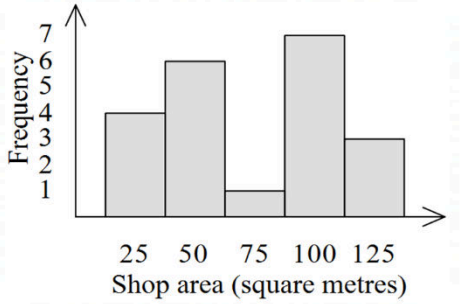
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Question 20 (3 marks)

The sizes, in square metres, of the 20 shops in a small shopping centre are summarized in the following histogram.



(a) From the histogram, describe in words the distribution of shop areas. **1**

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(b) The five-number summary of the shop area is given in the following table. **2**

Min	Q_L	Median	Q_U	Max
32	42	70	101	115

Determine whether there are any outliers in the data set.

Support your answer with relevant calculations.

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Question 21 (3 marks)

The table below shows that tax rates for various levels of income. **3**

Taxable Income ($)	**Tax payable**
$0 to $18,200	Nil
$18,201 to $37,000	19c for each $1 over $18,200
$37,001 to $90,000	$3,572 plus 32.5c for each $1 over $37,000
$90,001 to $180,000	$20,797 plus 37c for each $1 over $90,000
$180,001 and over	$54,097 plus 45c for each $1 over $180,000

The Medicare levy is calculated as 2% of a person's taxable income.

Gary paid $19 822 in tax(excluding the Medicare levy) for the past financial year. How much was Gary required to pay for the Medicare levy?

Do NOT write in this area.

Question 22 (4 marks)

Jelena borrows \$24 000 through a reducing balance loan.

Interest is calculated monthly (with each month considered as $\frac{1}{12}$ of a year).

Repayments of \$800.00 are deducted each month after the interest is added.

Jelena uses the spreadsheet below, to show the progress of the loan.

	A	B	C	D	E
1	*N*	*P*	*I*	*P* + *I*	*P* + *I* - *R*
2	1	\$24,000.00	\$160.00	\$24,160.00	\$23,360.00
3	2	\$23,360.00	\$155.73	\$23,515.73	\$22,715.73
4	3	\$22,715.73	\$151.44	\$22,867.17	\$22,067.17
5	4	\$22,067.17	\$147.11	\$22,214.29	\$21,414.29
6	5				***X***

(a) What is the annual percentage interest rate? **2**

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(b) Complete the next row to find the amount ***X***, which would appear in cell E6. **2**

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Question 23 (2 marks)

A rock is measured to be 8.0 cm in length, correct to one decimal place. **2**
What is the percentage error in this measurement?

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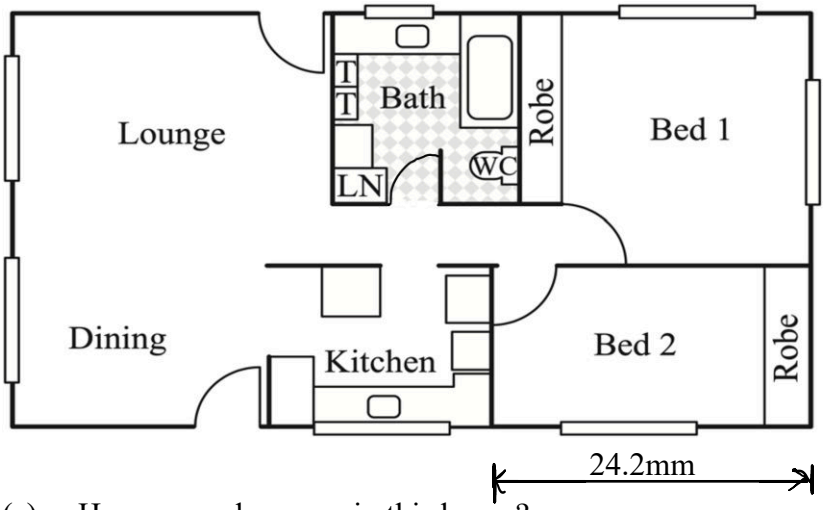
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Question 24 (2 marks)

The floor plan of a house is shown below. Scale is 1:180.



(a) How many doors are in this house? **1**

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(b) What is the length of bedroom 2? Answer in metres correct to one decimal place. **1**

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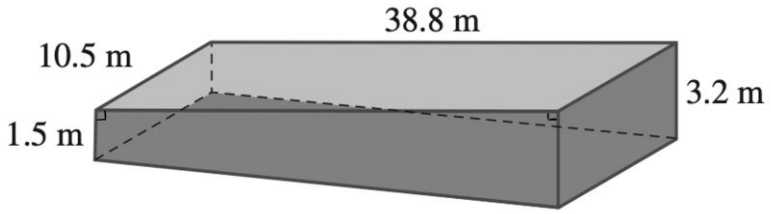
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Question 25 (3 marks)

A swimming pool is the shape of a trapezoidal prism as shown below.



