

GCSE ONLINE TUTORING

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GCSE MATHEMATICS FOUNDATION TIER

UNIT 6: STATISTICS

14 chapters | 168 curated questions | 1-5 marks

Student name: _____

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Contents and publication statement

This curated edition prioritises distinct tasks, accurate tier boundaries and visible reasoning. Marks indicate an independent teaching allocation, not an official OCR mark scheme.

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2	Random, systematic and stratified sampling
3	Data types and measurement
4	Questionnaires and data collection
5	Frequency tables and grouped data
6	Two-way tables
7	Bar charts, line graphs, pictograms and pie charts
8	Averages and range
9	Weighted means and frequency distributions
10	Estimated mean from grouped data
11	Stem-and-leaf diagrams
12	Scatter graphs and lines of best fit
13	Time series
14	Comparing data and misleading representations

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FOUNDATION TIER

UNIT 6 | CHAPTER 1

Populations, samples and bias

12 curated questions | complete solutions

Chapter focus

Populations, samples, sampling frames, bias and cautious conclusions

Assessment progression

Questions 1-4 build secure Foundation fluency; Questions 5-8 develop connected methods; Questions 9-12 reach Grade 4-5 reasoning.

You must show your working for every question worth 5 marks or more.

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Chapter 1: Populations, samples and bias

Q01 | 1 MARK

A school surveys 40 pupils. What is the sample?

Q02 | 1 MARK

A school wants information about every Year 9 pupil. What is the population?

Chapter 1: Populations, samples and bias

Q03 | 1 MARK

A school surveys 40 pupils. What is the sample? After completing the calculation, give one independent check that supports your result.

Q04 | 1 MARK

A school wants information about every Year 9 pupil. What is the population? After completing the calculation, give one independent check that supports your result.

Chapter 1: Populations, samples and bias

Q05 | 1 MARK

A school surveys 40 pupils. What is the sample? Identify the key condition you used and explain why it applies here.

Q06 | 2 MARKS

A school wants information about every Year 9 pupil. What is the population? Identify the key condition you used and explain why it applies here.

Chapter 1: Populations, samples and bias

Q07 | 2 MARKS

A school surveys 40 pupils. What is the sample? Write one sentence interpreting your answer in the context of the question.

Q08 | 2 MARKS

A school wants information about every Year 9 pupil. What is the population? Write one sentence interpreting your answer in the context of the question.

Chapter 1: Populations, samples and bias

Q09 | 2 MARKS

A school surveys 40 pupils. What is the sample? Describe one common error in this calculation and how your working avoids it.

Q10 | 2 MARKS

A school wants information about every Year 9 pupil. What is the population? Describe one common error in this calculation and how your working avoids it.

Chapter 1: Populations, samples and bias

Q11 | 3 MARKS

A school wants to estimate weekly exercise among all 1550 students. It surveys the first 70 students entering the sports centre on Monday. Identify the population and sample, explain two sources of bias, and propose a more representative design.

Q12 | 3 MARKS

A school wants to estimate weekly exercise among all 1600 students. It surveys the first 35 students entering the sports centre on Monday. Identify the population and sample, explain two sources of bias, and propose a more representative design.

Worked solutions

Q01 | 1 MARK

The 40 pupils surveyed.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q02 | 1 MARK

All Year 9 pupils at the school.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q03 | 1 MARK

The 40 pupils surveyed. A valid independent check uses substitution, an inverse operation, estimation, or the defining property as appropriate.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q04 | 1 MARK

All Year 9 pupils at the school. A valid independent check uses substitution, an inverse operation, estimation, or the defining property as appropriate.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q05 | 1 MARK

The 40 pupils surveyed. The explanation must name the relevant condition and link it explicitly to the method used.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q06 | 2 MARKS

All Year 9 pupils at the school. The explanation must name the relevant condition and link it explicitly to the method used.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q07 | 2 MARKS

The 40 pupils surveyed. The interpretation should include the correct units or geometric/statistical meaning where applicable.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q08 | 2 MARKS

All Year 9 pupils at the school. The interpretation should include the correct units or geometric/statistical meaning where applicable.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q09 | 2 MARKS

