Student Number

Hunters Hill High School

2025 TRIAL EXAMINATION

Mathematics Standard 2

General Instructions

- Reading time – 10 minutes
- Working time – 2 hours and 30 minutes
- Write using black pen
- Calculators approved by NESA may be used
- A reference sheet is provided with this paper
- For questions in Section II, show relevant mathematical reasoning and/or calculations
- Write your Student Number at the top of this page

Total marks: 100

Section I – 15 marks (pages 3–10)

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

Section II – 85 marks (pages 11–35)

- Attempt Questions 16–39
- Allow about 2 hours and 5 minutes for this section

Section I

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

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

1. If $a = -3, b = 2$, what is the value of $\frac{b - a^2}{b - a}$?

A. -1

B. $\frac{11}{7}$

C. $-\frac{7}{5}$

D. 1

2. Sanjoy purchased a laptop for $3200 and depreciated it using a declining balance method at 10% per annum. How much is the laptop worth after 3 years?

A. $3104.96

B. $2880

C. $2332.80

D. $2800

3. Perth in Western Australia is 8 hours ahead of Greenwich in England. Cape Town in South Africa is 2 hours ahead of Greenwich.
What is the time in Cape Town when it is 2 pm in Perth?

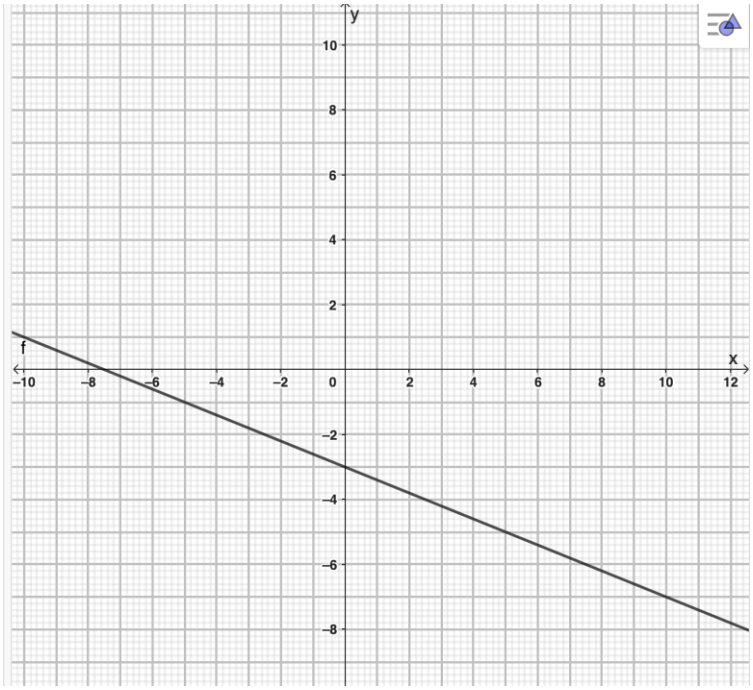
A. 10 am

B. 8 am

C. 8 pm

D. 10 pm

4. What is the equation of the line shown in the diagram?



A. $y = -\frac{2}{5}x - 3$

B. $y = -\frac{3}{4}x - 3$

C. $y = -\frac{1}{2}x - 3$

D. $y = 3x - 7.5$

5. Consider the stem and leaf plot to the right.

Stem	Leaf
1	2
2	1 3 5 5
3	1 3 4 5 7
4	7 7 7 7 8
5	5 8

The median and mode for the set of data is:

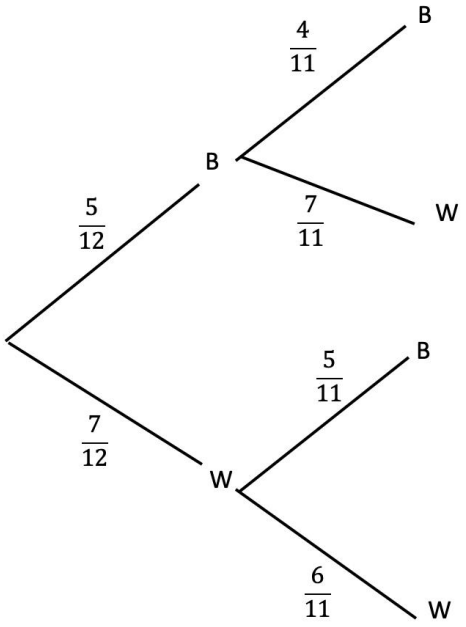
A. 37 and 47

B. 35 and 47

C. 35 and 7

D. 34 and 7

6. A bag contains 5 black and 7 white marbles. Two marbles are drawn from the bag one after the other without replacement. What is the probability of drawing a black marble first and then a white marble?



A. $\frac{5}{33}$

B. $\frac{7}{22}$

C. $\frac{130}{132}$

D. $\frac{35}{132}$

7. Corn flour is sold in four different sized packets. Which of the following is the best buy?

A. 1 kg for $4.00

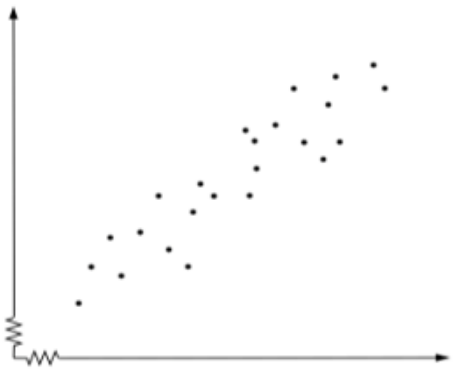
B. 500g for $1.95

C. 100g for $0.45

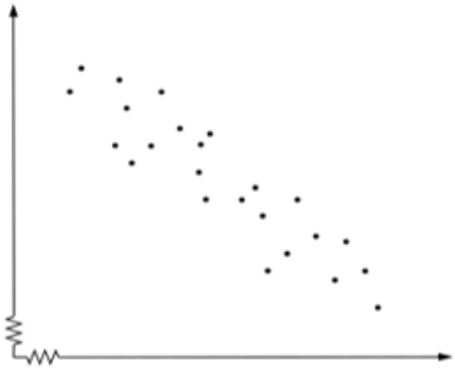
D. 2kg for $7.95

8. Which of the diagram below best represents a relationship with a correlation of coefficient of $r = -0.87$?

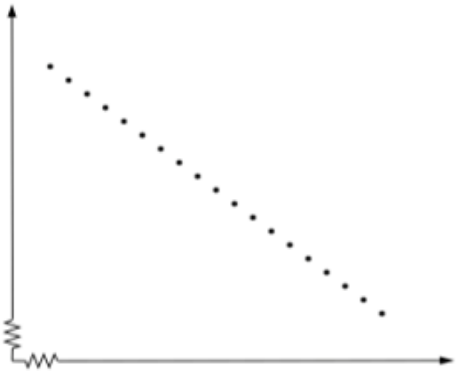
A.



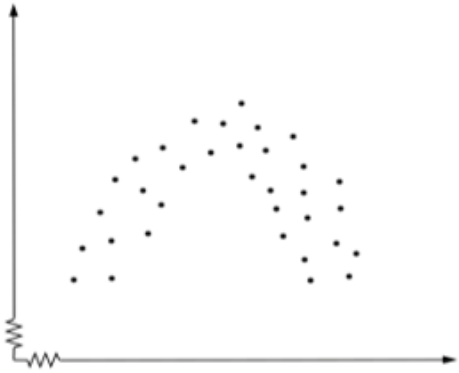
B.



C.



D.



9. Tim scored 53 in a test for which the marks were normally distributed with a mean of 65 and a standard deviation of 12.
What percentage of students scored higher marks than Tim?

