

Name: .....

Date: .....

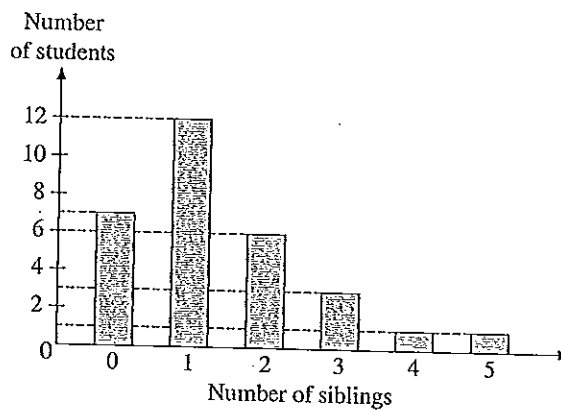
**INSTRUCTIONS TO CANDIDATES**

**Section A (30 marks)**

**Time: 45 minutes**

1. Answer **all** the questions in this section.
2. Calculators may **not** be used in this section.
3. All working must be clearly shown. Omission of essential working will result in loss of marks.
4. The marks for each question is shown in brackets [ ] at the end of each question.

- 1 Each student surveyed was asked how many siblings he had. The results are illustrated in the bar chart below.



- (a) How many students participated in the survey?
- (b) How many siblings do all the students have?
- (c) Find as a fraction in its simplest form, the number of students who have less than 3 siblings.

Answer (a) ..... students [1]

(b) ..... siblings [2]

(c) ..... [1]

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2 The number of goals scored by a football team in each of 30 matches is shown below.

0	3	1	2	3	0	1	4	0	1
2	1	0	3	1	4	3	1	3	0
1	3	2	3	2	1	4	0	1	2

(a) Complete the corresponding frequency distribution table below.

Answer (a)

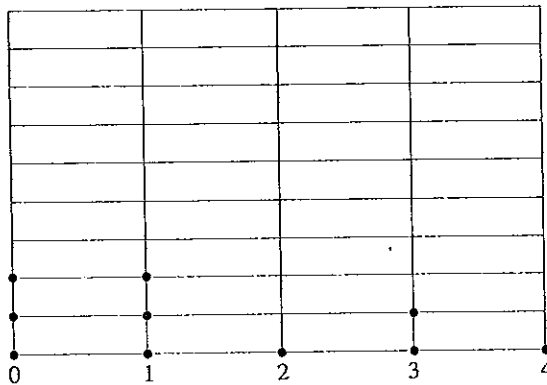
Number of goals	Tally Marks	Frequency
0		
1		
2		
3		
4		

[2]

(b) The data above is to be recorded in the dot diagram below. The first row of the data has already been entered on the dot diagram.

(i) Complete the dot diagram below.

Answer (b) (i)

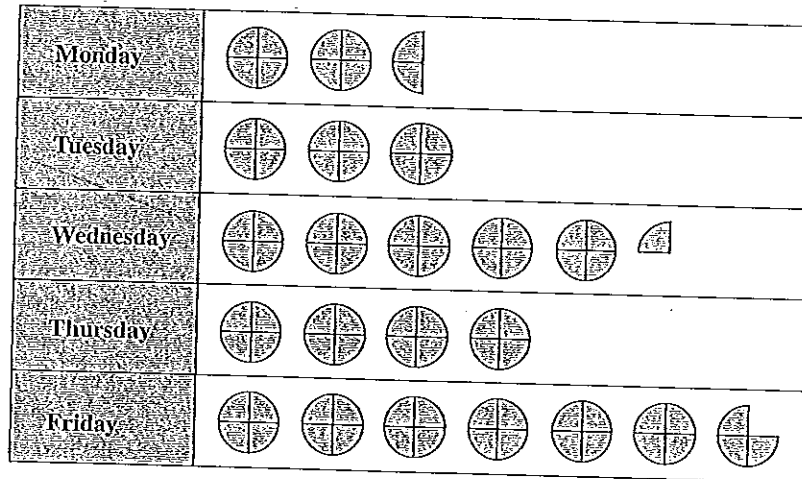


[1]

(ii) If the same data is to be represented in a pie chart, calculate the angle of the sector that represents the number of matches with 1 goal scored.

Answer (b) (ii) ..... ° [1]

- 3 A survey was conducted to find the number of sticks of satay sold by a satay stall from Monday to Friday.



Each represents 80 sticks of satay.

- (a) On which day did the stall sell the most number of sticks of satay? Write down how many sticks of satay was sold that day.
- (b) Find the ratio of the number of sticks of satay sold on Monday to the number of sticks of satay sold on Wednesday.
- (c) If the profit for selling each stick of satay was 15 cents, calculate the total profit earned for selling the sticks of satay from Monday to Friday.