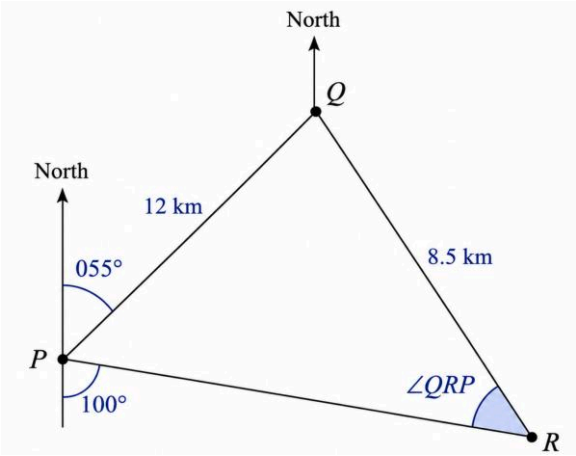
(a) Find the volume of the pool in cubic metres. **2**

(b) Find the capacity of the pool in megalitres correct to 4 significant figures. **1**

Do NOT write in this area.

Question 26 (5 marks)

A yacht leaves point P and sails 12 km on a bearing of 055°to point Q.
Another yacht leaves point P and sails on a Compass bearing of 80° to point R.
The distance between $Q$and $R$is 8.5 km.



NOT TO SCALE

(a) Show that the obtuse angle $\angle QRP$ is 143°22' to the nearest minute. **3**

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(b) Find the bearing of point Q from point R to the nearest degree. **2**

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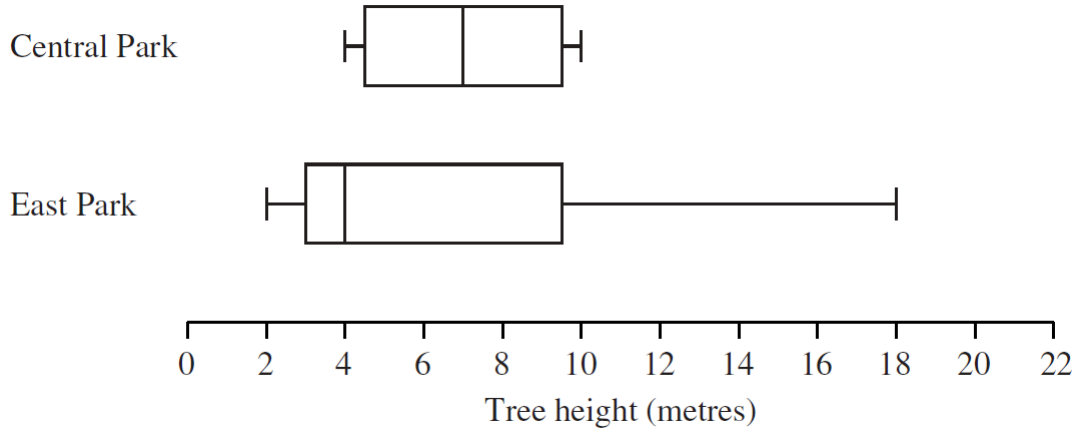
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Question 27 (7 marks)

Andy and her biology class went to two large city parks and measured the heights of the trees in metres.
In Central Park there were 25 trees. In East Park there were 35 trees. The data sets were displayed in two box-and-whisker plots.



(a) In which park is the tallest tree, and how high is it? **2**

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(b) What is the median height of trees in Central Park? **1**

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(c) Once a tree is 4.5m in height or taller, it is illegal to cut it down without council approval. Which park has more trees above 4.5m, justifying your answer. **2**

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(d) Data collectors missed a 16m tree in East Park. How could this impact Quartile 3 being as specific as possible. **2**

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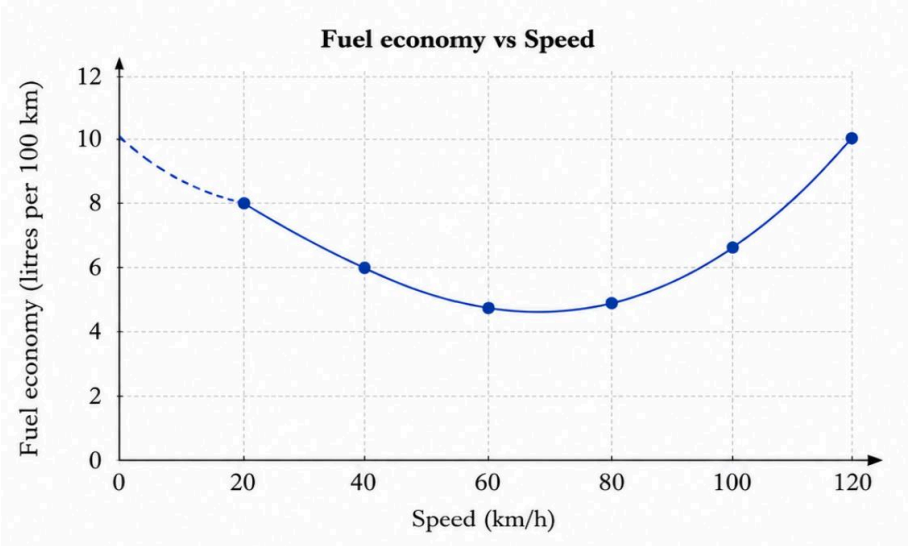
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Question 28 (3 marks)

The data is approximately modelled by a quadratic function.
This graph shows approximately how the fuel economy (litres per 100 km) changes with speed (km/h).