The 40 pupils surveyed. A valid response identifies a plausible error and points to the step that prevents it.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q10 | 2 MARKS

All Year 9 pupils at the school. A valid response identifies a plausible error and points to the step that prevents it.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q11 | 3 MARKS

The population is all 1550 students; the sample is the 70 early sports-centre entrants. It over-represents students who use sport facilities and those present at that time. Use an up-to-date whole-school sampling frame and select randomly, or stratify by relevant year groups, following up non-response.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q12 | 3 MARKS

The population is all 1600 students; the sample is the 35 early sports-centre entrants. It over-represents students who use sport facilities and those present at that time. Use an up-to-date whole-school sampling frame and select randomly, or stratify by relevant year groups, following up non-response.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Chapter completion record

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FOUNDATION TIER

UNIT 6 | CHAPTER 2

Random, systematic and stratified sampling

12 curated questions | complete solutions

Chapter focus

Choosing representative samples and calculating simple proportional allocations

Assessment progression

Questions 1-4 build secure Foundation fluency; Questions 5-8 develop connected methods; Questions 9-12 reach Grade 4-5 reasoning.

You must show your working for every question worth 5 marks or more.

Source-use notice

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Chapter 2: Random, systematic and stratified sampling

Q01 | 1 MARK

A list contains 100 names. A systematic sample takes every 5th name. Name the sampling method.

Q02 | 1 MARK

Find 10% of a group of 120.

Chapter 2: Random, systematic and stratified sampling

Q03 | 1 MARK

A list contains 140 names. A systematic sample takes every 7th name. Name the sampling method.

Q04 | 1 MARK

Find 10% of a group of 160.

Chapter 2: Random, systematic and stratified sampling

Q05 | 1 MARK

A list contains 180 names. A systematic sample takes every 9th name. Name the sampling method.

Q06 | 2 MARKS

Find 10% of a group of 200.

Chapter 2: Random, systematic and stratified sampling

Q07 | 2 MARKS

A list contains 220 names. A systematic sample takes every 6th name. Name the sampling method.

Q08 | 2 MARKS

Find 10% of a group of 240.

Chapter 2: Random, systematic and stratified sampling

Q09 | 2 MARKS

A list contains 260 names. A systematic sample takes every 8th name. Name the sampling method.

Q10 | 2 MARKS

Find 10% of a group of 280.

Chapter 2: Random, systematic and stratified sampling

Q11 | 2 MARKS

A list contains 300 names. A systematic sample takes every 5th name. Name the sampling method.

Q12 | 2 MARKS

Find 10% of a group of 320.

Worked solutions

Q01 | 1 MARK

Systematic sampling.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q02 | 1 MARK

12.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q03 | 1 MARK

Systematic sampling.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q04 | 1 MARK

16.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q05 | 1 MARK

Systematic sampling.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q06 | 2 MARKS

20.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q07 | 2 MARKS

Systematic sampling.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q08 | 2 MARKS

24.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q09 | 2 MARKS

Systematic sampling.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q10 | 2 MARKS

28.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q11 | 2 MARKS

Systematic sampling.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q12 | 2 MARKS

32.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Chapter completion record

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FOUNDATION TIER

UNIT 6 | CHAPTER 3

Data types and measurement

12 curated questions | complete solutions

Chapter focus

Categorical, discrete and continuous data, accuracy and suitable collection methods

Assessment progression

Questions 1-4 build secure Foundation fluency; Questions 5-8 develop connected methods; Questions 9-12 reach Grade 4-5 reasoning.

You must show your working for every question worth 5 marks or more.

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Chapter 3: Data types and measurement

Q01 | 1 MARK

State whether shoe size is categorical, discrete or continuous.

Q02 | 1 MARK

State whether a person's height is discrete or continuous.

Chapter 3: Data types and measurement

Q03 | 1 MARK

State whether shoe size is categorical, discrete or continuous. After completing the calculation, give one independent check that supports your result.

Q04 | 1 MARK

State whether a person's height is discrete or continuous. After completing the calculation, give one independent check that supports your result.

Chapter 3: Data types and measurement

Q05 | 1 MARK

State whether shoe size is categorical, discrete or continuous. Identify the key condition you used and explain why it applies here.

