

SENIOR SECONDARY IMPROVEMENT PROGRAMME 2013



education

Department: Education

GAUTENG PROVINCE

GRADE 12

MATHEMATICAL LITERACY

LEARNER HOMEWORK SOLUTIONS

The SSIP is supported by



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LEARNER HOMEWORK SOLUTIONS

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SOLUTIONS TO HOMEWORK: SESSION 3**TOPIC 1: PROBABILITY AND MISUSE OF STATISTICS IN SOCIETY****QUESTION 1**

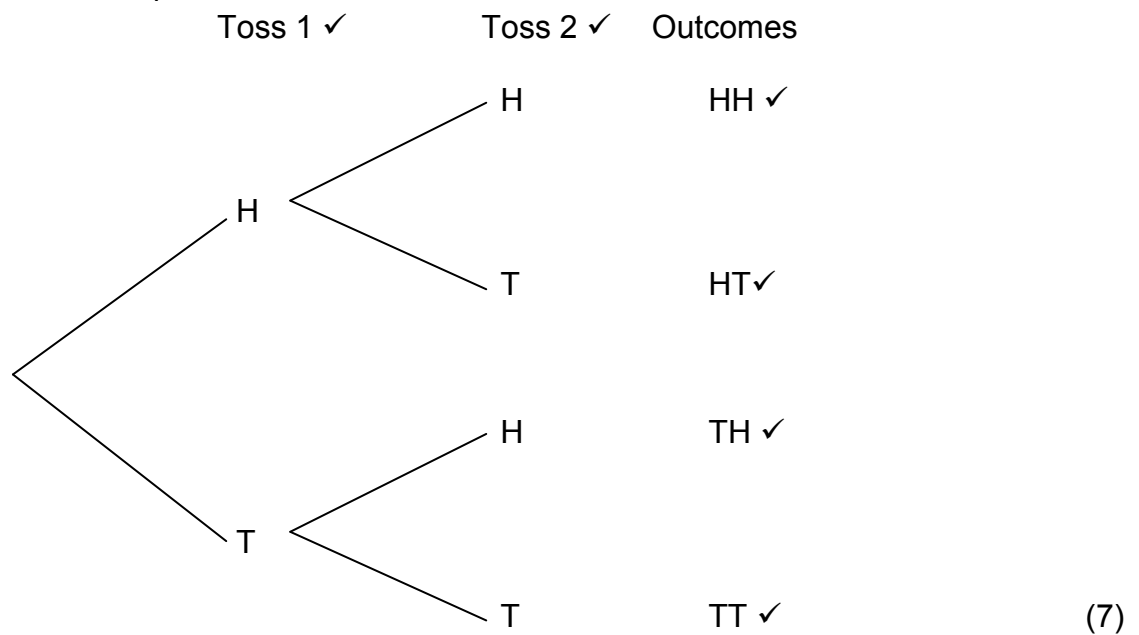
1.1 Probability

$$\text{a) Red} = \frac{0}{120} \checkmark\checkmark = 0 \checkmark \quad (3)$$

$$\text{b) Not white} = \frac{72}{120} \checkmark\checkmark = \frac{3}{5} \checkmark \quad (3)$$

$$\text{c) Green or blue} = \frac{39}{120} + \frac{33}{120} \checkmark\checkmark = \frac{72}{120} \checkmark = \frac{3}{5} \checkmark \quad (4)$$

$$\text{1.2. (a) Probability} = \frac{1}{4} \checkmark$$



$$\text{(b) Probability} = \frac{2}{4} \checkmark\checkmark = \frac{1}{2} \checkmark \quad (3)$$

[20]**QUESTION 2**

Graph B **OR** Q600 ✓✓ The graph was drawn with the months reversed. ✓ (3)

[3]

QUESTION 3

3.1

	Soccer	Rugby	Total
Grade 8	15 ✓	20 ✓	35
Grade 9	10	18 ✓	28
Total	25	38 ✓	63 ✓

(5)

