

FREE SAMPLE: THE FIRST 3 QUESTIONS

Question 1 (10 marks)

Suggested maximum time: 5 minutes.

(a) Find the value of $1686 + 988$.

[2 marks]

(b) Find the value of 2.7×5 .

[2 marks]

(c) Find the value of $10 + 5 \times 2$.

[2 marks]

(d) What number is halfway between 15 and 29?

[2 marks]

(e) Find the Lowest Common Multiple (LCM) of 3 and 8.

[2 marks]

Question 2 (25 marks)

Suggested maximum time: 10 minutes.

(a) Aoife goes to the shopping centre. The table shows some of the items Aoife buys. Fill in the table to find the total cost of these items.

Item	Cost (€)
1 cap at €10.50	
2 belts at €18.20 each	
1 scarf at €8.45	
Total cost:	

[7 marks]

(b) Aoife also buys a hat. In total Aoife spends €68.90. Aoife pays using one €50 note and two €20 notes. Work out how much change Aoife gets.

[6 marks]

(c) Aoife has lunch while at the shopping centre. The menu is shown in the table. Aoife chooses one main course and one dessert from the menu. For example, one choice would be pasta and rice pudding. Write down two more possible choices.

Main course	Dessert
Pasta	Rice pudding
Stir-fry	Apple crumble
Curry	Pancakes
Burger	

[5 marks]

(d) Find the total number of different choices of lunch that are possible if Aoife chooses one main course and one dessert.

[7 marks]

Question 3 (25 marks)

Suggested maximum time: 10 minutes.

In a survey, 30 students were asked to choose their favourite sport to watch on television. The results are: Rugby, Tennis, Golf, Rugby, Soccer, Golf, Rugby, Golf, Darts, Golf, Soccer, Darts, Golf, Soccer, Golf, Tennis, Rugby, Darts, Soccer, Rugby, Rugby, Soccer, Tennis, Rugby, Soccer, Golf, Darts, Darts, Soccer, Soccer.

(a) Complete the table to show how many students chose each sport.

Favourite sport	Rugby	Darts	Tennis	Soccer	Golf
Number of students	7	5			

[5 marks]

(b) In the line plot below, each student is represented by a dot. Complete the line plot to show the information from the table.

[4 marks]



(c) Which measure of centre (the mean, the median or the mode) can you find for this data? Tick one box only. Then write the value of this measure of centre for the data.

[4 marks]

(d) This survey was carried out during the World Darts Championship. Do you think this had an effect on the results? Tick one box only (Yes or No) and give a reason for your answer.

[4 marks]

(e) 60 other students were asked to choose their favourite soccer team. The results are shown in the table. A pie chart is drawn to show the results. Work out the size of the angle for each team in the pie chart. Show your work.

Team	Ballynore F.C.	Moyvane Rovers	Castlemore Town	Hollybrook Celtic
Number of students	24	6	15	15

[4 marks]

(f) In another survey of 60 students, the pie chart angle for Moyvane Rovers is 54° . Work out how many of the 60 students chose Moyvane Rovers as their favourite team.

[4 marks]

TEST PAPERS HUB NOT FOR RESALE OR REDISTRIBUTION

THE WORKED ANSWERS TO THOSE 3 QUESTIONS

Question 1 (10 marks) [Number and arithmetic]

Suggested maximum time: 5 minutes.

(a) Find the value of $1686 + 988$.

(a) Answer: 2674

- Line up the digits by place value: units under units, tens under tens, and so on.
- Add the numbers column by column, starting with the units, carrying when a column adds to 10 or more.
- $1686 + 988 = 2674$.

KEY TAKEAWAY

Add and subtract in columns, lining up place values.

(b) Find the value of 2.7×5 .

(b) Answer: 13.5

- Ignore the decimal point and multiply: $27 \times 5 = 135$.
- 2.7 has one decimal place, so the answer needs one decimal place: divide by 10.
- $135 \div 10 = 13.5$, so $2.7 \times 5 = 13.5$.

KEY TAKEAWAY

To multiply a decimal, multiply as whole numbers, then put the decimal point back in the same position.

(c) Find the value of $10 + 5 \times 2$.

(c) Answer: 20

- Multiplication comes before addition: $5 \times 2 = 10$.
- Then add: $10 + 10 = 20$.
- So $10 + 5 \times 2 = 20$.