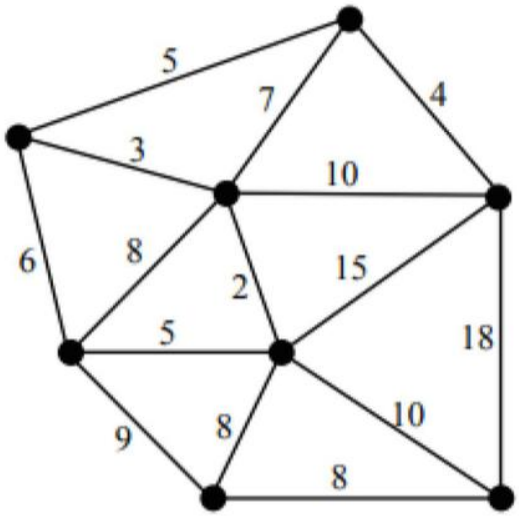
A. 97.5%

B. 50%

C. 68%

D. 84%

10. What is the length of the minimum spanning tree in the network below?



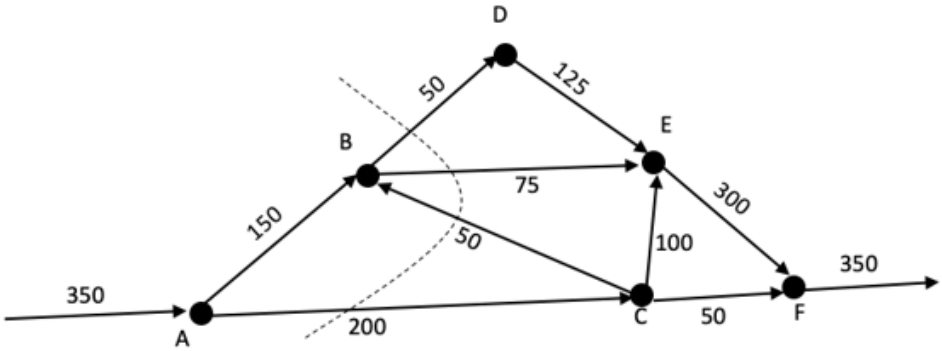
A. 30

B. 31

C. 35

D. 39

11. The network diagram shows a series of water channels and ponds in a garden. The vertices A, B, C, D, E and F represent ponds. The edges represent the water channels which connect the ponds. Three numbers on the edges indicate maximum capacity of the channels.



The maximum flow of the network is

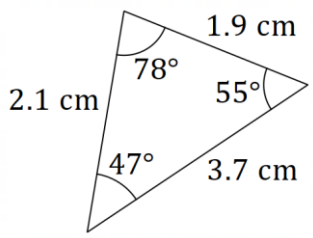
A. 325

B. 375

C. 525

D. 875

12. A triangle has side lengths 2.1 cm, 3.7 cm, and 1.9 cm, opposite angles of 55°, 78° and 47°, respectively.



NOT TO SCALE

Which of the following would give the area of this triangle?

A. $\frac{1}{2} \times 2.1 \times 3.7 \times \sin 78°$

B. $\frac{1}{2} \times 2.1 \times 1.9 \times \sin 78°$

C. $\frac{1}{2} \times 1.9 \times 3.7$

D. $\frac{1}{2} \times 2.1 \times 3.7$

13. Albert and Barry start from the same point, O, on a property.
Albert walks 2 km on a bearing of 50°. Barry also walks for 2 km and stops due South of where Albert has stopped.
What is the bearing of O from Barry?

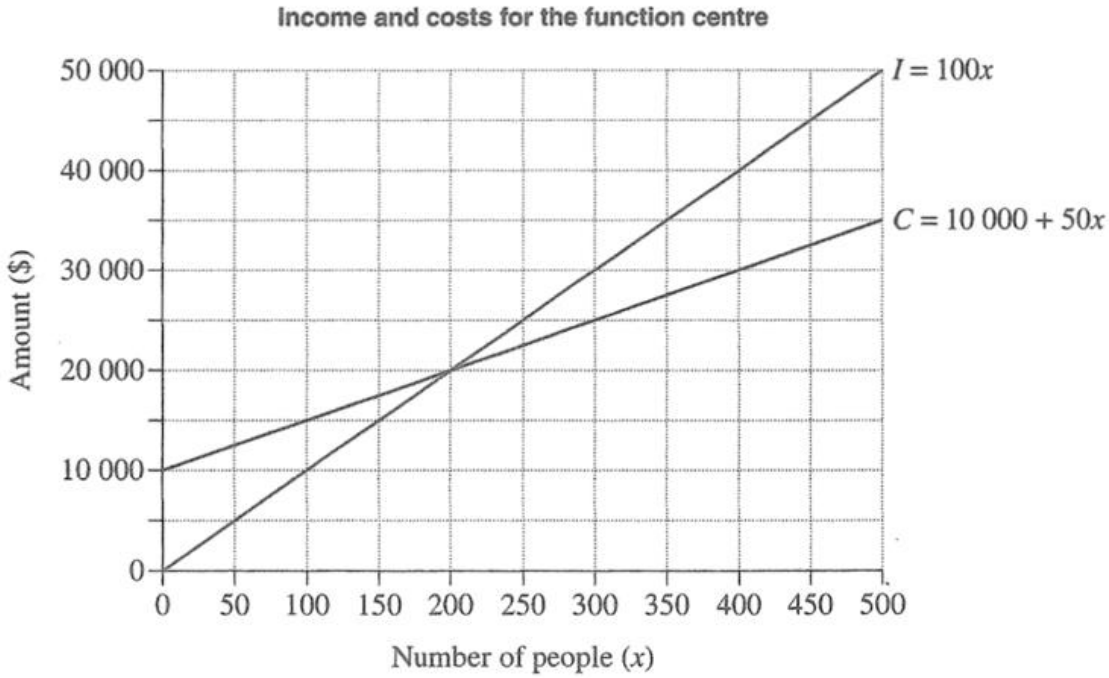
A. 050°

B. 130°

C. 228°

D. 312°

14. A function centre hosts events for up to 500 people. The cost C, in dollars, for the centre to host an event, where x people attend is given by $C = 10000 + 50x$.
The centre charges \$100 per person. Its income I, in dollars, is given by $I = 100x$.
The graph of each equation is shown below.



How much greater is the profit of the function centre when 500 people attend an event, than its profit when 300 people attend?

A. \$5000

B. \$10000

C. \$30000

D. \$40000

15. A dividend of 4.65 cents per share is paid on shares with a market value of \$0.91. Which of the following is the dividend yield?

A. 18.5%

B. 19.5%

C. 19.6%

D. 5.1%

End of Section I

Marks

Question 16 (2 marks)

Harry, a 78 kg male, goes to a party and drinks seven standard drinks over 4 hours. **2**

The blood alcohol content (BAC) for males can be estimated by

$$BAC_{\text{male}} = \frac{10N - 7.5H}{6.8M}$$

where N = number of standard drinks
H = number of hours drinking
M = mass in kilograms

Calculate Harry's BAC after 4 hours. Answer correct to 3 decimal places.

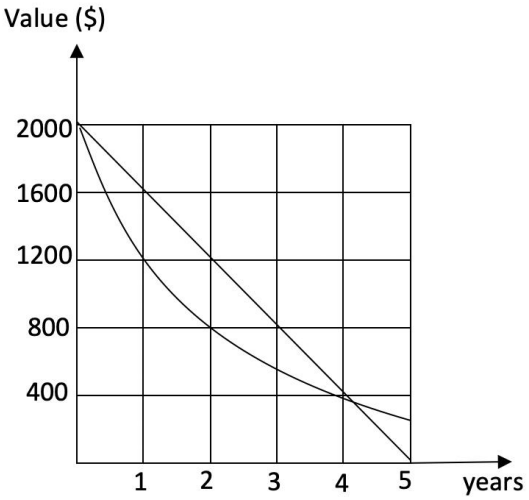
Question 17 (2 marks)

At a local football ground, the ratio of sausage rolls to beef pies sold was 3:4. The ratio of beef pies to hot chips sold was 1:8. **2**
If 640 hot chips were sold, how many sausage rolls were sold?