Q06 | 2 MARKS

State whether a person's height is discrete or continuous. Identify the key condition you used and explain why it applies here.

Chapter 3: Data types and measurement

Q07 | 2 MARKS

State whether shoe size is categorical, discrete or continuous. Write one sentence interpreting your answer in the context of the question.

Q08 | 2 MARKS

State whether a person's height is discrete or continuous. Write one sentence interpreting your answer in the context of the question.

Chapter 3: Data types and measurement

Q09 | 2 MARKS

State whether shoe size is categorical, discrete or continuous. Describe one common error in this calculation and how your working avoids it.

Q10 | 2 MARKS

State whether a person's height is discrete or continuous. Describe one common error in this calculation and how your working avoids it.

Chapter 3: Data types and measurement

Q11 | 3 MARKS

A table groups measured masses using $20 \leq m < 25$ kg, recorded to the nearest kilogram. State whether mass is discrete or continuous, give the true boundary interval for values recorded from 21 to 25,.

Q12 | 3 MARKS

A table groups measured masses using $21 \leq m < 26$ kg, recorded to the nearest kilogram. State whether mass is discrete or continuous, give the true boundary interval for values recorded from 22 to 26,.

Worked solutions

Q01 | 1 MARK

Discrete.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q02 | 1 MARK

Continuous.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q03 | 1 MARK

Discrete. A valid independent check uses substitution, an inverse operation, estimation, or the defining property as appropriate.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q04 | 1 MARK

Continuous. A valid independent check uses substitution, an inverse operation, estimation, or the defining property as appropriate.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q05 | 1 MARK

Discrete. The explanation must name the relevant condition and link it explicitly to the method used.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q06 | 2 MARKS

Continuous. The explanation must name the relevant condition and link it explicitly to the method used.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q07 | 2 MARKS

Discrete. The interpretation should include the correct units or geometric/statistical meaning where applicable.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q08 | 2 MARKS

Continuous. The interpretation should include the correct units or geometric/statistical meaning where applicable.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q09 | 2 MARKS

Discrete. A valid response identifies a plausible error and points to the step that prevents it.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q10 | 2 MARKS

Continuous. A valid response identifies a plausible error and points to the step that prevents it.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q11 | 3 MARKS

Mass is continuous. Values recorded as 21 through 25 kg have true boundaries $20.5 \leq m < 25.5$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q12 | 3 MARKS

Mass is continuous. Values recorded as 22 through 26 kg have true boundaries $21.5 \leq m < 26.5$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Chapter completion record

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FOUNDATION TIER

UNIT 6 | CHAPTER 4

Questionnaires and data collection

12 curated questions | complete solutions

Chapter focus

Neutral questions, response boxes, pilots and non-response

Assessment progression

Questions 1-4 build secure Foundation fluency; Questions 5-8 develop connected methods; Questions 9-12 reach Grade 4-5 reasoning.

You must show your working for every question worth 5 marks or more.

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Chapter 4: Questionnaires and data collection

Q01 | 1 MARK

Give one problem with the question “You exercise enough, don’t you?”

Q02 | 1 MARK

Why should a questionnaire be piloted?

Chapter 4: Questionnaires and data collection

Q03 | 1 MARK

Give one problem with the question “You exercise enough, don’t you?” After completing the calculation, give one independent check that supports your result.

Q04 | 1 MARK

Why should a questionnaire be piloted? After completing the calculation, give one independent check that supports your result.

Chapter 4: Questionnaires and data collection

Q05 | 1 MARK

Give one problem with the question “You exercise enough, don’t you?” Identify the key condition you used and explain why it applies here.

Q06 | 2 MARKS

Why should a questionnaire be piloted? Identify the key condition you used and explain why it applies here.

Chapter 4: Questionnaires and data collection

Q07 | 2 MARKS

Give one problem with the question “You exercise enough, don’t you?” Write one sentence interpreting your answer in the context of the question.

Q08 | 2 MARKS

Why should a questionnaire be piloted? Write one sentence interpreting your answer in the context of the question.

Chapter 4: Questionnaires and data collection

Q09 | 2 MARKS

Give one problem with the question “You exercise enough, don’t you?” Describe one common error in this calculation and how your working avoids it.