KEY TAKEAWAY

Order of operations (BIDMAS): brackets, then multiplication and division, then addition and subtraction.

(d) What number is halfway between 15 and 29?

(d) Answer: 22

- The number halfway between two numbers is their mean.
- Add them: $15 + 29 = 44$.
- Divide by 2: $44 \div 2 = 22$.

KEY TAKEAWAY

Halfway between two numbers = $(\text{first} + \text{second}) \div 2$.

(e) Find the Lowest Common Multiple (LCM) of 3 and 8.

(e) Answer: LCM = 24

- Write the first few multiples of 3: 3, 6, 9, 12, 15, 18, 21, 24.
- Write the first few multiples of 8: 8, 16, 24.
- The smallest number in both lists is 24, so LCM = 24.

KEY TAKEAWAY

The LCM is the smallest number that is a multiple of both numbers: list the multiples of each and find the first match.

LOS: Number and arithmetic (Junior Cycle Mathematics, Ordinary Level, Number)

Question 2 (25 marks) [Money, shopping and counting]

Suggested maximum time: 10 minutes.

(a) Aoife goes to the shopping centre. The table shows some of the items Aoife buys. Fill in the table to find the total cost of these items.

(a) Answer: €10.50, €36.40, €8.45; total €55.35

- For each item, multiply the quantity by the price: $1 \times €10.50 = €10.50$; $2 \times €18.20 = €36.40$; $1 \times €8.45 = €8.45$.
- Write each cost in the table.
- Add the three costs: $€10.50 + €36.40 + €8.45 = €55.35$.
- Check the total by estimating: each cost is close to a whole number of euro, and the total looks sensible.

KEY TAKEAWAY

Cost of several equal items = quantity $\times$ price of one. Add the line costs to get the total.

(b) Aoife also buys a hat. In total Aoife spends €68.90. Aoife pays using one €50 note and two €20 notes. Work out how much change Aoife gets.

(b) Answer: €21.10

- Work out the total paid: $€50 + €20 + €20 = €90$.
- Change = amount paid – amount spent = $€90.00 - €68.90$.
- $€90.00 - €68.90 = €21.10$.

KEY TAKEAWAY

Change = amount paid – amount spent. Add up the notes and coins paid first.

(c) Aoife has lunch while at the shopping centre. The menu is shown in the table. Aoife chooses one main course and one dessert from the menu. For example, one choice would be pasta and rice pudding. Write down two more possible choices.

(c) Answer: For example: stir-fry and apple crumble; pasta and apple crumble (any two different choices from the menu).

- A choice is one main course together with one dessert.
- The main courses are pasta, stir-fry, curry, burger and the desserts are rice pudding, apple crumble, pancakes.
- Two more choices are stir-fry with apple crumble, and pasta with apple crumble.

KEY TAKEAWAY

List choices systematically: fix one main course and pair it with each dessert in turn.

(d) Find the total number of different choices of lunch that are possible if Aoife chooses one main course and one dessert.

(d) Answer: 12

- Each of the 4 main courses can be paired with any of the 3 desserts.
- Burger-style listing: main course 1 with each dessert gives 3 choices, main course 2 gives 3 more, and so on.
- Total = number of main courses $\times$ number of desserts = $4 \times 3 = 12$.

KEY TAKEAWAY

Counting principle: if there are m ways to choose one thing and n ways to choose another, there are $m \times n$ combined choices.

LOS: Money, shopping and counting (Junior Cycle Mathematics, Ordinary Level, Number)

Question 3 (25 marks) [Statistics: a survey, line plot and pie chart]

Suggested maximum time: 10 minutes. In a survey, 30 students were asked to choose their favourite sport to watch on television. The results are: Rugby, Tennis, Golf, Rugby, Soccer, Golf, Rugby, Golf, Darts, Golf, Soccer, Darts, Golf, Soccer, Golf, Tennis, Rugby, Darts, Soccer, Rugby, Rugby, Soccer, Tennis, Rugby, Soccer, Golf, Darts, Darts, Soccer, Soccer.

(a) Complete the table to show how many students chose each sport.