Marks

Question 18 (2 marks)

The depreciation of a used car using both the straight-line and declining balance methods of depreciation is shown in the graph.



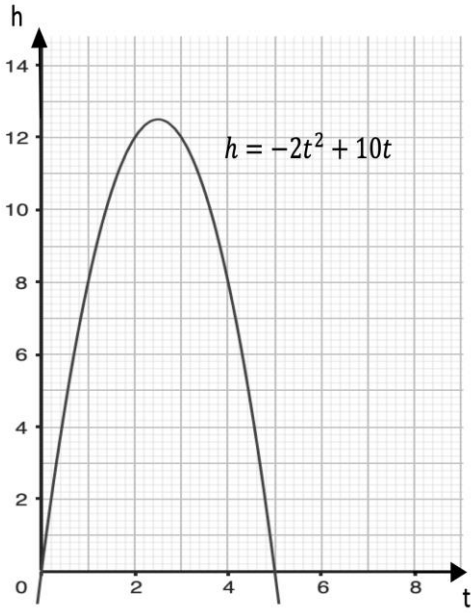
(a) After 2 years using the declining balance method, what is the salvage value of the used car? **1**

(b) Which method of depreciation would provide the largest depreciation for a tax deduction if the asset is to be kept for 5 years? **1**

Marks

Question 19 (2 marks)

An object is projected vertically into the air. Its height, h, metres, above the ground after t seconds is given by $h = -2t^2 + 10t$.
A graph of this non-linear function is shown below. **2**



By using the graph and showing calculations, find the maximum height of the object above the ground.

Marks

Question 20 (4 marks)

Packets of sugar are filled and labelled as having a weight of 1 kg. The weight of these packets is normally distributed with a mean of 1.01 kg and a standard deviation of 0.01 kg. A packet of sugar is rejected if its weight is lower than 0.985 kg.

Standard Normal Distribution: Table values below represent the area under the normal curve to the left of the z-score

z	2.50	2.51	2.52	2.53	2.54	2.55	2.56	2.57	2.58	2.59
Probability	0.9937	0.9939	0.9941	0.9943	0.9944	0.9946	0.9947	0.9949	0.9950	0.9952

(a) What is the z-score of the packet of sugar with a weight of 0.985 kg? **1**

(b) Using the table values for standard normal distribution given above, calculate the probability that a randomly chosen packet of sugar is rejected. **2**

(c) From a packet of 1000 packets of sugar, how many would you expect to be rejected? **1**

Marks

Question 21 (3 marks)

From the top of a 12 m tall building, the angles of depression of the top and foot of a lamp post are 30° and 60°, respectively.
All measurements of length are in metres.

(a) Draw a diagram to show the given information. **2**

(b) Find the height of the lamp post. **2**

Marks

Question 22 (8 marks)

Data was gathered from eight students on the average number of hours (h) of sleep they get on school nights, and the number of times they got distracted in class (d).

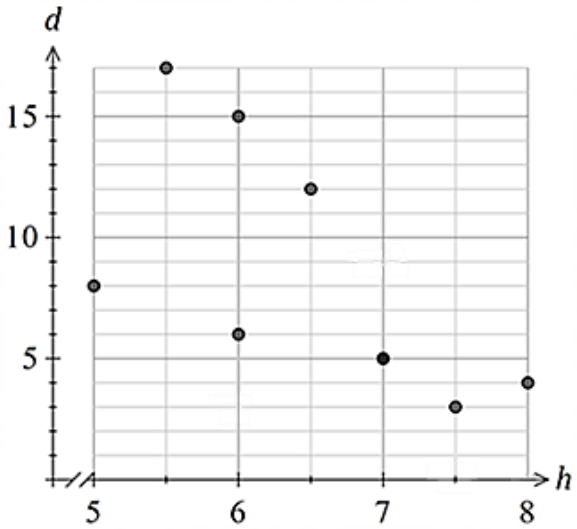
The data is displayed in the table below.

h	7.5	8	7	6	5	6.5	6	5.5
d	3	4	5	6	8	12	15	17

(a) Use a calculator to find Pearson's correlation coefficient (r) to two decimal places and describe the strength and direction of the relationship. **3**

(b) Use a calculator to find the equation of the least-squares line of best fit. **1**

(c) The data is plotted on the scatterplot below. **2**
Sketch the graph of the least-squares regression line on the scatterplot.



Marks

(d) Use the equation of the least-squares regression line to predict the average hours of sleep on school nights for a student who has 20 distractions in class. **2**

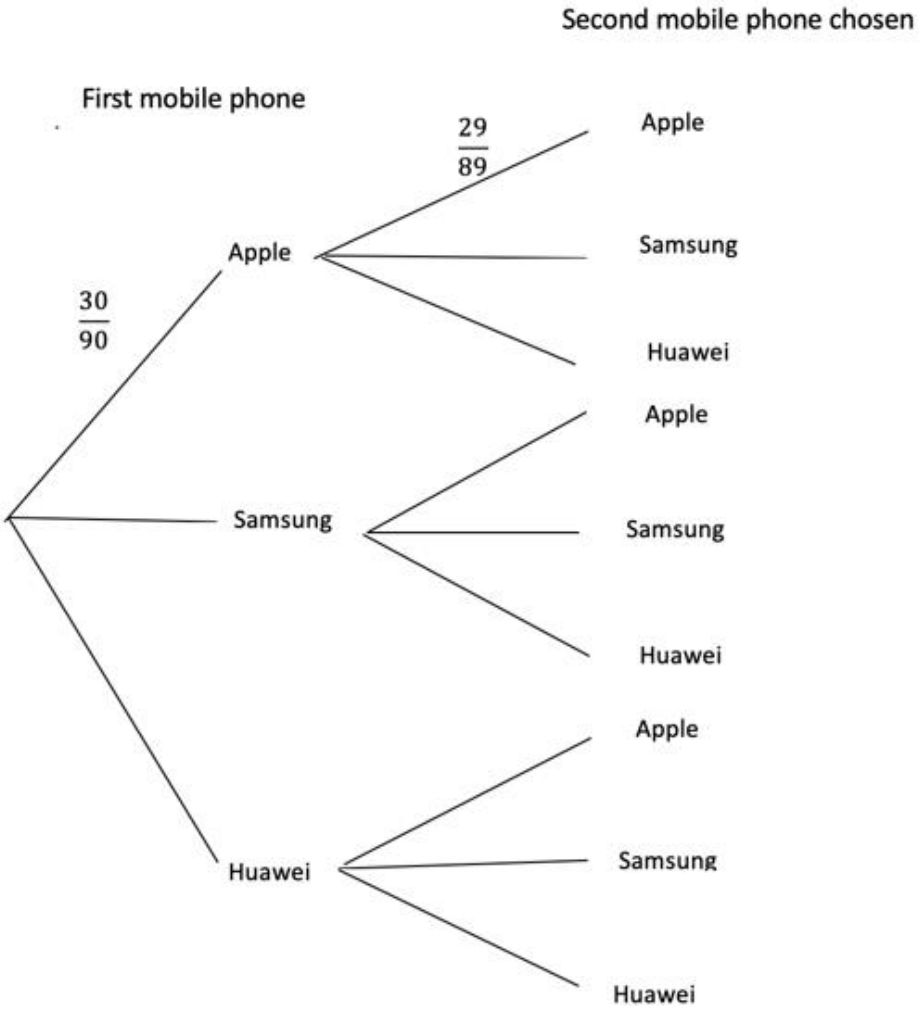
Marks

Question 23 (7 marks)

Before the start of an examination, students are required to place their mobile phone in a box at the front of the examination hall.
It was noted that of the 90 mobile phones in the box, 20 were Samsung, 30 were Apple and 40 were Huawei.