Answer (a) ..... ,  
 ..... sticks [1]

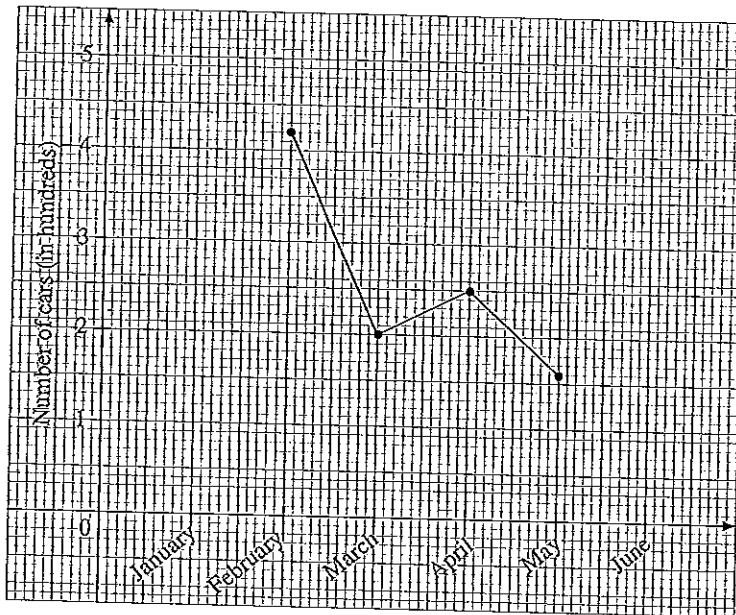
(b) ..... [1]

(c) \$ ..... [2]

- 4 The diagram shows part of the line graph of the number of cars sold by an automobile shop for the first six months of 2003.

Answer (d)

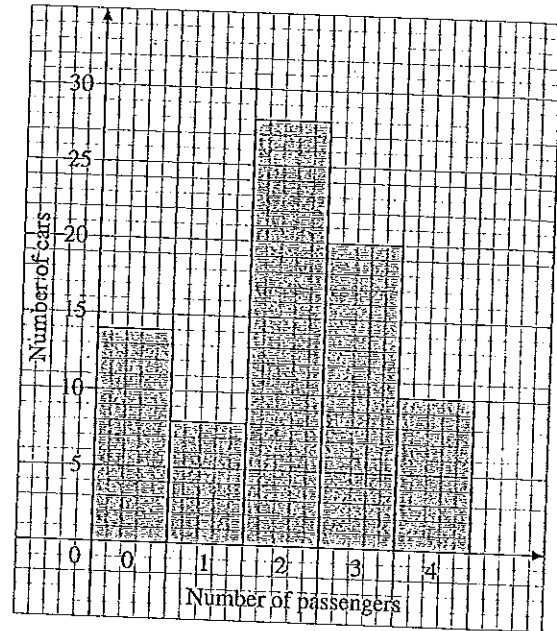
[1]



- (a) 40% more cars were sold in February than in January. How many cars were sold in January?  
 (b) Calculate the percentage decrease of the number of cars sold in May from the number of cars sold in April.  
 (c) There was an increase of 25% in the number of cars sold in June from the number of cars sold in May. How many cars were sold in June?  
 (d) Complete the line graph from January to June.  
 (e) Find the total number of cars sold by the shop for the first six months of 2003.

- Answer (a) ..... cars [1]  
 (b) ..... % [2]  
 (c) ..... cars [1]  
 (e) ..... cars [1]

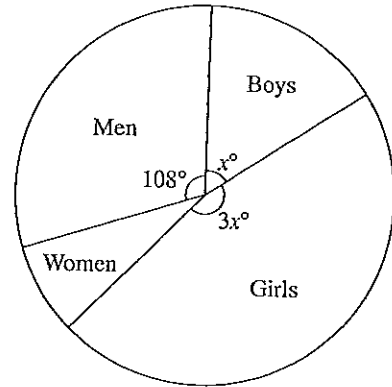
- 5 The histogram shows the results of a survey carried out to find the number of passengers in 80 cars passing an ERP gantry at a certain time of a day. Calculate
- the number of cars which had less than 3 passengers,
  - the total number of passengers in all the cars surveyed,
  - the percentage of the cars which had only 2 passengers.



Answer (a) ..... cars [1]  
 (b) ..... passengers [2]  
 (c) ..... % [1]

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- 6 The pie chart represents the distribution of a group of people who attended last month's family camp at Pulau Ubin.
- Calculate the percentage of the men in the group.
  - Given that the number of women was half the number of boys, calculate the value of  $x$ .
  - Given that 840 girls attended the camp, calculate the total number of people in the group.



