

Section I - Multiple-choice questions: (1 mark each)

- Louise is a sales representative. She earns a basic wage of \$250 per week and receives commission on all sales. In a particular week when she sold \$1500 worth of good, Louise earned \$470. The rate of commission Louise receives is closest to:
 (A) 14.7% (B) 31.3% (C) 16.7% (D) 48%
- A real estate agent earns \$2500 on the sale of all property to the value of \$100 000 and 3% of the value of property in excess of \$100 000. He recently sold a house for \$270 000. The total commission paid to the agent is:
 (A) \$7600 (B) \$8100 (C) \$5500 (D) \$9000
- The simple interest earned by investing \$2400 at 9.2% p.a. for 6 months is:
 (A) \$1104.00 (B) \$2510.40 (C) \$222.80 (D) \$110.40
- Sandra invests \$8000 in an investment, which is quoted at 8% p.a., with the interest compounding annually for a period of three years. The future value of her investment, to the nearest dollar would be:
 (A) \$6400 (B) \$1536 (C) \$9536 (D) \$10 078
- If $C = (-3d^2)^3$, then C simplifies to:
 (A) $-3d^3$ (B) $-27d^3$ (C) $27d^6$ (D) $-27d^6$
- The dosage (D) of medicine required for an infant of m months of age when compared to an adult dosage (A) is given by Fried's rule: $D = \frac{mA}{150}$. A mother required 25mL of a particular medicine. Her eighteen-month old infant required how many millilitres of the same medicine?
 (A) 3 (B) 4 (C) 5 (D) 6
- Rod's gross fortnightly pay is \$1234.80. He pays PAYG tax of \$405 per fortnight. He has tax deductions of \$5 per week for dry-cleaning his uniform, \$70 per week for work related travel, and \$369 per year for union fees. Rod's annual taxable income closest to:
 (A) \$17 306 (B) \$27 836 (C) \$38 365 (D) \$38 880
- Laura receives a bill for \$540.50, including 10% GST for car repairs. The cost of the repairs without the tax was:
 (A) \$486.45 (B) \$491.36 (C) \$540.50 (D) \$720.20

- Fiona is a nurse with a gross annual income of \$45 675. She has earned \$136.50 in interest from her bank and has allowable deductions of \$680. Fiona's taxable income is:
 (A) \$44858.50 (B) \$45131.50 (C) \$46218.50 (D) \$46491.50
- The frequency table below shows the marks achieved on a test by a group of students.

Score	Frequency
15	12
16	15
17	10
18	6
19	3
20	2

How many students received a mark higher than 17?

- (A) 3 (B) 10 (C) 11 (D) 18

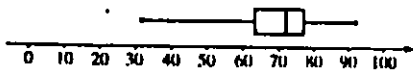
Questions 11 and 12 refer to stem-and leaf plot below.

Key: 15 | 7 = 157 kg

Stem	Leaf
15	4 8 8
16	1 3 3 6 8
17	0 0 1 4 7 9 9 9
18	1 2 3 3 5 7 8 8 9
19	2 7 8
20	0 2

- The median of the data is:
 (A) 179 (B) 178 (C) 48 (D) 88.5
- The interquartile range of the data is:
 (A) 168 (B) 20 (C) 188 (D) 48
- New Zealand has VAT levied at 12.5%. The cost of a computer printer is \$640. What is the price of the printer after VAT is added?
 (A) \$680 (B) \$560 (C) \$652.50 (D) \$720

14. The box-and-whisker plot below shows the marks achieved by a class on their end of year exam. The highest mark is:



- (A) 72 (B) 77 (C) 14 (D) 92
15. The mean height of five starting players in a basketball team is 1.82 m, during a time out, a player who is 1.78 m tall is replaced by a player 1.88 m tall. What is the mean height of the players after the replacement has been made?
- (A) 1.78 m (B) 1.82 m (C) 1.84 m (D) 1.88 m

- 16.
- | Score | Frequency |
|-------|-----------|
| 21 | 2 |
| 22 | 4 |
| 23 | 6 |
| 24 | 1 |
| 25 | 1 |
- A score of 25 is added to this sample. Which of these measures will change?
- (A) Range
(B) Median
(C) Mode
(D) Mean

17. Mr and Mrs Yousef researched the typical price of a large family car. At one car yard they found six family cars. Five of the cars were priced between \$30 000 and \$40 000, while the sixth is priced at \$80 000. What would be the best measure of the price of a typical family car?