3.1. What is the probability that a grade 8 boy chosen randomly will be a soccer player? (2)

$$= \frac{15}{35} \checkmark = \frac{3}{7} \checkmark$$

3.2. What is the probability that a boy chosen randomly will be a rugby player? (2)

$$= \frac{38}{63} \checkmark \checkmark$$

[9]

SOLUTIONS TO HOMEWORK: SESSION 3
TOPIC: MIXED EXERCISES: DATA HANDLING

QUESTION 1: 14 minutes

$$\begin{aligned}
 1.1. \text{ Mean} &= \frac{128+127+126+122+123+119+122+115+126+125+121+113}{12} \checkmark \\
 &= \frac{1467}{12} \checkmark \\
 &= 122,25 \text{ km/h} \checkmark
 \end{aligned}
 \tag{3}$$

$$\begin{aligned}
 1.2. \text{ Median:} \\
 113 \quad 115 \quad 119 \quad 121 \quad 122 \quad 122 \quad 123 \quad 125 \quad 126 \quad 126 \quad 127 \quad 128 \checkmark \text{ ordering} \\
 \frac{122+123}{2} \checkmark = 122,5 \checkmark
 \end{aligned}
 \tag{3}$$

$$\begin{aligned}
 1.3. \text{ Mode:} \\
 113 \quad 115 \quad 119 \quad 121 \quad \underline{122} \quad \underline{122} \quad 123 \quad 125 \quad \underline{126} \quad \underline{126} \quad 127 \quad 128 \checkmark \\
 \text{Bimodal: } 122\text{km/h} \checkmark \text{ and } 126\text{km/h} \checkmark
 \end{aligned}
 \tag{3}$$

$$1.4. \text{ Mean} \checkmark - \text{there are no outliers (very big or very small values) in the data, thus the mean is the best measure of central tendency.} \checkmark \tag{2}$$

$$\begin{aligned}
 1.5. \text{ Range of ball speed} &= 128 \text{ km/h} - 113 \text{ km/h} \checkmark \\
 &= 15 \text{ km/h} \checkmark
 \end{aligned}
 \tag{2}$$

[13]**QUESTION 2: 16 minutes**

$$\begin{aligned}
 2.1. \text{ Limpopo and Western Cape} \checkmark \checkmark \\
 \text{Difference} &= 30,1\% - 6,7\% \\
 &= 23,4\% \checkmark
 \end{aligned}
 \tag{3}$$

$$\begin{aligned}
 2.2. \text{ Did not use a computer} \\
 &= (100\% - 9,1\%) \text{ of } 911\,118 \checkmark \\
 &= 90,9\% \text{ of } 911\,118 \\
 &= 828\,206,262 \checkmark \\
 &\approx 828\,206 \text{ (or } 828\,207) \checkmark
 \end{aligned}$$

OR

$$9,1\% \text{ of } 911\,118 = 82\,911,738 \checkmark$$

Did not use computers

$$= 911\,118 - 82\,911,738 \checkmark$$

$$\approx 828\,206 \text{ (or } 828\,207) \checkmark$$

(3)

$$\begin{aligned}
 2.3. \text{ Difference in } \% &= 61,8\% - 13,2\% = 48,6\% \checkmark \\
 \text{Difference in usage} &= 48,6\% \text{ of } 264\,654 \checkmark \\
 &= 128\,621,844 \\
 &\approx 128\,622 \checkmark
 \end{aligned}$$

OR

$$\begin{aligned}
 &\text{No. of cellphone users} - \text{No. of computer users} \\
 &= 61,8\% \text{ of } 264\,654 - 13,2\% \text{ of } 264\,654 \checkmark \\
 &= 163\,556,172 - 34\,934,328 \\
 &= 128\,621,844 \checkmark \\
 &\approx 128\,622 \checkmark
 \end{aligned}$$

(3)

$$\begin{aligned}
 2.4. \text{ Total number of households surveyed} \\
 &= 9 \times 1\,388\,957 \checkmark \\
 &= 12\,500\,613 \checkmark
 \end{aligned}$$