Answer (a) ..... % [1]

(b)  $x =$  ..... [2]

(c) ..... people [1]

- 7 The Mathematics marks obtained by the students in a class test is shown in the stem and leaf diagram below. The total marks for the test is 80.

2	7									
3	5	9								
4	0	5	5							
5	3	7	8	9	9					
6	0	0	1	2	5	5	8	8	9	
7	1	1	1	6	6	6	7	7	7	8
8	0	0								

- (a) Find the number of students in the class.  
 (b) If the passing mark for the test is 45, find the fraction of the students who failed the test.  
 (c) If a distinction is awarded to the student who scores above 75% of the maximum marks, find the number of students who were awarded distinctions.

Answer (a) ..... students [1]  
 (b) ..... [1]  
 (c) ..... students [2]

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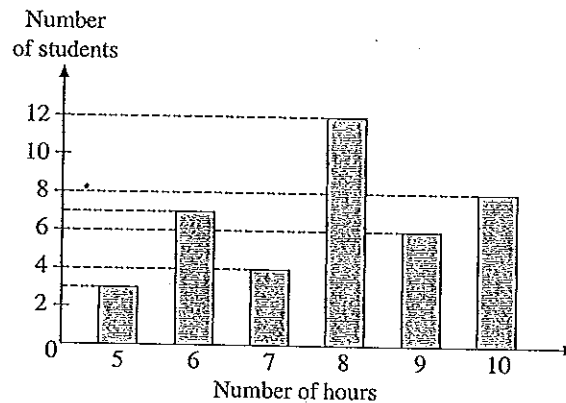
## INSTRUCTIONS TO CANDIDATES

Section B (30 marks)

Time: 45 minutes

1. Answer all the questions in this section.
2. Calculators may be used in this section.
3. All working must be clearly shown. Omission of essential working will result in loss of marks.
4. The marks for each question is shown in brackets [ ] at the end of each question.

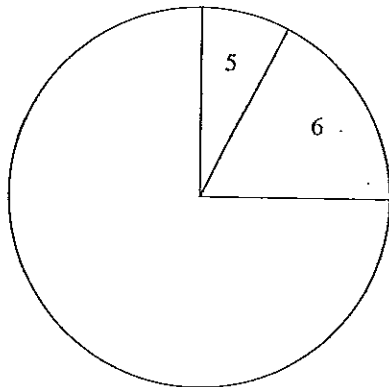
- 8 A survey was conducted on a group of 40 students to find out the number of hours each of them spent surfing the internet in a week.



- (a) Find the percentage of the students who spent at least 8 hours that week surfing the internet.  
(b) The same data is to be represented in a pie chart. Complete the pie chart.

Answer (b)

[2]



Answer (a) .....% [2]