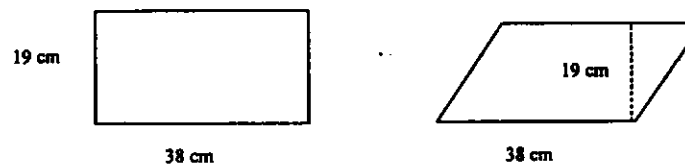
- (A) Mean (B) Median (C) Mode (D) All are equally important.
18. The area of the cross section of prism is 34.67 cm^2 , and the height is 3.6 cm. The volume of the prism is:
- (A) 41.604 cm^3 (B) 38.27 cm^3 (C) 166.416 cm^3 (D) 124.812 cm^3
19. The dimensions of a rectangular prism are all doubled. The volume of the prism will increase by a factor of:
- (A) 2 (B) 4 (C) 6 (D) 8

20. Joan and Toni are employed to fold T-shirts at a factory. They trialled on a number of occasions to find out how many T-shirts they can fold each minute. Their results are listed below.

Joan: Mean ($\bar{x} = 30$); Sample Standard Deviation (σ_{n-1}) = 3.3
 Toni: Mean ($\bar{x} = 30$); Sample Standard Deviation (σ_{n-1}) = 9.3

- From the above results, it could be said that;
- (A) Joan is more consistent than Toni.
 (B) Toni is more consistent than Joan.
 (C) Both are equally consistent.
 (D) It is not possible to determine who is more consistent.

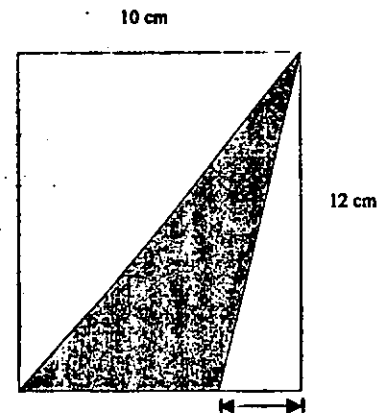
21. Which of the statements is correct for the two shapes drawn below:



Statement 1: The rectangle and parallelogram have equal areas.
 Statement 2: The rectangle and parallelogram have equal perimeter.

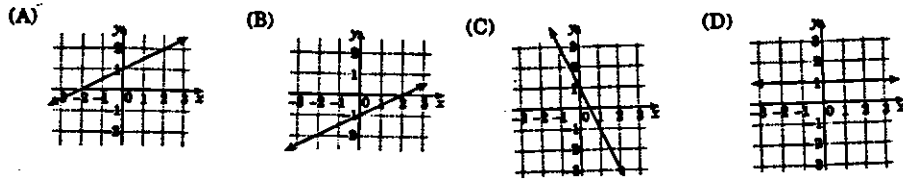
- (A) Statement 1 (B) Statement 2 (C) both statements (D) Neither statement