Number surveyed in Mpumalanga

$$\begin{aligned}
 &= 12\,500\,613 \checkmark - (1\,586\,739 + 802\,872 + 3\,175\,578 + 2\,234\,129 + 1\,215\,936 + 911 \\
 &118 + 264\,654 + 1\,369\,181) \checkmark \\
 &= 12\,500\,613 - 11\,560\,207 \\
 &= 940\,406 \checkmark
 \end{aligned}$$

(5)

SOLUTIONS TO HOMEWORK: SESSION (
TOPIC 1: GRIDS, MAPS AND THE COMPASS, LOCATION AND RELATIVE POSITION

QUESTION 1: 32 minutes*(Taken from DoE/Preparatory Exam 2009 Paper 1)*

- 1.1. C3✓✓ (2)
- 1.2. (a) South East✓✓ (2)
 (b) 160° ✓✓ (2)
- 1.3. Turn left into 4th Street.✓ Turn left into Buiten Street.✓ After passing Gerrie Visser Street, turn right into the next street. You will see the petrol station ahead of you. ✓ (3)
- OR**
- Turn left into 4th Street Turn left into Wishart Street ✓ Turn right into Gerrie Visser Street ✓ Turn left into Buiten Street ✓ At the next street turn right. You will see the petrol station ahead of you. (3)
- OR**
- Turn in a northerly direction along 4th Street. ✓ Turn in a westerly direction along Buiten Street.✓ After passing Gerrie Visser Street, turn in a northerly direction into the next street you come to. You will see the petrol station ahead of you. ✓ (3)
- 1.4. (a) Paardekraal Primary School.✓✓ (2)
 (b) Between 6 and 14 ✓ because he is at primary school. ✓ (2)
- 1.5. The school's entrance is on the corner of 3rd Street and Pretoria Street.
 a) 11 cm. ✓✓✓ (3)
 b) $1 \times x = 11 \times 11\ 000$ ✓ $x = 121\ 000$ cm ✓
 $x = 121\ 000$ cm \div 100 000 ✓ $x = 1,21$ km ✓ (4)
- [20]**

QUESTION 2: 8 minutes*(Taken from Summary sets for diagrams and notes 2011)*

$$A = \begin{pmatrix} 3 \\ 2 \end{pmatrix} \quad E = \begin{pmatrix} -3 \\ 7 \end{pmatrix} \quad G = \begin{pmatrix} -8 \\ -8 \end{pmatrix} \quad Q = \begin{pmatrix} 6 \\ -5 \end{pmatrix} \quad (8)$$

[8]

QUESTION 3: 4 minutes*(Original)*

Use the seating plan of the Airbus on the left to answer the following questions.

- 3.1. Yes. ✓ (1)
- 3.2. Yes, ✓ each seat has a power port. ✓ (2)
- 3.3. 3 ✓ (1)
- [4]**

SOLUTIONS TO HOMEWORK: SESSION)**TOPIC 2: USE AND INTERPRET SCALE DRAWINGS. BUILD SCALE MODELS****QUESTION 1: 32 minutes***(Original)**(<http://www.soccerwebsite.org>)*

1.1. $1 : 800 = 8,2 \text{ cm } \checkmark : x \text{ cm}$

$$\frac{1}{800} = \frac{8,2}{x} \checkmark$$

$x = 6560 \text{ cm } \checkmark$

$x = 65,6 \text{ m } \checkmark$

(4)

1.2. Use the scale $1 : 800$ to calculate the following:

1.2.1. the actual length of the field.

$1 : 800 = 11,5 \text{ cm } \checkmark : x \text{ cm}$

$$\frac{1}{800} = \frac{11,5}{x} \checkmark$$

$x = 9200 \text{ cm } \checkmark$

$x = 92 \text{ m } \checkmark$

(4)

1.2.2. the actual circumference of the centre circle.