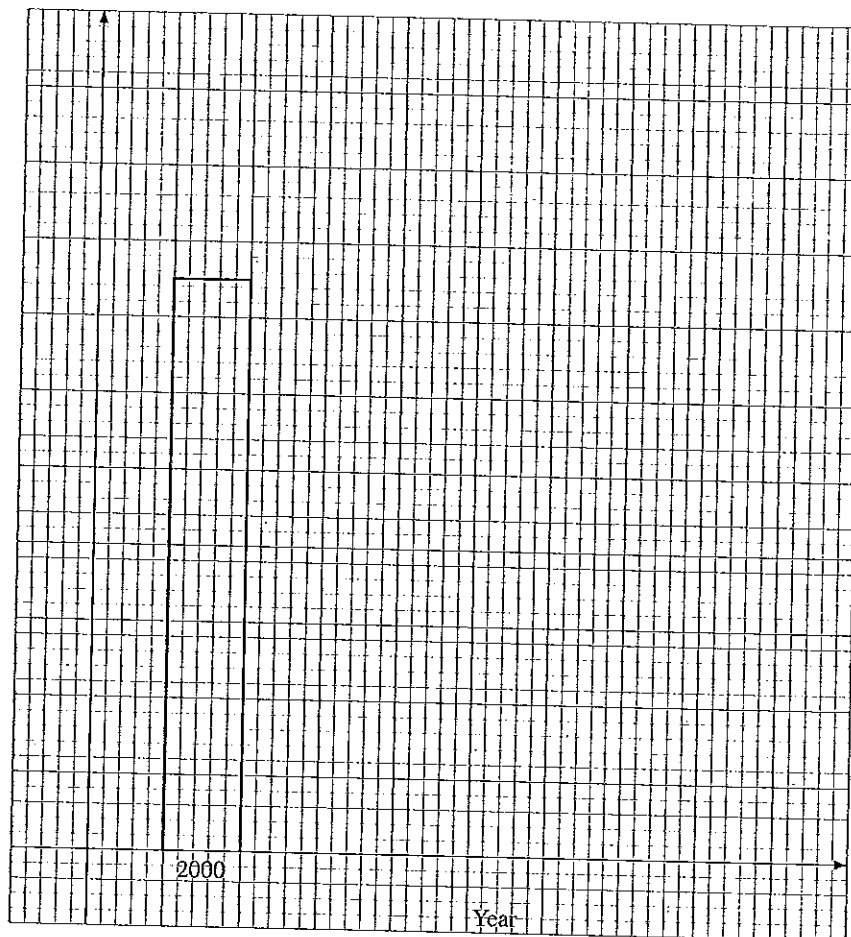


- 9 The number of male workers in Factory ABC (correct to the nearest hundred) from 2000 to 2003 is shown in the table below.

Year	2000	2001	2002	2003
Number of male factory workers	7500	7800	8200	8700

- (a) Using the data given above, complete and label the following bar graph.

Answer (a)



[2]

- (b) Calculate the percentage increase of the number of male workers in the factory from 2000 to 2003.

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- (c) The ratio of the number of male workers to the number of female workers in the factory in 2003 was 15 : 11. Calculate the number of female workers in the factory in 2003.

Answer (b) ..... % [2]

(c)..... female workers [2]

- 10 The students of Secondary 1A were asked to indicate the number of days they were late for school in a particular month. The results are shown below.

2	4	1	0	2	1	3
1	0	3	3	0	3	0
0	2	1	2	1	0	1
3	1	4	0	5	3	4
0	3	0	1	1	2	0

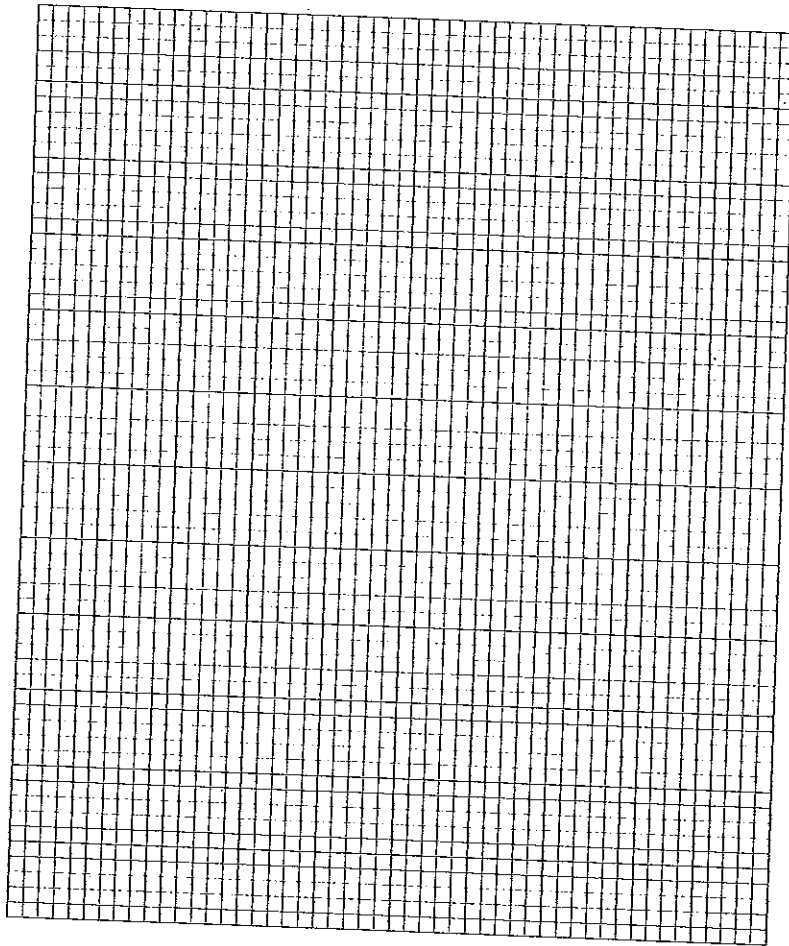
- (a) Construct a frequency table to represent the data above.

Answer (a)


[2]

(b) Draw a histogram to illustrate the information.