(a) Do values of $x < 0$ make sense in this context and why? **2**

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(b) At what speed is the fuel economy optimal (lowest)? **1**

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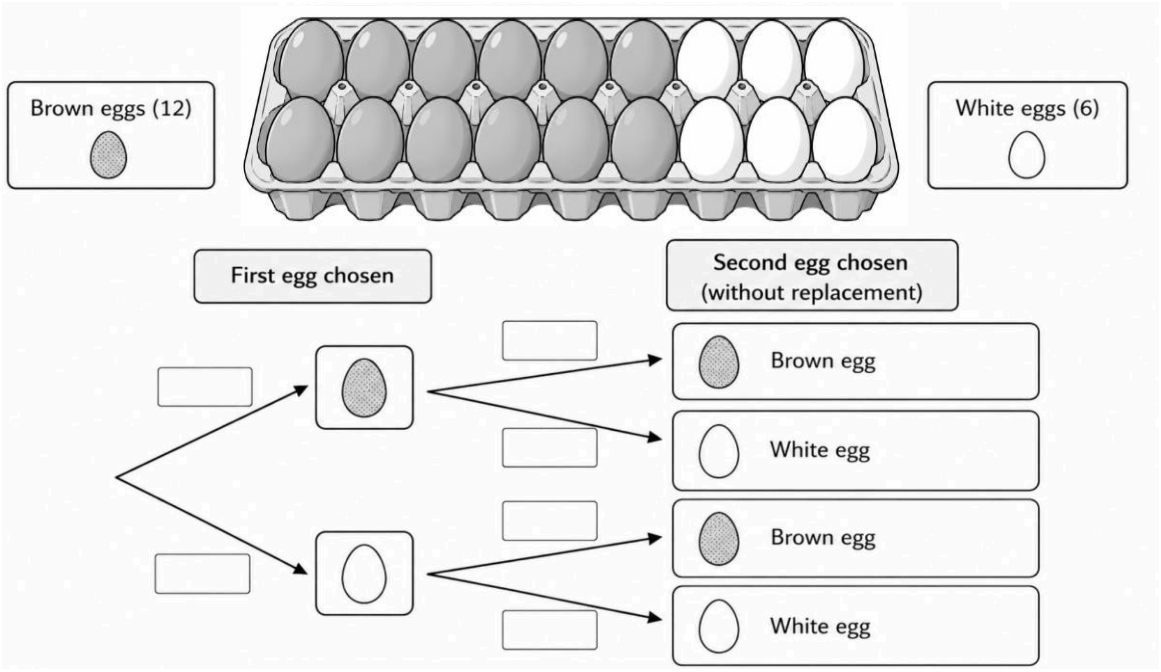
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Question 29 (6 marks)

A carton contains 18 eggs, made up of 12 brown eggs and 6 white eggs.

Two eggs are selected at random without replacement.



(a) Complete the unfinished probability tree above. **2**

(b) Find the probability that both eggs chosen are brown. **2**

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(c) Find the probability that at least one of the eggs chosen is brown. **2**

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Question 30 (3 marks)

Twenty years ago, Jordan deposited a single lump sum into a new bank account earning 3.6% interest per annum, compounding monthly. **3**

Present value interest factors for an annuity of $1 for various interest rates ((r)) and numbers of periods ((n)) are given in the table.

Rate (r) / *Period (n)*	*0.001*	*0.002*	*0.003*	*0.004*
60	58.207	56.487	54.835	53.249
120	113.026	106.592	100.649	95.156
180	164.655	151.036	138.927	128.137
240	213.278	190.460	170.908	154.093
300	259.071	225.430	197.627	174.521

Jordan made the following withdrawals from this account:

- $1500 at the end of each month for the first 10 years, beginning at the end of the first month.
- $900 at the end of each month for the next 10 years, beginning at the end of the 121st month after the account was opened.

Calculate the minimum lump sum that Jordan could have deposited in order to make these withdrawals.

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Question 31 (3 marks)

Sydney is 10 hours ahead of Coordinated Universal Time (UTC +10) and Los Angeles is 7 hours behind Coordinated Universal Time (UTC −7). **3**

Tony travels from Sydney to Los Angeles. His plane leaves Sydney at 8:20 pm on Wednesday local time and flies non-stop to Los Angeles.

The flight takes 14 hours and 15 minutes.

What time and day is it in Los Angeles when the plane lands?