Diameter = 2,6 cm

$1 : 800 = 2,6 \text{ cm } \checkmark : x \text{ cm}$

$$\frac{1}{800} = \frac{2,6}{x} \checkmark$$

$x = 2080 \text{ cm } \checkmark$

$\therefore \text{Diameter } 20,8 \text{ m } \checkmark$

Circumference = πD

Circumference = $\pi \times 20,8 \checkmark$

$= 3,14 \times 20,8 \text{ m} = 65,31 \text{ m } \checkmark$ (π button = 65,345 m)

(6)

1.3. The coach wants to design a board.

1.3.1. Field = 96 m and board = 3 m.

Scale: board : field

$$= 3 \text{ m } \checkmark : 96 \text{ m } \checkmark$$

$$= \frac{300 \text{ cm}}{9600 \text{ cm}} \checkmark$$

$$= \frac{1}{32}$$

Scale = 1: 32 ✓

The field length fits on the board length exactly. ✓

The width of the field is 68 m and the board width is 1,5 m. To determine the fit

$$1: 32 \text{ cm} = x : 68 \text{ m } \checkmark$$

$$1: 32 \text{ cm} = x : 6800 \text{ cm } \checkmark$$

$$= \frac{1}{32} = \frac{x}{6800}$$

$$= 32x = 6800$$

$$= \frac{32x}{32} = \frac{6800}{32}$$

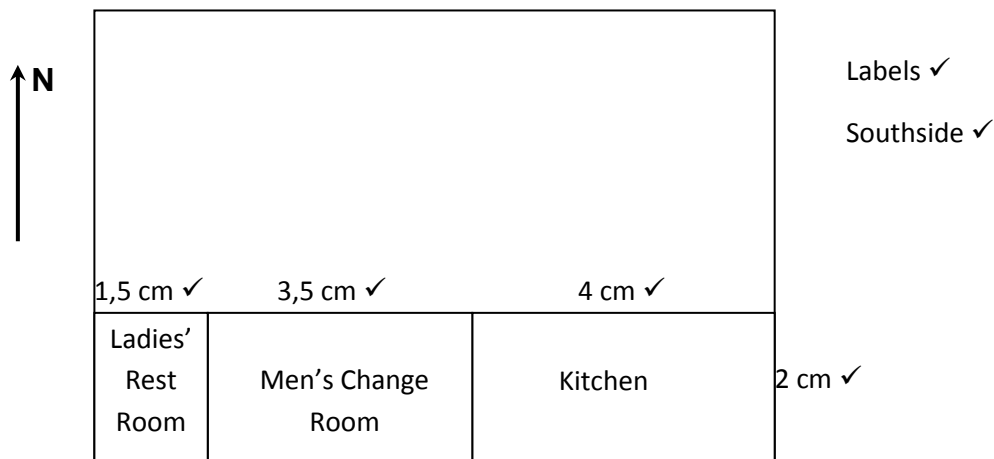
$$x = 212,5 \text{ cm } \checkmark$$

$$x = 2,125 \text{ m } \checkmark$$

∴ The board is too short for the width of the field. ✓ (10)

1.3.2. Use a scale so that the width of the field will fit onto the board. ✓✓ (2)

1.4. Use the scale, draw and label the Kitchen, Ladies' Restroom and the Men's Change Room on the plan.



(6)
[32]

SOLUTIONS TO HOMEWORK: SESSION) SELF STUDY**TOPIC 1: COMPARE, SUMMARISE AND DISPLAY DATA – DESCRIBE TRENDS****QUESTION 1**

The ages (in years) of patients treated for Malaria at two different clinics during a certain month was recorded as follows:

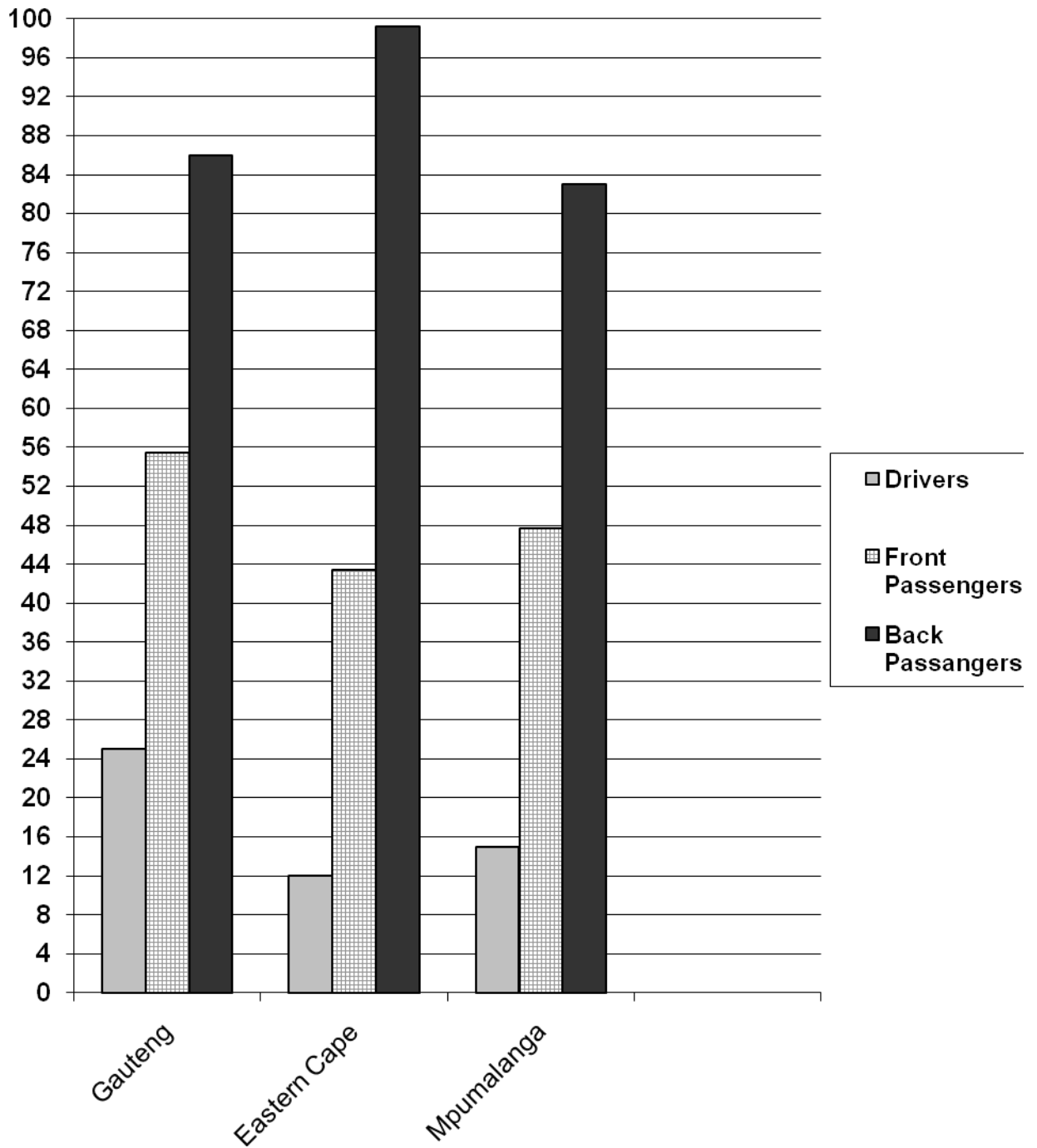
Clinic A:	5	7	18	24	24	32	46	52	63	
Clinic B:	37	28	17	56	43	55	39	40	26	35

- 1.1. Arrange in ascending order: 17, 26, 28, 35, 37, 39, 40, 43, 55, 56 ✓✓ (4)
 Median = $\frac{37 + 39}{2}$ ✓ = 38 ✓
- 1.2. Mode = 24 ✓ (1)
- 1.3. Range = highest – lowest
 65 - 17 ✓ = 39 years ✓ (2)
- 1.4. Mean = $\frac{17 + 26 + 28 + 35 + 37 + 39 + 40 + 43 + 55 + 56}{10}$ ✓✓
 = $\frac{376}{10}$ ✓
 = 37,6
 ≈ 38 years old ✓ (4)
- 1.5. Clinic A ✓ because the data shows young children and very old people go to the clinic ✓. (2)
- [13]**

QUESTION 2

- 2.1. More drivers wear safety belts than front or back passengers. ✓ This may not be, as people tend to put their seatbelts on when they see a roadblock. ✓✓ (3)
- 2.2. Y axis correct ✓✓, key ✓✓✓, X axis shows Gauteng ✓, EC ✓ and Mpumalanga ✓
 all three bars correctly represented. ✓✓✓ compound bar graph ✓ (12)