*Answer (b)*



[2]

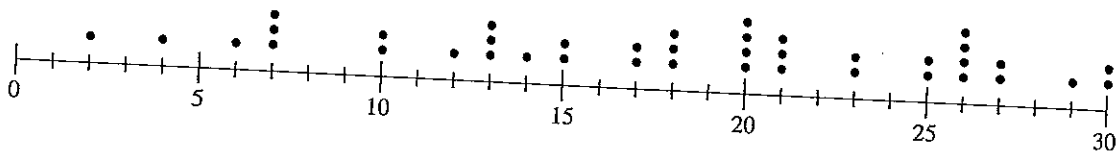
(c) Find the fraction of students who were late for more than 2 days that month.

*Answer (c)* .....

[1]

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- 11 (a) In a recent survey, 40 students were asked the number of novels each of them bought last year. The following dot diagram shows the results of the survey.



- (i) By using the information provided by the dot diagram, complete the stem and leaf diagram below.

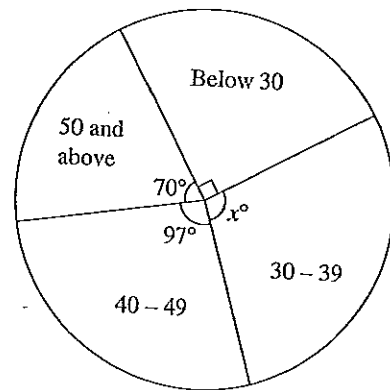
Answer (a) (i)

0	2
0	6 7
1	0 0 2
1	5 5 7
2	0
2	
3	

[3]

- (ii) Find the percentage of the students who bought more than 25 novels last year.
- (b) The pie chart below shows the results of a survey of the age of the workers in a chain of fast food outlets.

- (i) Calculate the value of  $x$ .
- (ii) Calculate the number of workers being interviewed if there are 264 more workers aged 30 years to 39 years than those aged 50 years and above.
- (iii) Find the percentage of the workers aged 40 years to 49 years in the survey, giving your answer correct to 3 significant figures.



Answer (a) (ii) .....% [1]

(b) (i)  $x =$  ..... [1]

(ii) ..... workers [2]

(iii) .....% [1]

12 The data below represents the mass of 30 parcels in kilograms.

54	36	29	42	23	38	26	47	23	53
23	47	59	56	44	35	59	21	42	35
35	40	29	47	21	54	38	49	56	47

- Draw a stem and leaf diagram to display the information.
- Find the most common mass of the 30 parcels.
- Find the difference in mass between the lightest and heaviest parcel.
- Calculate the average mass of the parcels which are over 50 kg, giving your answer correct to 3 significant figures.
- Find the fraction in its simplest form, of the parcels that weighs between 36 kg and 54 kg.

Answer (a)

[2]

Answer (b) ..... kg [1]

(c) ..... kg [1]

(d) ..... kg [2]

(e) ..... [1]

**Test 15: Statistics**

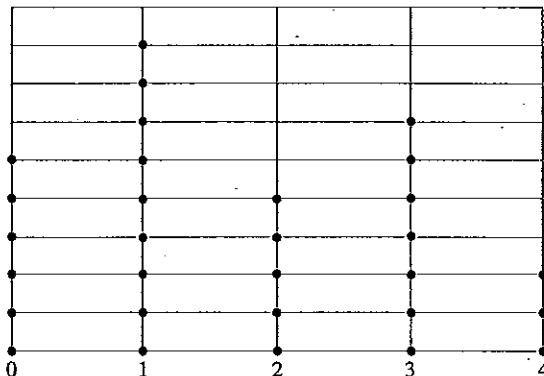
**Section A**

1. (a) No. of students  
 $= 7 + 12 + 6 + 3 + 1 + 1$   
 $= 30$
- (b) No. of siblings  
 $= (0 \times 7) + (1 \times 12) + (2 \times 6) + (3 \times 3) + (4 \times 1) + (5 \times 1)$   
 $= 0 + 12 + 12 + 9 + 4 + 5$   
 $= 42$
- (c) No. of students having less than 3 siblings.  
 $= 7 + 12 + 6$   
 $= 25$   
 Required fraction  
 $= \frac{25}{30}$   
 $= \frac{5}{6}$

2. (a)

Number of goals	Tally Marks	Frequency
0	### I	6
1	### IIII	9
2	###	5
3	### II	7
4	III	3

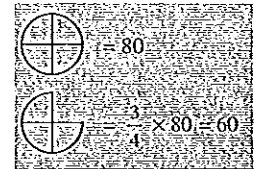
(b) (i)



- (ii) No. of matches with 1 goal scored  
 $= 9$   
 Angle of sector representing no. of matches with 1 goal scored  
 $= \frac{9}{30} \times 360^\circ$   
 $= 108^\circ$

3. (a) The most number of sticks of satay was sold on Friday.