(a) A partially completed tree diagram shows the probability of randomly drawing two particular phones from the box. **2**

Complete the probability tree diagram, by writing probabilities on each of the branches.



(b) Calculate the probability that both mobile phones drawn are Samsung. **2**

Marks

(c) Calculate the probability that the first mobile phone drawn is either an Apple or a Huawei. 1

(d) Calculate the probability that neither of the mobile phones drawn are Huawei. 2

Marks

Question 24 (6 marks)

A rectangular room was measured to be 5.4 m long by 3.2 m wide.

(a) Calculate the area of the room using these measurements. **1**

(b) Find the lower and upper bounds of the room's true length and width. **2**

(c) What are the lower and upper bounds of the room's true area? **2**

Marks

Question 25 (3 marks)

Georgia leaves Sydney $(34°S, 151°E)$, at 11:00 am Friday, flying to Honolulu $(21°N, 158°W)$.
Sydney standard time is UTC $+ 10$ and Honolulu standard time is UTC $- 10$.

(a) What is the time and day in Honolulu when Georgia leaves Sydney? **2**

(b) The flight time is $11\frac{1}{2}$ hours. What is the day and time in Honolulu when she arrives? **1**

Marks

Question 26 (2 marks)

Young's rule for calculating the medicine dosage for infants is **2**

$$D = \frac{yA}{y + 12},$$

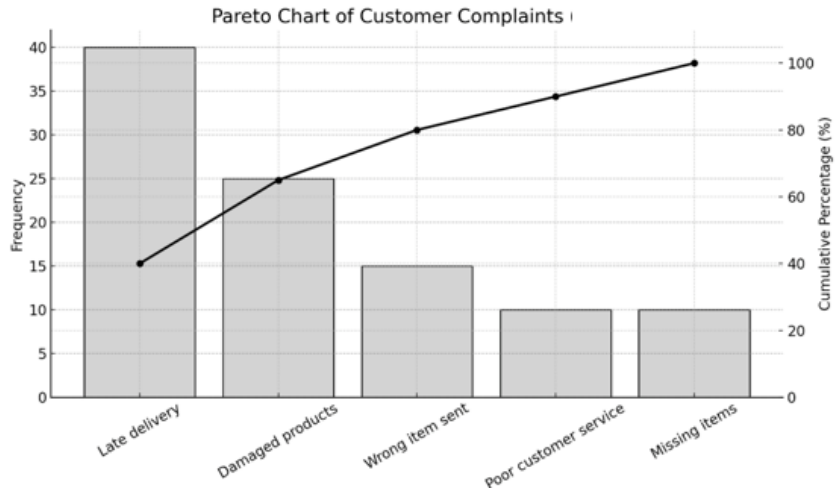
where y is the age the infant in years and A is the adult dosage.

How old is Rita if her medicine dosage is 0.6 mL and the adult dosage is 15 mL?

Marks

Question 27 (2 marks)

A company has received customer complaints over the past month.
The results are shown in the Pareto chart below.



(a) Approximately what percentage of complaints were due to late delivery or damaged products? **1**

(b) Approximately what percentage of complaints were due to poor customer service? **1**

Marks

Question 28 (2 marks)

Chloe wants to investigate the population of woodlice that live in a greenhouse. **2**

On Saturday she caught 90 woodlice. She puts a mark on each of them and returns them to the greenhouse. On Sunday, Chloe caught a number of woodlice (y) and found that 12 of these woodlice had been marked. Chloe's estimate for the number of woodlice in the greenhouse is 600. Calculate how many woodlice Chloe caught on Sunday.

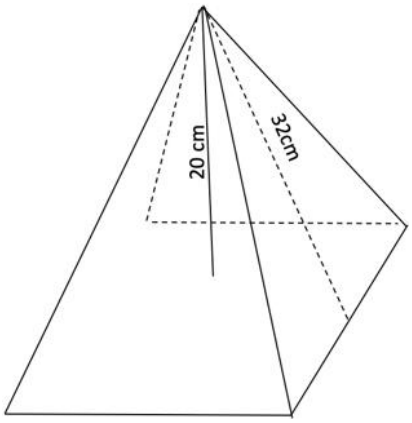
Question 29 (2 marks)

The power consumption of a wash cycle for a front loader washing machine is 1600 W. The machine is used 5 times a week and it takes 36 minutes to complete a wash cycle. Electricity is charged at the rate of 32.8735 cents/kWh. **2**
What is the total cost of using this washing machine for one year?

Marks

Question 30 (2 marks)

Hari made a silk-covered lampshade in the shape of a square-based pyramid as shown. The lampshade has no base, and consists of the four triangular faces only. **2**

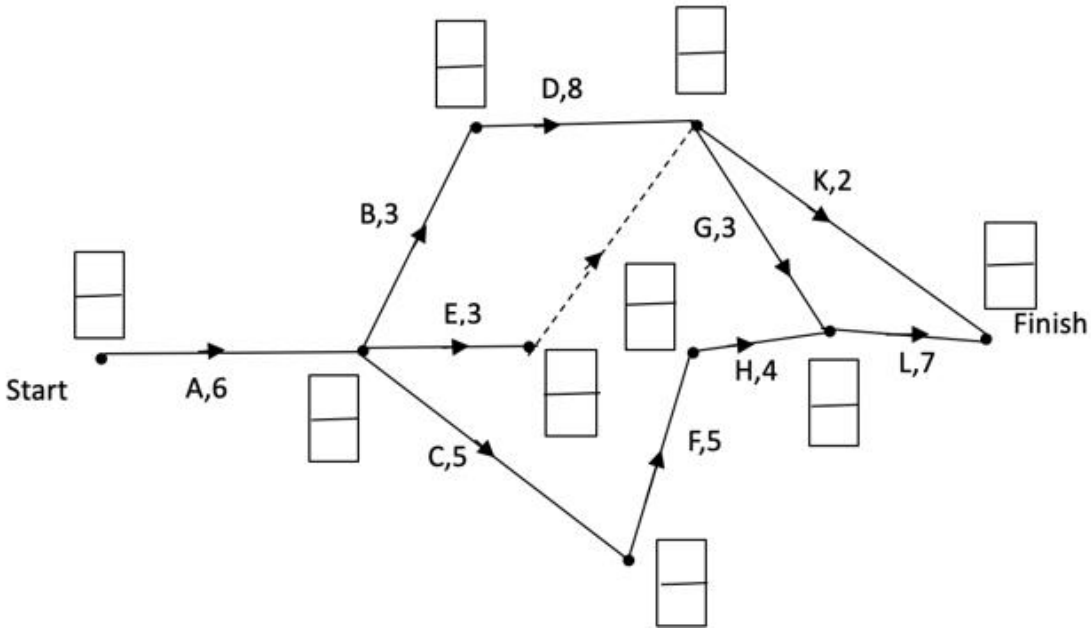


The height of the lampshade is 20 cm and the slant height is 32 cm. If the total material required to make the lampshade is 3201 cm^2, find the perimeter of the base of the square pyramid, correct to 1 decimal place.

Marks

Question 31 (4 marks)

A project is represented by the network below, with activity times in days.



(a) Determine the critical path by completing the earliest starting time (EST) and latest starting time (LST). **3**

(b) By how much can the activity E be delayed without affecting the project? **1**

Marks

Question 32 (4 marks)

The tax table shows the income tax rates for the 2023-2024 financial year.

Taxable income	Tax payable
$0 - $11000	Nil
$11001 - $42400	20 cents for each $1 over 11000
$42401 - $78800	$6280 plus 33 cents for each $1 over $42400
$78801 - $108400	$18292 plus 44 cents for each $1 over $78800
$108401 and over	$31316 plus 48 cents for each $1 over $108400

Sarah works as an accountant and receives a yearly salary of $64 479 plus an income of $1 950 per year from babysitting.