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Question 32 (2 marks)

An electrician purchases a set of tools for $5,000. The tools depreciate using the declining balance method at a rate of 30% per year. Calculate the total amount that the tools depreciate over the first 3 years. **2**

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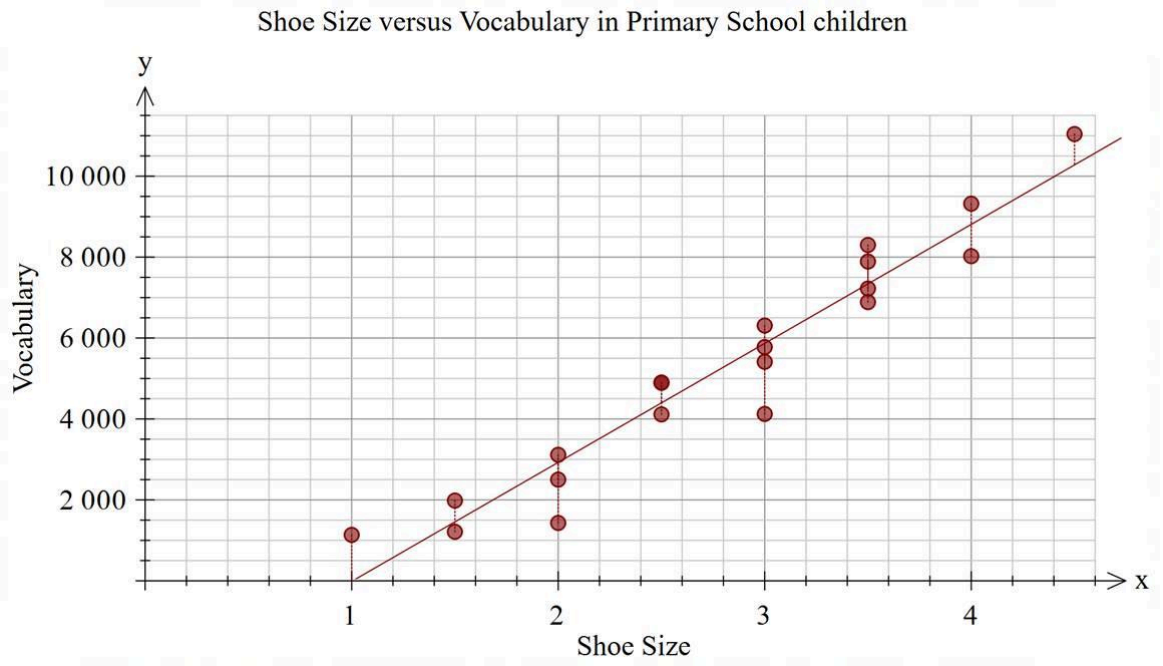
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Question 33 (8 marks)

The following graph shows the relationship between the shoe size of primary school students and the size of their vocabulary.



(a) Describe the strength and direction of the relationship. **1**

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(b) The line of best fit is given by the equation **2**

$y = 2977x - 2904$

Explain the meaning of the gradient and y-intercept in context.

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(c) Using the equation of the line of best fit calculate the shoe size of an elementary student with a vocabulary of 41751 words and comment on the reliability of your results. **2**

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(d) A new elementary school student was added to the data set with a shoe size of 1.0 and a vocabulary of 4000 words. Explain the impact this would have on the gradient, y-intercept and correlation coefficient of the line of best fit. (You are not required to recalculate the gradient, y-intercept or correlation coefficient.) **3**

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Question 34 (5 marks)

A family borrows $700,000 with a fixed interest of 6% p.a. compounded monthly for 20 years.

Monthly loan repayments (in dollars) per $1000 borrowed

Interest rate % pa	*5 years*	*10 years*	*15 years*	*20 years*
5%	18.87	10.61	7.91	6.60
6%	19.33	11.10	8.44	7.16
7%	19.80	11.61	8.99	7.75
8%	20.28	12.13	9.56	8.36
9%	20.76	12.67	10.14	9.00

(a) How much will they have paid over the life of loan? **2**

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(b) The family realise they can pay up to an additional $900/month. Using the table above, how much earlier could they pay off the loan? **2**

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(c) Calculate the total savings over the life of the loan if the extra amount per month was paid? **1**

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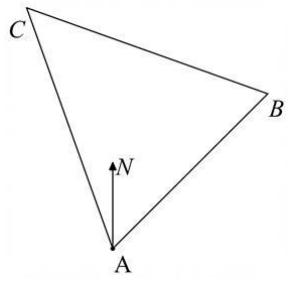
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Question 35 (5 marks)

A triangular paddock is to be formed that has an area of 600m^2. AB is 40m long. From the most southerly corner, the bearing of the other two corners are 355°T and 025°T respectively.



(a) Show that one of the other sides is 60m. **2**

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(b) Hence, find the perimeter of the paddock (To the nearest m). **2**

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(c) Calculate the cost of fencing the paddock, given it costs $5.30 for a 10m roll of wire. **1**

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Question 36 (4 marks)

For the following questions use the Z-Score table below.