No. of sticks of satay sold on Friday  
 $= 6 \times 80 + 60$   
 $= 480 + 60$   
 $= 540$



- (b) No. of sticks of satay sold on Monday = 200  
 No. of sticks of satay sold on Wednesday = 420  
 Required ratio = 200 : 420  
 $= 10 : 21$

(c) Total no. of sticks of satay sold  
 $= 200 + 240 + 420 + 320 + 540$   
 $= 1720$   
 Total profit  
 $= 1720 \times 15\text{¢} = \$258$

4. (a) From the graph, 420 cars were sold in February.  
 No. of cars sold in February = 140% of the no. of cars sold in January  
 No. of cars sold in January

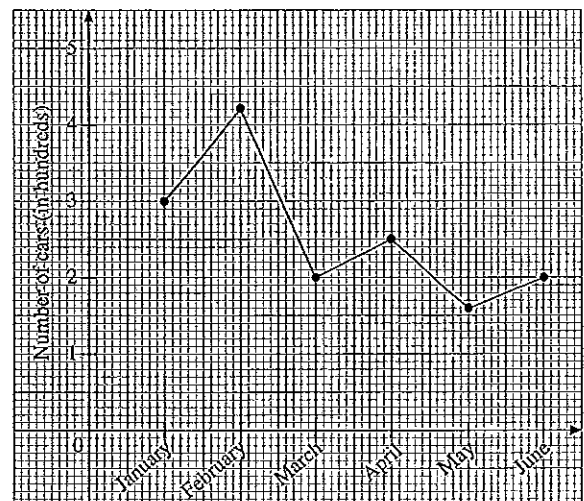
$$= \frac{100}{140} \times 420 = 300$$

- (b) Percentage decrease  
 $= \frac{(250 - 160)}{250} \times 100\%$   
 $= \frac{90}{250} \times 100\% = 36\%$

Percentage decrease =  $\frac{\text{Decrease}}{\text{Original amount}} \times 100\%$

- (c) No. of cars sold in June  
 $= 125\%$  of the no. of cars sold in May  
 $= \frac{125}{100} \times 160 = 200$

(d)



(e) Total no. of cars sold  
 $= 300 + 420 + 200 + 250 + 160 + 200$   
 $= 1530$

5. (a) No. of cars which had less than 2 passengers  
 $= 14 + 8 + 28$   
 $= 50$

(b) Total number of passengers  
 $= (0 \times 14) + (1 \times 8) + (2 \times 28) + (3 \times 20) + (4 \times 10)$   
 $= 0 + 8 + 56 + 60 + 40$   
 $= 164$

(c) Percentage of the cars with 2 passengers  
 $= \frac{28}{80} \times 100 = 35\%$

6. (a) Required percentage  
 $= \frac{108^\circ}{360^\circ} \times 100\%$   
 $= \frac{3}{10} \times 100\%$   
 $= 30\%$

(b) Angle of sector representing women  $= \frac{1}{2}x^\circ$   
 (Given that the no. of women was half the no. of boys.)

$$x^\circ + 3x^\circ + \frac{1}{2}x^\circ + 108^\circ = 360^\circ$$

$$\frac{9}{2}x^\circ = 252^\circ$$

Multiply both sides by 2

$$9x^\circ = 504^\circ$$

$$x^\circ = \frac{504^\circ}{9} = 56^\circ$$

$$\therefore x = 56$$

(c)  $3x^\circ = 3 \times 56^\circ$   
 $= 168^\circ$

$168^\circ$  represent 840 people.

$1^\circ$  represents  $\frac{840}{168} = 5$  people.

$360^\circ$  represent  $360 \times 5 = 1800$ .

$\therefore 1800$  people attended the camp.

7.	2	7
	3	5 9
	4	0 5 5
	5	3 7 8 9 9
	6	0 0 1 2 5 5 8 8 9
	7	1 1 1 6 6 6 7 7 7 8
	8	0 0



### Teacher's Tip

2	7	→ represents 27 marks
3	5 9	→ represents 35 marks and 39 marks
↑	↑	
stem	leaf	

The stems are the tens digits and the leaves are the ones digit.

(a) No. of students in the class  
 $= 32$

(b) No. of students who failed  
 $= 4$

$$\therefore \text{required fraction} = \frac{4}{32} = \frac{1}{8}$$

(c) 75% of 80  
 $= \frac{75}{100} \times 80$   
 $= 60$

A distinction is awarded to pupils who score above 60 marks.