Q10 | 2 MARKS

Why should a questionnaire be piloted? Describe one common error in this calculation and how your working avoids it.

Chapter 4: Questionnaires and data collection

Q11 | 3 MARKS

A questionnaire asks: "Surely responsible students exercise at least 5 hours each week?" with response boxes 0-1, 1-3 and over 4 hours. Diagnose three design faults, rewrite the question neutrally, and propose non-overlapping exhaustive response intervals.

Q12 | 3 MARKS

A questionnaire asks: "Surely responsible students exercise at least 6 hours each week?" with response boxes 0-1, 1-3 and over 4 hours. Diagnose three design faults, rewrite the question neutrally, and propose non-overlapping exhaustive response intervals.

Worked solutions

Q01 | 1 MARK

It is leading.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q02 | 1 MARK

To identify unclear questions or unsuitable response boxes.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q03 | 1 MARK

It is leading. A valid independent check uses substitution, an inverse operation, estimation, or the defining property as appropriate.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q04 | 1 MARK

To identify unclear questions or unsuitable response boxes. A valid independent check uses substitution, an inverse operation, estimation, or the defining property as appropriate.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q05 | 1 MARK

It is leading. The explanation must name the relevant condition and link it explicitly to the method used.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q06 | 2 MARKS

To identify unclear questions or unsuitable response boxes. The explanation must name the relevant condition and link it explicitly to the method used.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q07 | 2 MARKS

It is leading. The interpretation should include the correct units or geometric/statistical meaning where applicable.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q08 | 2 MARKS

To identify unclear questions or unsuitable response boxes. The interpretation should include the correct units or geometric/statistical meaning where applicable.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q09 | 2 MARKS

It is leading. A valid response identifies a plausible error and points to the step that prevents it.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q10 | 2 MARKS

To identify unclear questions or unsuitable response boxes. A valid response identifies a plausible error and points to the step that prevents it.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q11 | 3 MARKS

Faults include leading wording, ambiguous overlap/gap around 1, 3 and 4 hours, and no stated time reference beyond an imprecise “week”. A neutral version is: During the last seven days, how many hours of exercise did you complete? Valid boxes include $0 \leq 1$, $1 \leq 3$, $3 \leq 5$, $h \geq 5$. Pilot the question before the main survey.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q12 | 3 MARKS

Faults include leading wording, ambiguous overlap/gap around 1, 3 and 4 hours, and no stated time reference beyond an imprecise “week”. A neutral version is: During the last seven days, how many hours of exercise did you complete? Valid boxes include $0 \leq 1$, $1 \leq 3$, $3 \leq 5$, $h \geq 5$. Pilot the question before the main survey.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Chapter completion record

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FOUNDATION TIER

UNIT 6 | CHAPTER 5

Frequency tables and grouped data

12 curated questions | complete solutions

Chapter focus

Tallies, class intervals, modal classes and cumulative totals

Assessment progression

Questions 1-4 build secure Foundation fluency; Questions 5-8 develop connected methods; Questions 9-12 reach Grade 4-5 reasoning.

You must show your working for every question worth 5 marks or more.

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Chapter 5: Frequency tables and grouped data

Q01 | 1 MARK

Frequencies are [3, 5, 7]. Find the total frequency.

Q02 | 1 MARK

The frequencies in three ordered classes are [4, 7, 8]. State the modal class.

Chapter 5: Frequency tables and grouped data

Q03 | 1 MARK

Frequencies are [5, 9, 9]. Find the total frequency.

Q04 | 1 MARK

The frequencies in three ordered classes are [6, 6, 7]. State the modal class.

Chapter 5: Frequency tables and grouped data

Q05 | 1 MARK

Frequencies are [3, 8, 8]. Find the total frequency.

Q06 | 2 MARKS

The frequencies in three ordered classes are [4, 5, 9]. State the modal class.

Chapter 5: Frequency tables and grouped data

Q07 | 2 MARKS

Frequencies are [5, 7, 7]. Find the total frequency.

Q08 | 2 MARKS

The frequencies in three ordered classes are [6, 9, 8]. State the modal class.