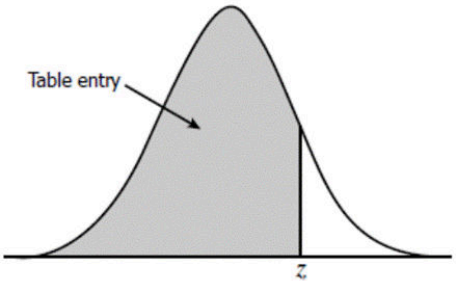


Table entry for z is the area under the standard normal curve to the left of z.

z	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
0.0	.5000	.5040	.5080	.5120	.5160	.5199	.5239	.5279	.5319	.5359
0.1	.5398	.5438	.5478	.5517	.5557	.5596	.5636	.5675	.5714	.5753
0.2	.5793	.5832	.5871	.5910	.5948	.5987	.6026	.6064	.6103	.6141
0.3	.6179	.6217	.6255	.6293	.6331	.6368	.6406	.6443	.6480	.6517
0.4	.6554	.6591	.6628	.6664	.6700	.6736	.6772	.6808	.6844	.6879
0.5	.6915	.6950	.6985	.7019	.7054	.7088	.7123	.7157	.7190	.7224
0.6	.7257	.7291	.7324	.7357	.7389	.7422	.7454	.7486	.7517	.7549
0.7	.7580	.7611	.7642	.7673	.7704	.7734	.7764	.7794	.7823	.7852
0.8	.7881	.7910	.7939	.7967	.7995	.8023	.8051	.8078	.8106	.8133
0.9	.8159	.8186	.8212	.8238	.8264	.8289	.8315	.8340	.8365	.8389
1.0	.8413	.8438	.8461	.8485	.8508	.8531	.8554	.8577	.8599	.8621
1.1	.8643	.8665	.8686	.8708	.8729	.8749	.8770	.8790	.8810	.8830
1.2	.8849	.8869	.8888	.8907	.8925	.8944	.8962	.8980	.8997	.9015
1.3	.9032	.9049	.9066	.9082	.9099	.9115	.9131	.9147	.9162	.9177
1.4	.9192	.9207	.9222	.9236	.9251	.9265	.9279	.9292	.9306	.9319
1.5	.9332	.9345	.9357	.9370	.9382	.9394	.9406	.9418	.9429	.9441
1.6	.9452	.9463	.9474	.9484	.9495	.9505	.9515	.9525	.9535	.9545
1.7	.9554	.9564	.9573	.9582	.9591	.9599	.9608	.9616	.9625	.9633
1.8	.9641	.9649	.9656	.9664	.9671	.9678	.9686	.9693	.9699	.9706
1.9	.9713	.9719	.9726	.9732	.9738	.9744	.9750	.9756	.9761	.9767
2.0	.9772	.9778	.9783	.9788	.9793	.9798	.9803	.9808	.9812	.9817
2.1	.9821	.9826	.9830	.9834	.9838	.9842	.9846	.9850	.9854	.9857
2.2	.9861	.9864	.9868	.9871	.9875	.9878	.9881	.9884	.9887	.9890
2.3	.9893	.9896	.9898	.9901	.9904	.9906	.9909	.9911	.9913	.9916
2.4	.9918	.9920	.9922	.9925	.9927	.9929	.9931	.9932	.9934	.9936
2.5	.9938	.9940	.9941	.9943	.9945	.9946	.9948	.9949	.9951	.9952
2.6	.9953	.9955	.9956	.9957	.9959	.9960	.9961	.9962	.9963	.9964
2.7	.9965	.9966	.9967	.9968	.9969	.9970	.9971	.9972	.9973	.9974
2.8	.9974	.9975	.9976	.9977	.9977	.9978	.9979	.9979	.9980	.9981
2.9	.9981	.9982	.9982	.9983	.9984	.9984	.9985	.9985	.9986	.9986
3.0	.9987	.9987	.9987	.9988	.9988	.9989	.9989	.9989	.9990	.9990
3.1	.9990	.9991	.9991	.9991	.9992	.9992	.9992	.9992	.9993	.9993
3.2	.9993	.9993	.9994	.9994	.9994	.9994	.9994	.9995	.9995	.9995
3.3	.9995	.9995	.9995	.9996	.9996	.9996	.9996	.9996	.9996	.9997
3.4	.9997	.9997	.9997	.9997	.9997	.9997	.9997	.9997	.9997	.9998

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(a) The run time of a particular type of battery powered power tools are normally distributed with a mean of 1 hr 40 min and a standard deviation of 7 minutes. If a hardware store sells 400 of these power tools how many would be expected to last more than 1 hr 30 min? **3**

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.....

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(b) Hence, find the number of power tools that would last between 1hr 30min and 1hr 40min. **1**

.....