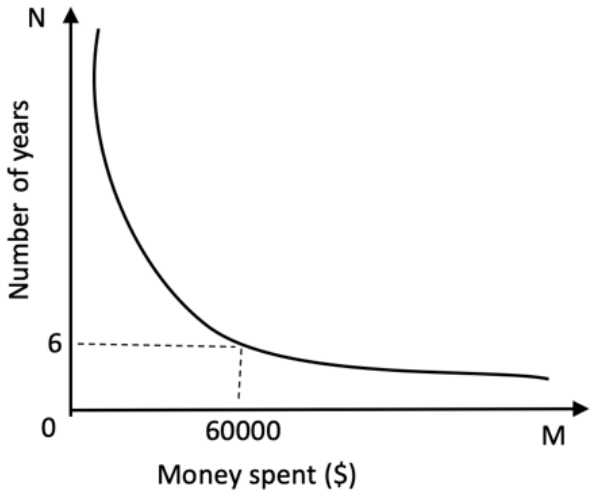
(a) If Sarah has annual tax deductions of $1 570 for home office equipment, and $575 for union fees, calculate her taxable income. **2**

(b) Hence, calculate Sarah's tax payable. **2**

Marks

Question 33 (2 marks)

The number of years (N) required to carry out a project varies inversely with how much money (M) is spent on it.
If \$60 000 is spent on the project, it takes 6 years to complete, as shown in the graph below.



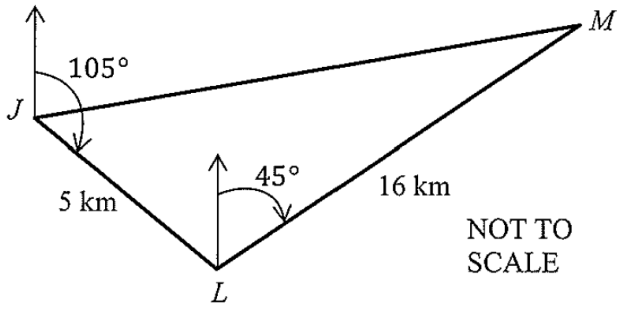
(a) Find the equation for the graph in terms of M and N in the form $N = \frac{k}{M}$, where k is a constant. 1

(b) The project needs to be carried out in one year or less. 1
What is the least amount of money that could be spent in order to achieve this timeline?

Marks

Question 34 (4marks)

Sally is training for the swim leg of a triathlon and decides to go for a training swim in the harbour.
She starts at a jetty J and swims on a bearing of 105° for 5 km out to a buoy L.
She then changes direction and swims on a bearing of 045° for a further 16 km to buoy M.



(a) Find $\angle JLM$. **1**

(b) Find the distance JM that Sally will swim back to the jetty. **2**

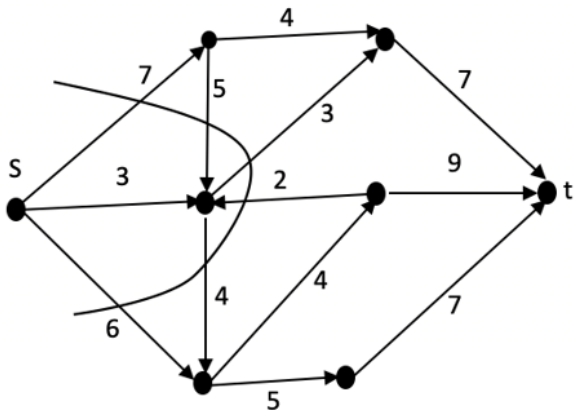
(c) Find the bearing of jetty J from the buoy L. **1**

Marks

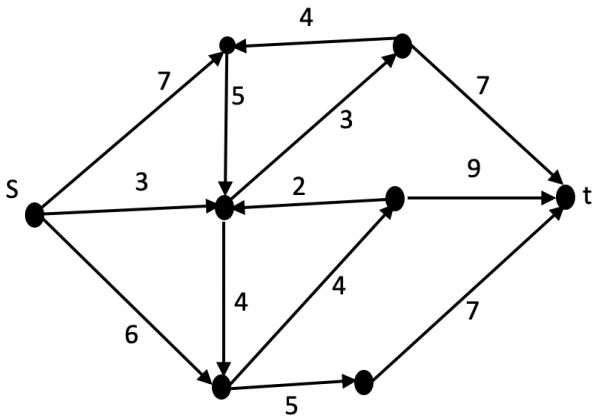
Question 35 (4 marks)

A plumber needs to fix a system of pipes. The sink (t) is connected to the water source (S) by an interconnected series of one-directional pipes. The capacity of each pipe is shown below.

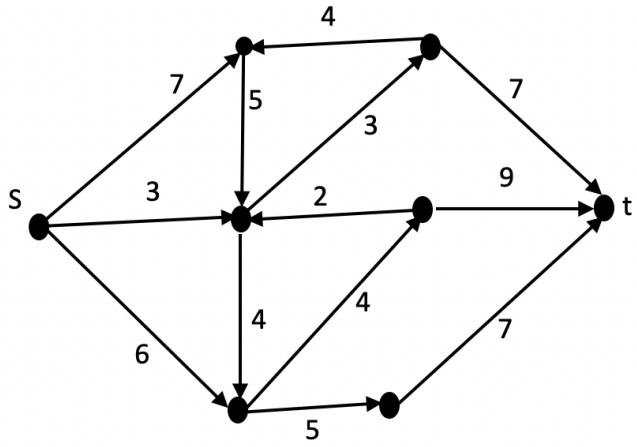
(a) What is the capacity of the cut below? **1**



(b) Draw a cut of capacity 12 on the network diagram below. **2**



(c) The plumber experienced difficulty in cutting the pipes and wants to identify the smallest cut possible (in terms of capacity). By finding the maximum flow, explain why this is the smallest cut possible. Justify your response on the diagram below **2**



Marks

Question 36 (4 marks)

Tickets to a concert cost \$5 for children and \$14 for adults. Altogether, 650 people attended the concert and ticket sales totaled \$5824. Let a be the number of adults and c be the number of children.

(a) Write two relevant equations from the information provided. **1**

(b) Solve your equations simultaneously to find the number of children and adults that attended the concert. **2**

Marks

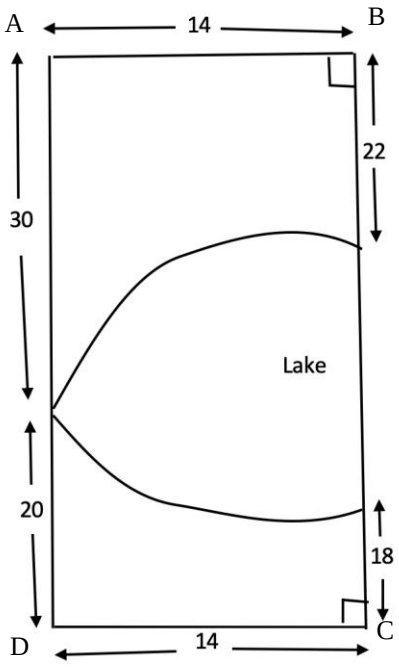
Question 37 (3 marks)

Vicky bought 600 shares in Myer at $1.82 per share. Brokerage fees were 2% of the purchase price. Vicky is paid a dividend of 25 cents per share, then immediately sells the shares for $2.50 each. If she pays no further brokerage fees, what is Vicky's total profit? **3**

Marks

Question 38 (5marks)

A lake sits within a rectangular grass picnic area $ABCD$, as shown in the diagram.