No. of students awarded with distinctions  
 $= 19$

### Section B

8. (a) No. of students who spent at least 8 hours

$$= 12 + 6 + 8$$

$$= 26$$

At least 8 hrs means 8 hrs or more

$\therefore$  required percentage

$$= \frac{26}{40} \times 100\%$$

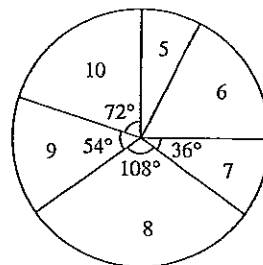
$$= 65\%$$

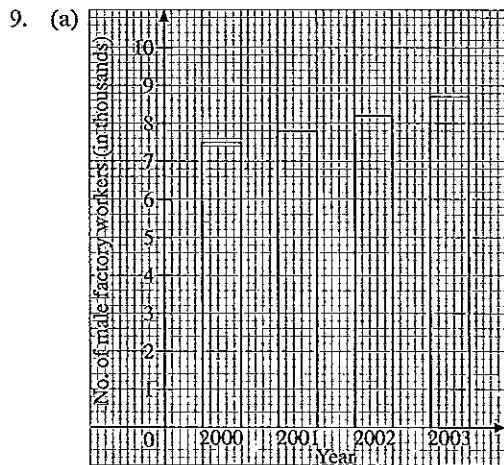
(b) In the pie chart,

40 students is represented by  $360^\circ$ .

$$\therefore 1 \text{ student is represented by } \frac{360^\circ}{40} = 9^\circ$$

No. of hours spent surfing the internet	No. of students	Angle in pie chart
7	4	$4 \times 9^\circ = 36^\circ$
8	12	$12 \times 9^\circ = 108^\circ$
9	6	$6 \times 9^\circ = 54^\circ$
10	8	$8 \times 9^\circ = 72^\circ$



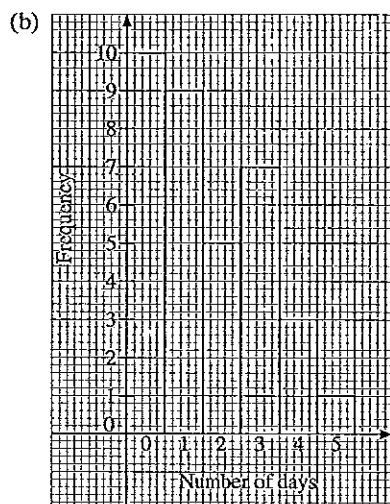


(b) Percentage increase =  $\frac{8700 - 7500}{7500} \times 100\%$   
 $= 16\%$

- (c) 15 units — 8700 people  
 1 unit —  $\frac{8700}{15} = 580$  people  
 11 units —  $11 \times 580 = 6380$  people  
 $\therefore$  there were 6380 female workers in the factory in 2003.

10. (a)

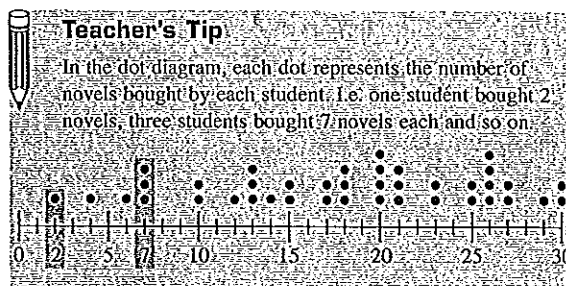
No. of days	0	1	2	3	4	5
Frequency	10	9	5	7	3	1



**Teacher's Tip**  
 In a histogram, there are no gaps between the bars.

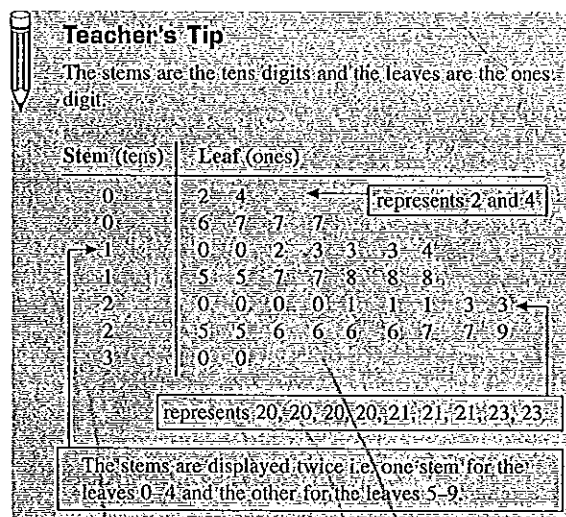
- (c) No. of students late for more than 2 days  
 $= 7 + 3 + 1$   
 $= 11$   
 Total no. of students  
 $= 10 + 9 + 5 + 7 + 3 + 1$   
 $= 35$   
 $\therefore$  required fraction  
 $= \frac{11}{35}$