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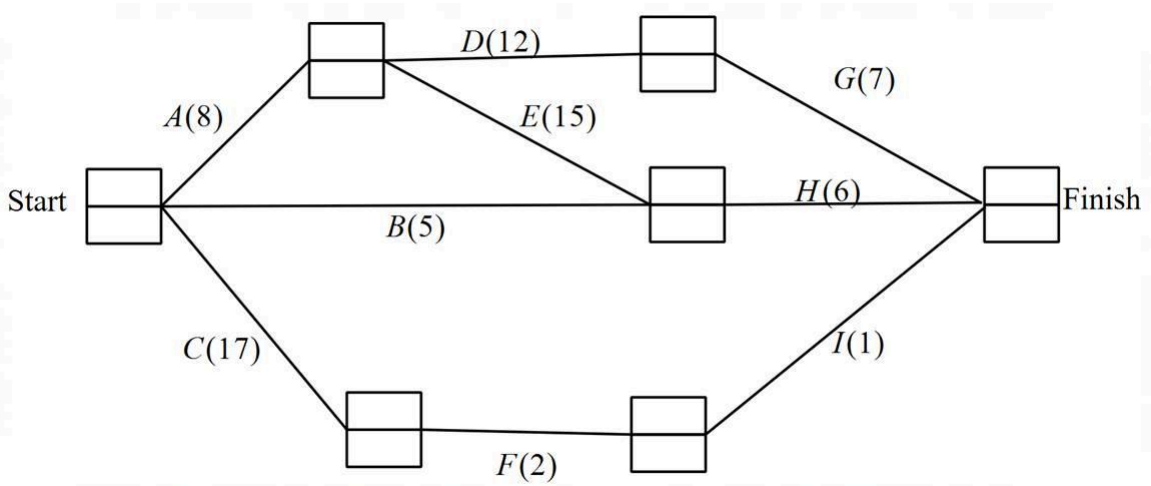
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Question 37 (6 marks)

A manufacturing plant has the following process for producing one of its most important products. With each of the processes A-I given their completion time(hours) in the network below.



(a) Complete a forward and backwards scan. **3**

(b) Name the critical path/s **1**

.....

.....

(c) A systems engineer has found a more efficient way to complete process E. Reducing its completion time by 7 hours. Explain the effect this would have on the minimum completion time, fully justifying your answer. **2**

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Section II extra writing space

If you use this space, clearly indicate which question you are answering.

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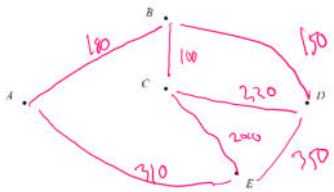
2026 Std Exam Solns others

Multiple Choice
Q1 D
Q2 C
Q3 C
Q4 B (3*942.5*1.175=3,322.3125)
Q5 A (*Answer: 180-145 = 35 Option A)*
Q6 C (0.6*50=30.0)
Q7 D
Q8 D
Q9 C (n=20 med=2.5, mode=3, mean 50/20=2.5 C)
Q10 B
Q11 A
Q12 C ($(\frac{42}{560} * 100 = = 7.5 \approx 7.5\ \mathrm{L/100\ km}$)
Q13 A
Q14 A
Q15 D (8.5*5.5=46.75 7.5*4.5=33.75)

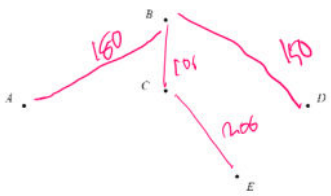
Short Answer

Question 16

a)



b)



Question	16 a and b
2 marks	Correct response with weights
1 mark	1 mistake with correct working and response
0 marks	2 or mores incorrect paths

Comment: Well done

Question 17
9900 L = 9.9 kL Annual energy cost: 0.42 × 175 = $73.5
Annual water cost: 2.35 × 9.9 = $23.265 73.5 + 23.265 = $96.765
= $96.77 (to 2 decimal places)

Question	17
3 marks	Correct response and rounding.
2 marks	Substantial progress: 2 correct processes.
1marks	Part progress:1 correct process.

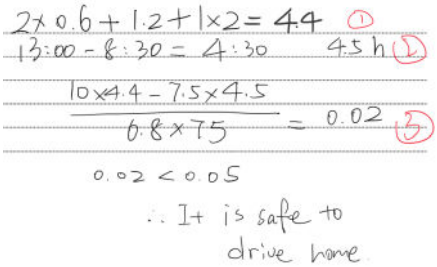
Comment: Well done

Question 18
A = 480*(1+0.00052)^21=485.26895
Interest = $5.27

Question	18
2 marks	Answer Question, justified
1 mark	1 mistake with correct working and resp

Comment: Some students didn't change 0.052% to 0.00052

Question 19



Question	19
2 marks	Answer Question, justified
1 mark	1 mistake with correct working and resp

Comment : Well done

Question 20
a) Bi-modal or Symmetrical
Comment: Only a few students described bimodal

Question	20

Question 20

a) Bi-modal or Symmetrical

Comment: Only a few students described bimodal

Question	20
1 mark	Correct answer with working

a) IQR = 101-42 = 59
1.5IQR= 59*1.5 = 88.5
No outlier as Q1-88.5 is < lowest number and Q3+88.5 > largest number

Comment: Mostly well done, only a few student didn't mention IQR at all.

Question	20
2 marks	Correct answer with working
1 mark	Part progress, IQR

Question 21

3572 + 0.325 × (Income − 37000) = 19822
0.325 × (Income − 3700) = 16250
Income − 37000 = 50000
Income = $87000
Medicare levy = 2% × $87000 = $1740.