NOT TO SCALE

All measurements are in metres

(a) Use two applications of the Trapezoidal Rule to approximate the area of the lake's surface. **3**

(b) This lake is 80 cm deep. Arjun thinks he can empty the lake using a five-litre bucket. How many times would he have to fill his bucket from the lake in order to empty the lake? **2**

Marks

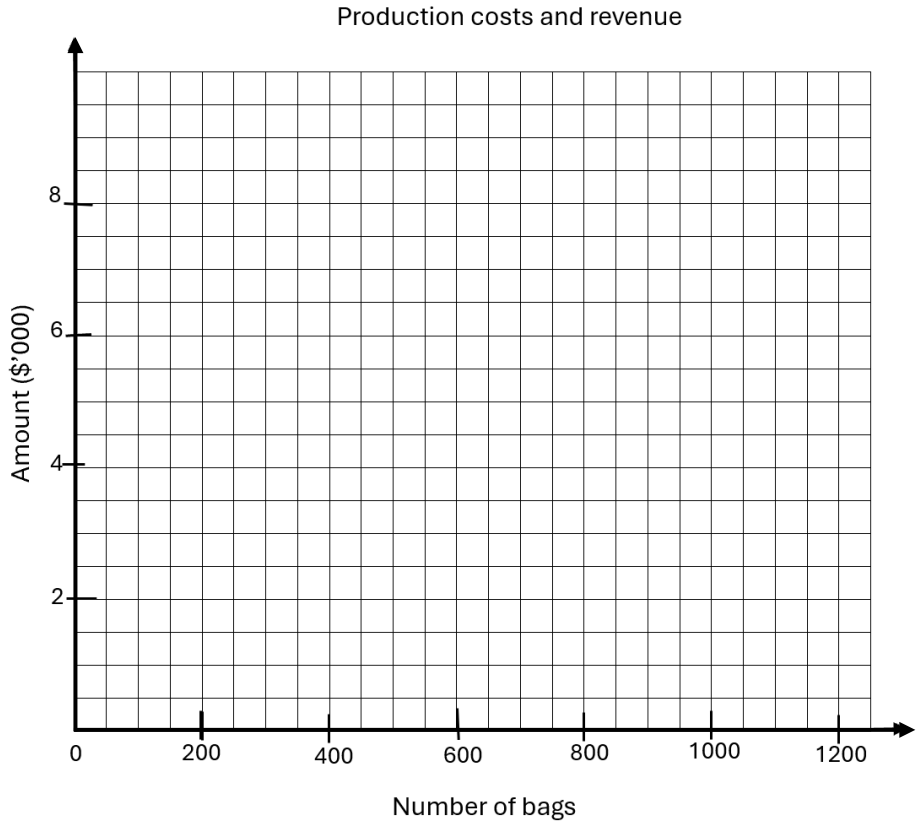
Question 39 (6 marks)

(a) The cost (C) of producing cotton bags is initially \$2000 plus \$2.50 per item (n). Each bag is sold for \$5.

i. Write an equation to represent the cost of production (C). **1**

ii. Write an equation to represent the revenue (R). **1**

(b) On the grid below, sketch the graphs of the equations found from (a). **2**



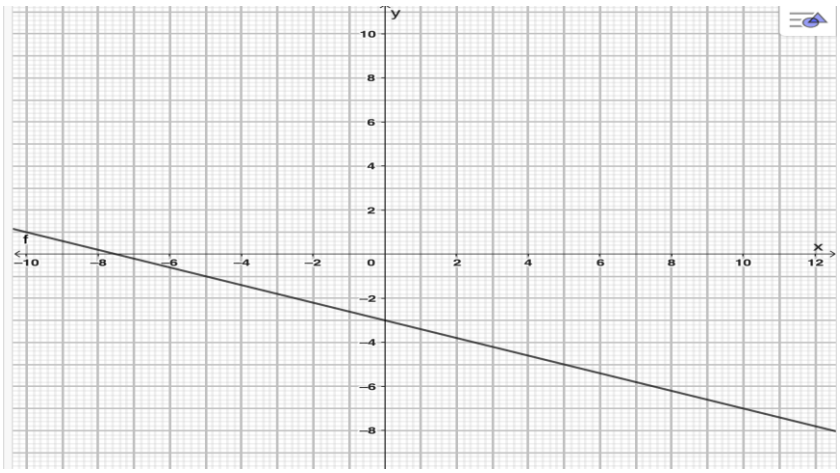
Marks

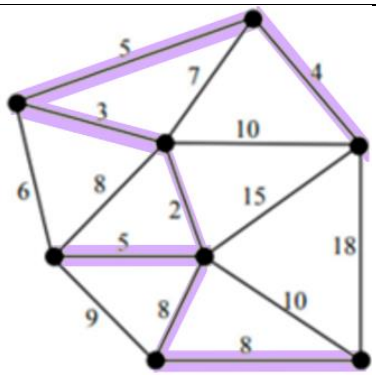
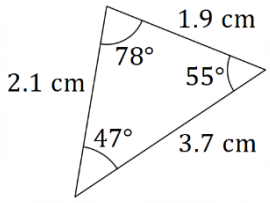
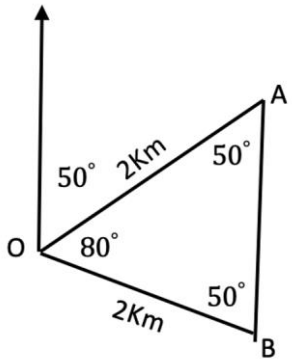
(c) From the graph, determine the number of bags that must be sold to break even. 1

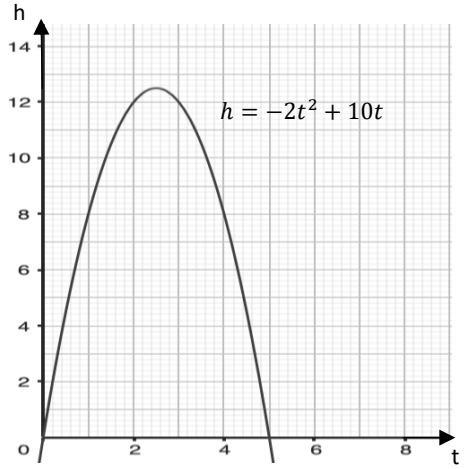
(d) From the graph, determine how many bags must be sold to make profit of $1000. 1

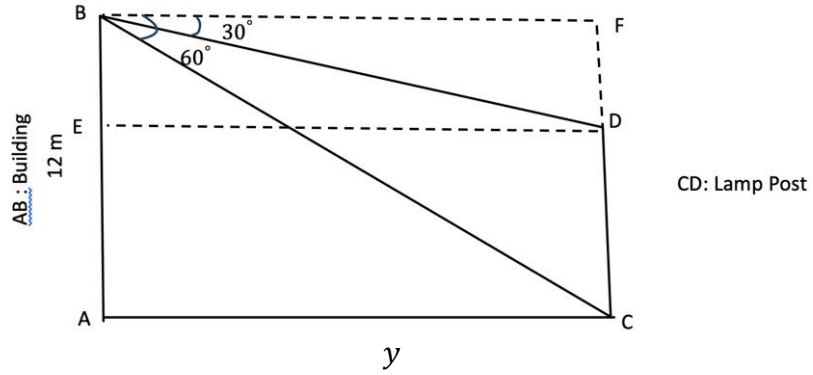
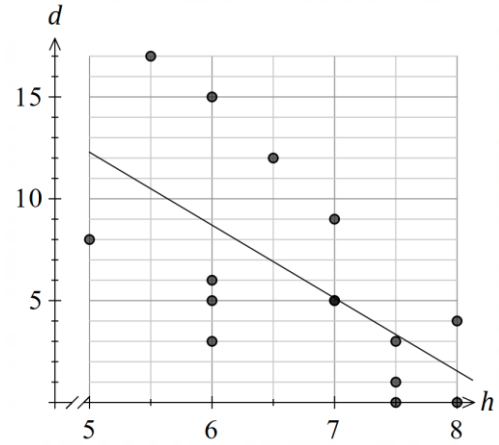
End of paper