MATHEMATICAL LITERACY GRADE 12 SESSION) SELF STUDY (LEARNER HOMEWORK SOLUTIONS)



[15]

SOLUTIONS TO HOMEWORK: SESSION) SELF STUDY
TOPIC 2: PROBABILITY AND MISUSE OF STATISTICS IN SOCIETY

QUESTION 1

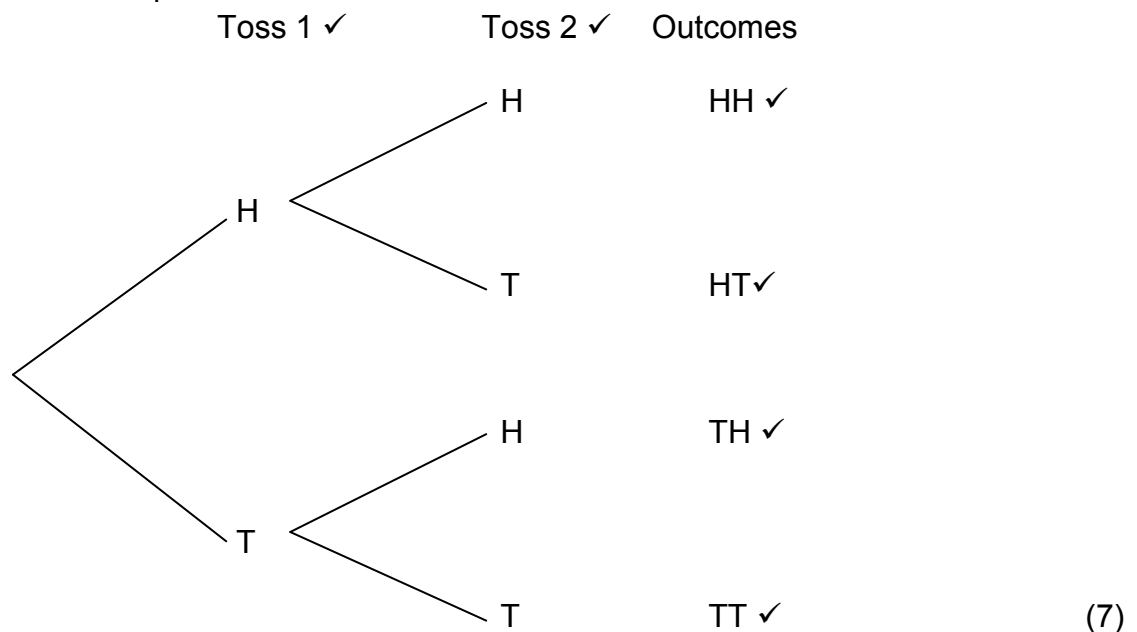
1.1 Probability

a) Red = $\frac{0}{120}$ ✓✓ = 0 ✓ (3)

b) Not white = $\frac{72}{120}$ ✓✓ = $\frac{3}{5}$ ✓ (3)

c) Green or blue = $\frac{39}{120} + \frac{33}{120}$ ✓✓ = $\frac{72}{120}$ ✓ = $\frac{3}{5}$ ✓ (4)

1.2. (a) Probability = $\frac{1}{4}$ ✓



(b) Probability = $\frac{2}{4}$ ✓✓ = $\frac{1}{2}$ ✓ (3)

[20]**QUESTION 2**

Graph B OR Q600 ✓✓ The graph was drawn with the months reversed. ✓ (3)

[3]

QUESTION 3

	Soccer	Rugby	Total
Grade 8	15 ✓	20 ✓	35
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Total	25	38 ✓	63 ✓

(5)

3.1. What is the probability that a grade 8 boy chosen randomly will be a soccer player? (2)

$$= \frac{15}{35} \checkmark = \frac{3}{7} \checkmark$$

3.2. What is the probability that a boy chosen randomly will be a rugby player? (2)

$$= \frac{38}{63} \checkmark \checkmark$$

[9]