Question	21
3 marks	Correct answer with working
2 marks	Part progress, works out taxable income
1 mark	Uses correct row of table

Question 22

a) (160/24000)*100*12=8

b) The next row is:
21,414.29 | 142.76 | 21,557.05 | 20,757.05

Question	22a
2 marks	Correct answer with working
1 mark	Part progress

Question	22a
2 marks	Correct answer with working
1 mark	Part progress, 2 numbers correct

Question 23

Precision = 0.1 cm,
Absolute error = $\frac{1}{2} \times 0.1 = 0.05$ cm
Percentage error = $\frac{0.05}{8.0} \times 100\% = 0.625\%$

Question	23
2 marks	Correct answer with working
1 mark	Part progress, eg Precision and progress on abs error

Question 24

a) 5 doors

b) 24.2*180=4356.0
4356mm/1000 = 4.356(m)=4.4m

Question	24a
1 mark	Correct answer

Question	24b
1 mark	Correct answer, ignore units

Question 25

a) $\frac{1}{2}$(1.5+3.2)×38.8×10.5=957.39 m3

b) 957.39Kl = 0.9574 (ML) correct to 4 s.f.

Question	25a
2 marks	Correct answer with working
1 mark	Part progress, eg volume but wrong trapezium error

Question 26

1.

$$\frac{\sin \angle QRP}{12} = \frac{\sin 25^\circ}{8.5}$$

$$\sin \angle QRP = \sin 25^\circ \times 12$$

Question	25a
1 mark	Correct answer with working

$\frac{\sin \angle QRP}{12} = \frac{\sin 25^\circ}{8.5}$

$\sin \angle QRP = \frac{\sin 25^\circ \times 12}{8.5}$

$\angle QRP \approx 36^\circ 38'$

$180 - 36^0 38' = 143^0 22'$

1. 180 - 55 - 100 = 25 degrees
   Angle at Q is $180 - 143^0 22' - 25 = 11^0 38'$
   $360-125-11^0 38' = 223^0 22'$
   $223^0 22' - 180 = 43^0 22'$

1 mark	Correct answer with working

Question	26a
3 marks	Correct answer with working to the nearest minute
2 marks	Substantial progress, incorrect rounding or correct work, wrong answer and correct rounding.
1 mark	Attempt sin rule with some correct numbers

Question	26b
2 marks	Correct answer with working
1 mark	Part progress, eg $11^0 38'$

Question	27a
2 marks	2 correct answers
1 mark	1 correct answer

Question 27

1. East Park, 18m
2. 7
3. Central Park 4.5 is Q1 ==> 3/4 of 25=25 18.75, at least 18.
   East Park, Q2 is 4m ==> 1/2 of 35 is 17.5, 17 trees above 4m
   Answer is Central Park

1.

Five Num Summar orig(in terms of ordered position)
Central: 1st,6th+7th/2, 13th, 19th+20th/2, 25th
East Pk: 1st, 9th, 18th, 27th, 35

With additional 16m tree = 36 trees
East Pk: 1st, 9th+10th/2, 18th+19th/2, 27th+28th/2 , 36th

Impact on Q3:
If 27th and 28th same then no change in Q3
If 27th and 28th different: Height increase of 27th+28th/2 - 27th

Question	27b
1 mark	1 correct answer

Question	27d
2 marks	2 scenarios correctly indicated.
1 mark	1 scenario indicated or part progress in terms of 27th/28th tree heights.

Question 28

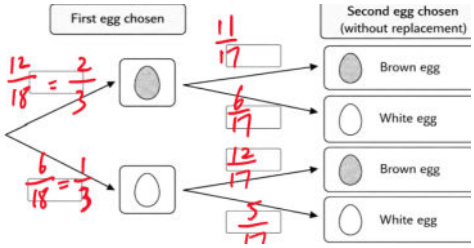
2. No as speed is >0

3. Accept between 63 and 70

Question	27d
2 marks	2 scenarios correctly indicated.
1 mark	1 scenario indicated or part progress in terms of 27th/28th tree heights.

Question 29

a)



b) $P(B,B) = \frac{2}{3} \times \frac{11}{17} = \frac{22}{51}$

c)

$= 1 - \frac{5}{51}$

$= \frac{46}{51}$

Question 30

3.6% / 12 = 0.003
Int Rate Factor for 10 yrs=120 periods, 0.3% per month
PV of $1500 1st 10yrs out.
A1 = 1500 * 100.649=150973.5

PV of $900 20yrs out - PV $900 10yrs out.
A2 = 900 * 100.649=90,584.1
A3 = 900 * 170.908=153,817.2
A3-A2 = 153817.2 - 90584.1 = 63233.1

Min lump sum = 150973.5 + 63233.1=214206.6 $214206.60

3.6%/12=0.003
PV of $900 for 20 years
A1=900x170.908
=$153817.20

PV of $600 for 10 years
A2 =600x100.649
=$60389.40

A3=A1+A2
=214206.60

Min lump sum =$214206.60

Question 31
10 − (−7) = 17
20:20 + 14 hr 15 min = 34:35
24:35 − 24 = 10:35 am Thurs
10:35 − 10 = 00:35 am
00:35 − 7 hr = 17:35 p.m Wed
5:35pm Wed

Question	31
3 marks	Correct answer from correct working.
2 marks	Further progress involving and demonstration 2 calculation
1 mark	Some minor progress like 10+7=17

Question 32
Dep 5000-5000*(1-0.3)^3 = 3285.0

Question	32
2 marks	Correct answer with working
1 mark	Found depreciation.