22. Calculate the area of the shaded part of the rectangle shown below.

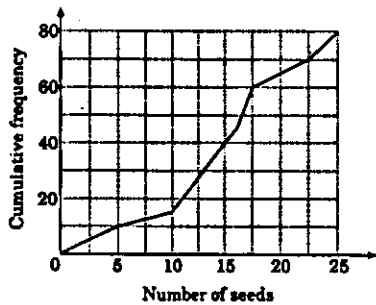


- (A) 24 cm^2 (B) 36 cm^2 (C) 60 cm^2 (D) 72 cm^2

23. The graph of $y = \frac{1}{2}x + 1$ is represented by :



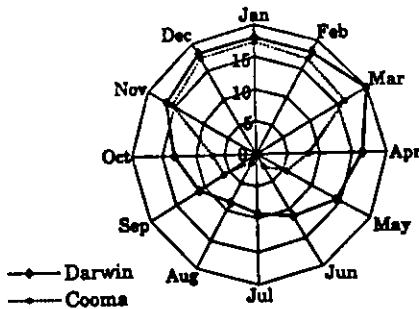
24. The ogive plotted below shows the number of seeds found in each of 80 tomatoes.



The median number of seeds is:

- (A) 5 (B) 10 (C) 15 (D) 20

25. The radar chart shown below gives the average monthly temperature (in °C) for Darwin and Cooma.



The number of months in the year in which both towns have similar temperatures is:

- (A) 1 (B) 2 (C) 6 (D) 4

Section II

Show all your necessary working in the following questions:

Question 26. (begin a new page)

Marks: 13

(a) Simplify:
(i) $4p^2q^4 \times (-pq^2)$ 1

(ii) $45xy^2 + 15x^2$ 1

(b) Expand and simplify the following :

(i) $5d(3a^2 + ad)$ 2

(ii) $x(x - y) - y(y - x)$ 2

(c) Solve the equation:

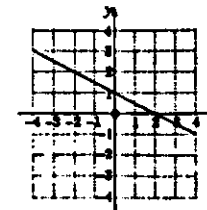
$3r + 5 = 12 - r$ 2

(d) From the top of a hill of height h metres, an observer can see a distance of d kilometres to the horizon, where d is given by the formula;

$$d = 8\sqrt{\frac{h}{8}} \quad 2$$

How far can a person see to the horizon (to the nearest kilometre) if they are on top of a hill, which is 310m high?

(e) A straight line is shown on this grid:



(i) Write down the gradient and y-intercept. 2

(ii) Using part (i), write the equation of the line. 1

Question 27 (begin a new page)

Marks: 16

- (a) Brian runs a small bakery and has equipment in this bakery to the value of \$45 000 at the beginning of the 2000-01 financial year. For tax purposes he depreciates these items at a rate of 28% p.a. Calculate the tax deduction that Brian can claim for depreciation in 2000-01. (1 mark)
- (b) Ray has two jobs. One earns him \$938.50 per fortnight and the other \$190.60 per week. He also earned \$97.10 in interest throughout the year.
- (i) Calculate Ray's gross annual income. (3 marks)
- (ii) In travelling between jobs Ray made 104 trips at 23 km per trips. For this he was entitled to claim a tax deduction at the rate of 45.7 c/km. Ray had other tax deductions totalling \$950. Calculate his total deductions. (2 marks)
- (iii) Calculate Ray's taxable income for the year. (1 mark)
- (c) A Group certificate for Wendell Hancock is shown below. Wendell has also earned \$372.10 in interest from an investment and has tax deductions totalling \$1298.

GROUP CERTIFICATE	
Wendell Hancock	
Gross income:	\$39600.00
PAYE tax deducted:	\$8854.00

- (i) Calculate Wendell's taxable income. (1 mark)
- (ii) Calculate the tax payable on Wendell's taxable income. (use the tax table given below) (2 mark)
- (iii) Calculate the Medicare levy for Wendell. The Medicare levy is calculated at 1.5% of the taxable income) (1 mark)
- (iv) Calculate the amount that Wendell should receive as a tax refund or the balance amount he must pay (2 mark)