11. (a)



(i)

0	2 4
0	6 7 7 7
1	0 0 2 3 3 3 4
1	5 5 7 7 8 8 8
2	0 0 0 0 1 1 1 3 3
2	5 5 6 6 6 6 7 7 9
3	0 0



- (ii) No. of students who bought more than 25 novels  
 $= 9$   
 $\therefore$  required percentage  
 $= \frac{9}{40} \times 100\%$   
 $= 22.5\%$



(b) (i)  $x^\circ + 97^\circ + 70^\circ + 90^\circ = 360^\circ$   
 $x^\circ = 103^\circ$   
 $\therefore x = 103$

(ii)  $103^\circ - 70^\circ = 33^\circ$   
 $33^\circ$  represent 264 workers.  
 $1^\circ$  represents  $\frac{264}{33} = 8$  workers.

$360^\circ$  represent  $360 \times 8 = 2880$  workers.  
 $\therefore 2880$  workers were being interviewed.

(iii) Required percentage  
 $= \frac{97^\circ}{360^\circ} \times 100\%$   
 $= 26.9\%$  (correct to 3 sig. fig.)

12. (a)

Stem	Leaf
2	1 1 3 3 3 6 9 9
3	5 5 5 6 8 8
4	0 2 2 4 7 7 7 7 9
5	3 4 4 6 6 9 9

(b) The most common mass is 47 kg.

The most no. of parcels weighing 47 kg.

(c) Lightest parcel = 21 kg  
 Heaviest parcel = 59 kg  
 Difference =  $59 - 21 = 38$  kg

(d) Average mass  
 $= \frac{53 + 54 + 54 + 56 + 56 + 59 + 59}{7}$   
 $= \frac{391}{7}$   
 $= 55.9$  kg (correct to 3 sig. fig.)

There are 7 parcels weighing more than 50 kg.

(e) No. of parcels weighing between 36 kg and 54 kg = 12  
 $\therefore$  required fraction  
 $= \frac{12}{30}$   
 $= \frac{2}{5}$

**Final Examination**  
**Specimen Paper A: Part 1**

1.  $-16 + \sqrt{64} - [50 - (9 - 15) \times 2]$   
 $= -16 + 8 - [50 - (-6) \times 2]$   
 $= -16 + 8 - [50 - (-12)]$   
 $= -16 + 8 - 62$   
 $= -2 - 62$   
 $= -64$

**Teacher's Tip**

1. Simplify the expressions within the brackets first. (Start with innermost brackets.)
2. Within brackets, do multiplication before subtraction.
3. Working from left to right, perform division before subtraction.

2. (a)  $\frac{6}{7} \approx 0.857$  (correct to 3 sig. fig.)

$$\begin{array}{r} 0.8571 \\ 7 \overline{) 6.0000} \\ \underline{56} \phantom{00} \\ 40 \phantom{00} \\ \underline{35} \phantom{00} \\ 50 \phantom{00} \\ \underline{49} \phantom{00} \\ 10 \phantom{00} \\ \underline{7} \phantom{00} \\ 3 \phantom{00} \end{array}$$

**Teacher's Tip**

The division is carried out up to 4 sig. fig., 1 sig. fig. more than required.

(b)  $1\frac{1}{2} \times \frac{4}{9} + \frac{7}{12} \div 2\frac{1}{3}$

Change mixed numbers to improper fractions.  
 Change  $\div$  to  $\times$  and invert the divisor.

$$= \frac{3^1}{2_1} \times \frac{4^2}{9_3} + \frac{7^1}{12_4} \times \frac{3^1}{3_1}$$

Do multiplication before addition.

$$= \frac{2}{3} + \frac{1}{4}$$

The LCM of 3 and 4 is 12.

$$= \frac{8+3}{12}$$

$$= \frac{11}{12}$$

3.  $1764 = 2^2 \times 3^2 \times 7^2$

$$\begin{array}{r} 2 \overline{) 1764} \\ 2 \overline{) 882} \\ 3 \overline{) 441} \\ 3 \overline{) 147} \\ 7 \overline{) 49} \\ 7 \overline{) 7} \\ 1 \end{array}$$

$9261 = 3^3 \times 7^3$

$$\begin{array}{r} 3 \overline{) 9261} \\ 3 \overline{) 3087} \\ 3 \overline{) 1029} \\ 7 \overline{) 343} \\ 7 \overline{) 49} \\ 7 \overline{) 7} \\ 1 \end{array}$$