Question 33
a) Strong, positive
b) Shoe size increase by 1, vocab increase by 2977
c) 41751=2977x-2904
41751+2904=44655
44655=2977x
x=15
d)
Gradient is decreased, y-int is increased, r is decreased

Question	33a
2 marks	Correct answer from correct working.
Question	33b
2 marks	Correct answers for both gradient and y-in
1 mark	1 correct answer
Question	33c
2 marks	Correct answer
1 mark	Correct substitution
Question	33d
3 marks	All three correct answers
2 marks	2 correct
1 mark	1 correct

Question	34a

2 marks	Correct answer from correct working.
1 mark	Finding the correct Monthly loan factor from the table
Question	34b
2 marks	Find the correct number of years by looking up the new monthly interest factor
1 mark	By finding the new monthly repayment calculate the new Monthly interest factor
Question	34c
1 mark	Subtracting the two values found in a and b to give the savings.

Question 34

6% p.a. 20 years, Loan factor = 7.16

a) 7.16*700=5,012.0
5012*12*20=1202880 =$1,202,880

b) 5012+900=5912
5912/700=8.4457
At 6%, paid off in 15 yrs, ie, 5 years earlier

c) 5912*12*15=1064160
Saving is 1202880-1064160=$138 720

Question 35

a) $\angle CAB = 30°$
$A = \frac{1}{2}absinC$
$= \frac{1}{2}40 \times x \times \sin 30 = 600$
$10x = 600$
$x = 60$
OR
$A = \frac{1}{2}ab\sin C$
$= \frac{1}{2} \times 40 \times 60 \times \sin 30$
$= 600$

1 mark
Finding $\angle CAB = 30°$

1 mark
Using area formula to find/demonstrate that the other side is 60m

b) $BC = \sqrt{60^2 + 40^2 - 2 \times 60 \times 40 \times \cos 30}$
$= 32m(to\ the\ nearest\ metre)$
$P = 60 + 40 + 32$
$= 132m$

1 mark Using Cosine rule to find the unknown side

2marks Finding the unknown side to be 32 and finding the Perimeter

c) *Need 14 rolls*
$5.30 \times 14 = \$74.20$

1 mark correct answer using a whole number, needs to be correct from previous questions

Question 36

Mean is 100 min
Sd is 7 min

$z = (90 - 100)/7 = -1.4286 = -1.43$ (2dp)

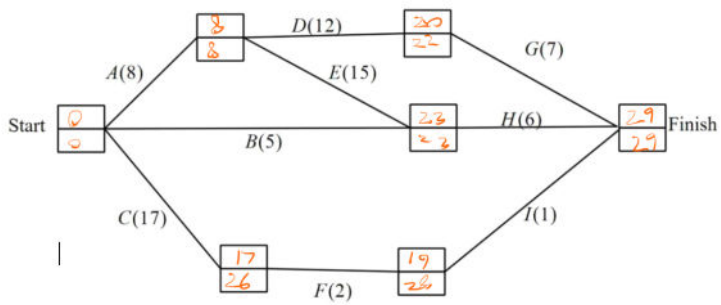
For $z = 1.43 \implies Area = 0.9236$

Tools lasting > 1hr:30min = 0.9236*400=369.44
Therefore 369 should last longer than 1hr:30min

Question	36a
2 marks	Correct number of tools from correct working.
1 mark	Finding the correct z-score and looking up the z-score table.

Question 37

d)

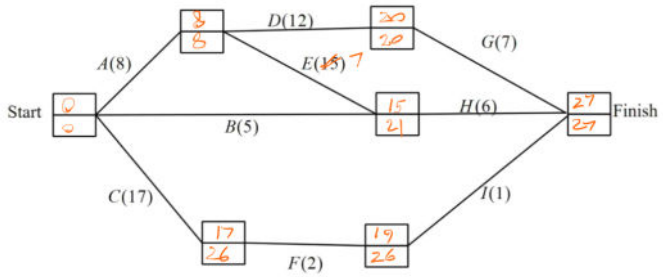


Question	37a
3 marks	Correct answer
2 marks	All EST correct and 2 other or equiv
1 mark	2-8 correct numbers

Question	37b
1 mark	Correct answer

e) Critical Path A-E-H

f)



Question	37c
2 marks	Correct answer with justification
1 mark	Answer only, no reasoning

Min completion time reduced by 2, new critical Path A-D-G