Tax Table

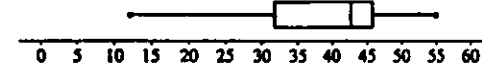
Income	Tax Payable
\$1 to \$6000	\$0
\$6001 to \$20 000	\$0 plus 17c for each \$1 over \$6000
\$20 001 to \$50 000	\$2380 plus 30c for each \$1 over \$20 000
\$50 001 to \$60 000	\$11 380 plus 42c for each \$1 over \$50 000
In excess of \$60 000	\$15 580 plus 47c for each \$1 over \$60 000

- (d) The Besenko family goes to McDonald's for lunch. The cost of the meal is \$19.80 without GST. How much will the Besenkos have to pay for the meal, including the 10% GST? (1 mark)
- (e) New Zealand has VAT levied at a rate of 12.5%, Vanessa goes on holidays to New Zealand and rents a car for five days at a rate of NZ\$56.50 per day, without VAT. Calculate the total cost of renting the car including the VAT. (2 marks)

Question 28. (begin a new page)

Marks: 18

- (a) Write a five-number summary for the box-and-whisker plot drawn below. (5 marks)



- (b) The selectors for a local cricket team have to choose between two batsmen. The following sets of their scores were chosen randomly.

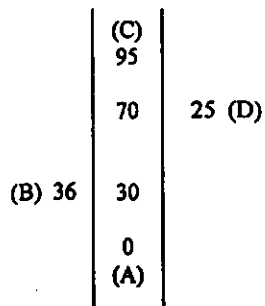
Batsman A	33	29	35	34	28	33
Batsmen B	41	26	37	35	25	34

- (i) Should the population or sample standard deviation be used in this case? (1 mark)
- (ii) Using your calculator, find the mean score and standard deviation of **each** player. (4 marks)
- (iii) The selectors wish to choose the more consistent player. Which player would you advise to select? Give reason. (1 mark)
- (c) The frequency distribution table below shows the marks obtained by a group of people on an IQ test.

IQ score	Frequency
75-85	12
85-95	25
95-105	50
105-115	24
115-125	13

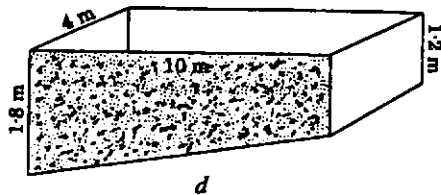
- (i) Complete the frequency distribution table given on page 10. (2 marks)
- (ii) Draw a cumulative frequency histogram and cumulative frequency polygon using the graph given on page 10. (2 marks)
- (iii) Use the graph to estimate the lower quartile (1 mark)
- (iv) Use the graph to estimate the upper quartile (1 mark)
- (v) Calculate the interquartile range. (1 mark)
- (Detach page 10 and attach to your answer sheet)

- (a) The diagram below shows the notebook entry (field diagram) for a block of land. (Measurements are in metres)



- (i) Use the above notebook entries to make a neat sketch of the block of land (1 mark)
 (ii) Calculate the area of the block of land, correct to 1 decimal place. (2 marks)

- (b) Below is a diagram of a swimming pool. Two sides of the pool are in the shape of a trapezium.



- (i) Calculate the area of the shaded wall. (1 mark)
 (ii) Calculate the volume of the pool. (1 mark)
 (iii) How many litres of water will it take to fill the pool? ($1 \text{ m}^3 = 1000 \text{ L}$) (1 mark)
 (iv) Use Pythagoras' theorem to find d , correct to 2 decimal places. (2 marks)
 (v) The wall and floor of the pool need to be painted. Calculate the area to be painted, correct to 2 decimal places. (2 marks)

- (c) (i) A cone has a base with diameter of 9 cm and height of 12 cm. Calculate the volume of that cone, correct to 1 decimal place. (2 marks)
 (ii) Calculate the volume of a sphere with a radius of 1.15 cm. Answer correct to 2 decimal places. (1 mark)

END OF PAPER

Question 28 (c)

IQ score	Class Centre	Frequency	Cumulative Frequency
75-85		12	
85-95		25	
95-105		50	
105-115		24	
115-125		13	