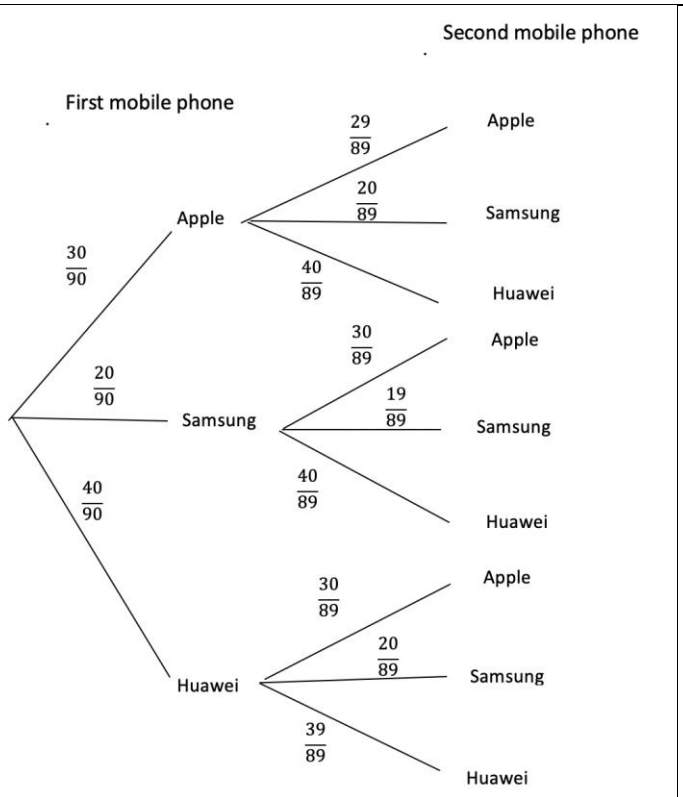
Section I

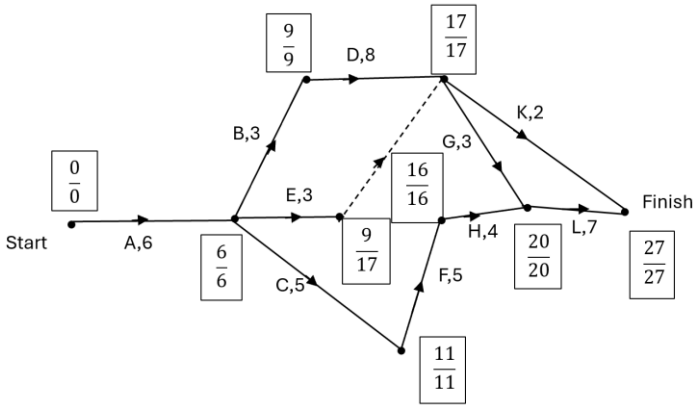
Question	Solution	Answer
1	$\dfrac{2-(-3)^2}{2-(-3)} = \dfrac{-7}{5}$	C
2	$V = V_0(1-r)^n$ $V = 3200(1-0.1)^3$ $= \$2332.80$	C
3	Difference in time between Perth and Cape Town is 6 hours Time in CapeTown $= 8$am	B
4	$y = -\dfrac{2}{5}x - 3.$ 	A
5	35 and 47	B
6	$\dfrac{5}{12} \times \dfrac{7}{11} = \dfrac{35}{132}$	D
7	$(A)\ \dfrac{4}{1000} = 0.004$ $(B)\ \dfrac{1.95}{500} = 0.0039$ $(C)\ \dfrac{0.45}{100} = 0.0045$ $(D)\ \dfrac{7.95}{2000} = 0.003975$	B
8	-0.75 to -0.99 Strong negative	C
9	$z = \dfrac{x-\mu}{\sigma}$ $z = \dfrac{53-65}{12}$ $= -1$ Students who scored higher than Tim $= (50+34)\%$ $= 84\%$	D

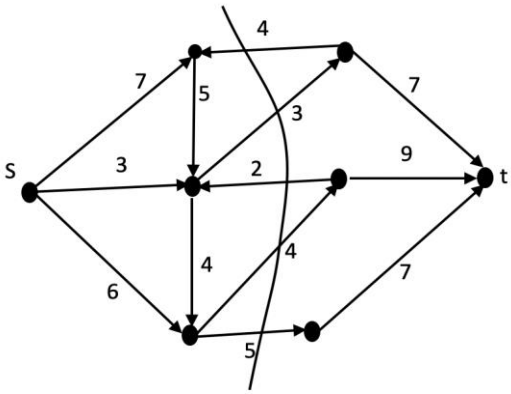
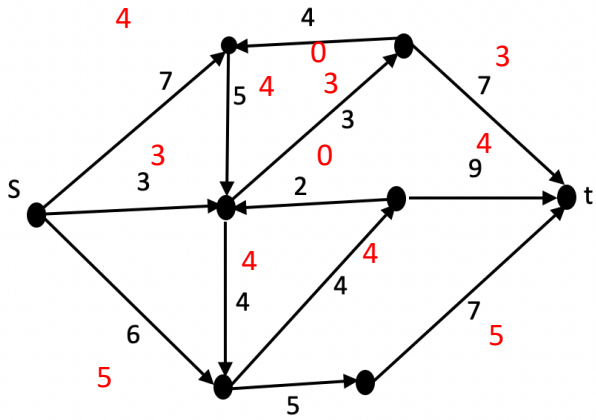
10	 sum of lengths $= 3 + 2 + 5 + 5 + 4 + 8 + 8$ $= 35$	C
11	325	A
12	Given $A = \frac{1}{2}ab\sin C$ The angle C must be between the sides a and b. The expression in option B fits this configuration.  	B
13	 Bearing $= 130^{\circ}$	B
14	When 300 people attend profit $= 5000$ When 500 people attend profit $= 15000$ Answer $= 15000 - 5000$ $= 10000$	B
15	Dividend Yield $= \frac{4.65}{91} \times 100$ $= 5.1\%$	D

Section II		
16	$BAC = \dfrac{10 \times 7 - 7.5 \times 4}{6.8 \times 78}$ $= 0.075$	2: for correct answer with mathematical working 1: for correct substitution
17	Sausage Roll : Beef pies : Hot chips $= 3 : 4 : 32$ $32 \text{ parts} = 640$ $1 \text{ part} = \dfrac{640}{32}$ $3 \text{ parts} = \dfrac{640}{32} \times 3$ $= 60$	2: For correct answer with working 1: For finding one part.
18(a)	800	1: Correct answer
(b)	Straight-line method	1: Correct answer
19	 $h = -2 \times (2.5)^2 + 10 \times 2.5$ $= 12.5 \text{ m}$	2: For correct answer with working 1: correct substitution
20 (a)	$z = \dfrac{x - \text{mean}}{\text{sd}}$ $= \dfrac{0.985 - 1.01}{0.01}$ $= -2.5$	1: correct answer
(b)	$p(z < -2.5) = p(z > 2.5)$ $= (1 - p(z < 2.5)$ $= 1 - 0.9937$ $= 0.0063$ ≈ 0.01	2: Correct answer with working 1: working towards $(1 - p(z < 2.5)$
(c)	0.0063×1000 ≈ 6	1: Correct answer