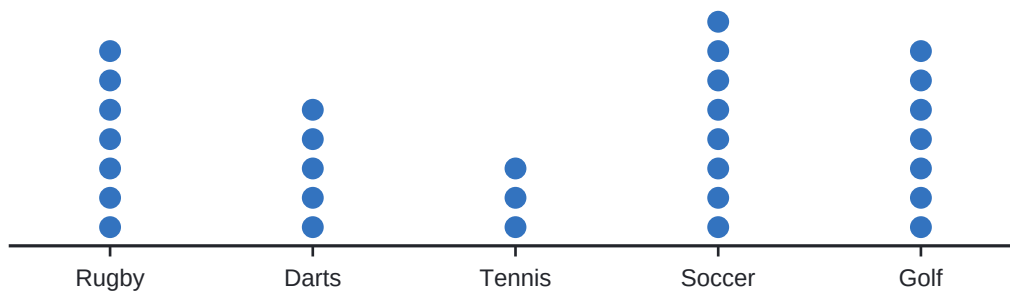
(a) Answer: Rugby 7, Darts 5, Tennis 3, Soccer 8, Golf 7

- Tally the results: go through the list and count how many times each sport appears.
- Count: Rugby 7; Darts 5; Tennis 3; Soccer 8; Golf 7.
- Check that the five numbers add up to the 30 students surveyed: $7 + 5 + 3 + 8 + 7 = 30$.

KEY TAKEAWAY

To build a frequency table, tally each result once, then check that the frequencies add up to the number surveyed.

(b) In the line plot below, each student is represented by a dot. Complete the line plot to show the information from the table.



(b) Answer: A line plot with 7 dots above Rugby, 5 dots above Darts, 3 dots above Tennis, 8 dots above Soccer, 7 dots above Golf.

- Look at the number of students for each sport in your table.
- Draw that many dots, one above the other, above each sport.
- Count the dots: there should be 30 in total.

KEY TAKEAWAY

In a line plot every data value is one dot, stacked above its category.

(c) Which measure of centre (the mean, the median or the mode) can you find for this data? Tick one box only. Then write the value of this measure of centre for the data.

(c) Answer: Mode: Soccer

- The data are names of sports, not numbers, so we cannot add them (no mean) or put them in order (no median).
- The mode is the value that occurs most often. The most frequent sport is Soccer with 8 students.
- So the measure is the mode and its value is Soccer.

KEY TAKEAWAY

For categories (not numbers) only the mode can be found: it is the most common value.

(d) This survey was carried out during the World Darts Championship. Do you think this had an effect on the results? Tick one box only (Yes or No) and give a reason for your answer.

(d) Answer: Yes: students may have been watching darts at the time, so more of them may have chosen it as their favourite.

- Think about when the survey took place: the World Darts Championship was on television.
- Students who were watching it may be more likely to name darts.
- So the results may be biased towards darts: the answer is Yes, with that reason.

KEY TAKEAWAY

Survey results can be biased by when and where the survey is carried out; always link your reason to the situation described.

(e) 60 other students were asked to choose their favourite soccer team. The results are shown in the table. A pie chart is drawn to show the results. Work out the size of the angle for each team in the pie chart. Show your work.

(e) Answer: Ballynore F.C. 144°, Moyvane Rovers 36°, Castlemore Town 90°, Hollybrook Celtic 90°

- The whole circle is 360° and there are 60 students, so each student is worth $360 \div 60 = 6^\circ$.
- Angle = number of students $\times 6^\circ$: Ballynore F.C. $24 \times 6 = 144^\circ$; Moyvane Rovers $6 \times 6 = 36^\circ$; Castlemore Town $15 \times 6 = 90^\circ$; Hollybrook Celtic $15 \times 6 = 90^\circ$.
- Check: $144 + 36 + 90 + 90 = 360^\circ$.

KEY TAKEAWAY

Pie chart angle = (number $\div$ total) $\times 360^\circ$; the angles add up to 360° .

(f) In another survey of 60 students, the pie chart angle for Moyvane Rovers is 54° . Work out how many of the 60 students chose Moyvane Rovers as their favourite team.

(f) Answer: 9 students

- The angle 54° is a fraction of the full circle: $\frac{54}{360}$.
- Number of students = $(54 \div 360) \times 60 = \frac{3}{20} \times 60$.
- = 9 students.

KEY TAKEAWAY

From an angle back to a frequency: frequency = (angle $\div 360^\circ$) $\times$ total.

LOS: Statistics: a survey, line plot and pie chart (Junior Cycle Mathematics, Ordinary Level, Statistics and Probability)