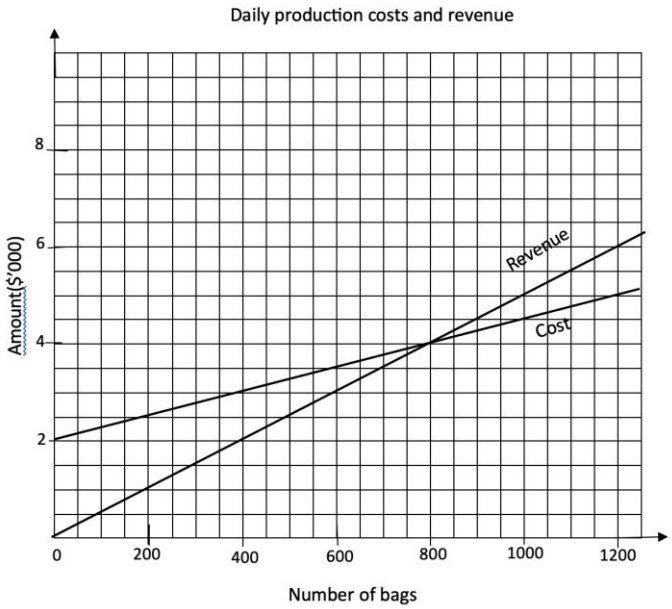
21 (a)		2: Correct diagram with all parts labelled 1: One wrong angle or height
(b)	$\tan 60^\circ = \frac{12}{AC}$ $AC = 6.928m$ $\text{ED} = \text{AC}$ $\tan 30^\circ = \frac{BE}{ED}$ $BE = ED \tan 30^\circ$ $= 6.928 \times \tan 30^\circ$ $= 4 \text{ m}$ $DC = 12 - 4$ $= 8 \text{ m}$	2: Correct answer with working 1: Finding distance between the post and the building Or making a connection using trigonometric ratios between the height of the
22 (a)	$r = -0.629 \ldots$ ≈ -0.63 Moderate, negative relationship	3: correct answer 2: -0.629.. 1: Mention strength and direction
(b)	Equation: $d = -3.273h + 29.818$	1: Correct equation
(c)		2: correct graph 1: error in graph
(d)	When $d = 20$: $20 = -3.273h + 29.818$ $-29.818 \quad -29.818$ $-9.818 = -3.273h$ $\frac{-9.818}{-3.273} = \frac{-3.273h}{-3.273}$ $h = 3$	2: correct solution with working 1: correct substitution into the rule.

23 (a)		2: Correct answer 1: Five parts filled correctly
(b)	$\frac{20}{90} \times \frac{19}{89} = \frac{38}{801}$	2: Correct answer 1: One part incorrect
(c)	$\frac{30}{90} + \frac{40}{90} = \frac{7}{9}$	1: Correct answer
(d)	$\frac{30}{90} \times \frac{29}{89} + \frac{30}{90} \times \frac{20}{89} + \frac{20}{90} \times \frac{30}{89} + \frac{20}{90} \times \frac{19}{89}$ $= \frac{245}{801}$	2: correct answer with working 1: Answer with one error
24 (a)	$5.4 \times 3.2 = 17.28$	1: Correct answer
(b)	Absolute error $=0.05$ Lower and upper bounds of length $= 5.4 - 0.05, 5.4 + 0.05$ $= -5.35, 5.45$ Lower and upper bounds of width $= 3.2 - 0.05, 3.2 + .05$ $= 3.15, 3.25$	2: Correct answer with working 1: Finding correct bounds either for length or width
(c)	Area of lower bound $= 5.35 \times 3.15$ $= 16.8525$ Area of upper bound $= 5.45 \times 3.25$ $= 17.7125$	2: Correct answer with working 1: Finding correct bounds either for lower or upper bounds
25(a)	Time difference between Sydney and Honolulu is 20 hours Therefore 11am in Sydney on Friday is 11am−20hours=3pm on Thursday	2: Correct answer with working 1: Finding time difference or answer with incorrect time difference

(b)	3pm+11.5 hours= 2.30am on Friday in Honolulu	1: Correct answer
26	$0.6 = \dfrac{y \times 15}{y + 12}$ $0.6(y + 12) = 15y$ $0.6y + 7.2 = 15y$ $0.6y - 15y = -7.5$ $y = \dfrac{7.5}{14.4}$ $= 0.520$ $= 0.5 years$	2: correct answer with working 1: correct substitution
27(a)	Approximately 65%	1: Correct answer
(b)	Approximately 10%	1: Correct answer
28	$\dfrac{90}{600} = \dfrac{12}{y}$ $y = 80$	2: Correct answer with working 1: One correct ratio
29	Bill for one week $5 \times \dfrac{36}{60} \times \dfrac{1600}{1000} \times \dfrac{32.8735}{100} = 1.577928$ Bill for 1 year $= 1.577928 \times 52$ $= 82.0522$	2: Correct answer with solution 1: Finding bill for a week or for 1 year
30	Let x be the base of the pyramid $4 \times \text{area} = 3201$ $4 \times \dfrac{x}{2} \times 32 = 3201$ $x = \dfrac{3201}{2 \times 32}$ $= 50.01$ $= 50\text{cm to 1 dp}$	2: correct answer with working 1: finding the base of the pyramid
31(a)	 Critical Path = ACFHL or ABDGL	3: All correct values with critical path 2: Finding correct EST and LST with few errors 1: Finding either EST or LST
(b)	$17 - 9 = 8$ days	1: Correct answer
32(a)	Total income $= 64479 + 1950$ $= \$66429$ Deductions $= 1570 + 575$ $= \$2145$ Taxable income $= 66429 - 2145$	2: Correct answer with working 1: Finding taxable income with incorrect deductions or income

	$= \$64284$	
(b)	Tax payable $= \$6280 + .33 \times (64284 - 42400)$ $= \$13501.72$	2: Correct answer with working 1: Selecting correct tax bracket
33(a)	$6 = \frac{k}{60000}$ $k = 360000$	1: Correct answer
(b)	$1 = \frac{360000}{M}$ $M = 360000$ Minimum amount to be spent should be at least 360000	1: Correct answer
34 (a)	$\angle JLM = 75 + 45$ $= 120°$	1: correct answer
(b)	$JM^2 = 5^2 + 16^2 - 2 \times 5 \times 16 \times \cos 120°$ $JM = 19$ km	2: correct solution with working 1: Applying the cos formula.
(c)	Bearing $= 360 - 75$ $= 285°$	1: correct answer
35(a)	$7 + 3 + 4 + 6 = 20$	1: Correct answer
(b)		2: Correct answer with the cut 1: One error in the cut
(c)	 $5 + 4 + 3 = 12$	2: Correct values 1: One error or correctly cites minimum flow / maximum cut theorem

36(a)	$a + c = 650$ $14a + 5c = 5824$	1: Correct equations
(b)	By elimination method $14a + 5c = 5824$ --- (1) $5a + 5c = 3250$------(2) Subtracting equation (2) from (1) $9a = 2574$ $a = 286$ $c = 650 - a$ $= 650 - 286$ $= 364$	2: Correct solutions 1: Working towards solution using substitution or elimination
37	Cost of 600 shares $= 600 \times 1.82$ $= 1092$ Brokerage fees $= 2\% \times 1092$ $= \$21.84$ Dividend $= 0.25 \times 600$ $= \$150$ Sale Price $= \$2.50 \times 600$ $= \$1500$ Total Profit $= 1500 + 150 - (1092 + 21.84)$ $= \$536.16$	3: correct answer with solution 2: Finds total cost and sale price 1: Finds either cost or sale price
38(a)	Area of Rectangle $= 15 \times 50$ $= 700\ \text{m}^2$ Area of the outer surface (excluding lake) Area of park $\div \frac{1}{2}(30 + 22) \times 14 + \frac{1}{2}(20 + 18) \times 14$ $\div 630$ Area of lake $\div 700 - 630$ $\div 70m^2$	3: Correct answer with solution 2: Applies trapezoidal rule for the outer surface 1: Area of the rectangle 1: Finds area of one trapezium
(b)	$70 \times \frac{80}{100} = 56\ \text{m}^3$ $= 56000\ L$ Number of buckets $= \frac{56000}{5}$ $= 11200$	2: Correct answer with working 1: working towards solution
39(a)	**i.** $C = 2.5n + 2000$, where C is the production cost in dollars **ii.** $R = 5n$, where R is the revenue for n bags.	1: Correct answer 1: Correct answer

(b)		2: Correct graph 1: one equation plotted correctly
(c)	800	1: Correct answer from graph
(d)	1200	1: Correct answer from graph