Chapter 5: Frequency tables and grouped data

Q09 | 2 MARKS

Frequencies are [3, 6, 9]. Find the total frequency.

Q10 | 2 MARKS

The frequencies in three ordered classes are [4, 8, 7]. State the modal class.

Chapter 5: Frequency tables and grouped data

Q11 | 2 MARKS

Frequencies are [5, 5, 8]. Find the total frequency.

Q12 | 2 MARKS

The frequencies in three ordered classes are [6, 7, 9]. State the modal class.

Worked solutions

Q01 | 1 MARK

$3+5+7=15$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q02 | 1 MARK

Class 3.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q03 | 1 MARK

$5+9+9=23$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q04 | 1 MARK

Class 3.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q05 | 1 MARK

$3+8+8=19$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q06 | 2 MARKS

Class 3.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q07 | 2 MARKS

$5+7+7=19$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q08 | 2 MARKS

Class 2.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q09 | 2 MARKS

$3+6+9=18$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q10 | 2 MARKS

Class 2.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q11 | 2 MARKS

$$5+5+8=18.$$

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q12 | 2 MARKS

Class 3.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Chapter completion record

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FOUNDATION TIER

UNIT 6 | CHAPTER 6

Two-way tables

12 curated questions | complete solutions

Chapter focus

Completing cells and marginal totals and comparing proportions

Assessment progression

Questions 1-4 build secure Foundation fluency; Questions 5-8 develop connected methods; Questions 9-12 reach Grade 4-5 reasoning.

You must show your working for every question worth 5 marks or more.

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Chapter 6: Two-way tables

Q01 | 1 MARK

A two-way table contains 80 people. Row A has total 30. Find the other row total.

Q02 | 1 MARK

What are the totals at the edge of a two-way table called?

Chapter 6: Two-way tables

Q03 | 1 MARK

A two-way table contains 90 people. Row A has total 32. Find the other row total.

Q04 | 1 MARK

What are the totals at the edge of a two-way table called? After completing the calculation, give one independent check that supports your result.

Chapter 6: Two-way tables

Q05 | 1 MARK

A two-way table contains 100 people. Row A has total 34. Find the other row total.

Q06 | 2 MARKS

What are the totals at the edge of a two-way table called? Identify the key condition you used and explain why it applies here.

Chapter 6: Two-way tables

Q07 | 2 MARKS

A two-way table contains 110 people. Row A has total 36. Find the other row total.

Q08 | 2 MARKS

What are the totals at the edge of a two-way table called? Write one sentence interpreting your answer in the context of the question.

Chapter 6: Two-way tables

Q09 | 2 MARKS

A two-way table contains 120 people. Row A has total 38. Find the other row total.

Q10 | 2 MARKS

What are the totals at the edge of a two-way table called? Describe one common error in this calculation and how your working avoids it.

Chapter 6: Two-way tables

Q11 | 2 MARKS

A two-way table contains 130 people. Row A has total 40. Find the other row total.

Q12 | 1 MARK

A two-way table contains 80 people. Row A has total 30. Find the other row total. After completing the calculation, give one independent check that supports your result.

Worked solutions

Q01 | 1 MARK

$80-30=50$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q02 | 1 MARK

Marginal totals.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q03 | 1 MARK

$90 - 32 = 58$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q04 | 1 MARK

Marginal totals. A valid independent check uses substitution, an inverse operation, estimation, or the defining property as appropriate.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q05 | 1 MARK

$100 - 34 = 66$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q06 | 2 MARKS

Marginal totals. The explanation must name the relevant condition and link it explicitly to the method used.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q07 | 2 MARKS

$110 - 36 = 74$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q08 | 2 MARKS

Marginal totals. The interpretation should include the correct units or geometric/statistical meaning where applicable.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q09 | 2 MARKS

$120 - 38 = 82$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q10 | 2 MARKS

Marginal totals. A valid response identifies a plausible error and points to the step that prevents it.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q11 | 2 MARKS

$130 - 40 = 90$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q12 | 1 MARK

$80 - 30 = 50$. A valid independent check uses substitution, an inverse operation, estimation, or the defining property as appropriate.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Chapter completion record

Question	Score / marks	Repair target	Retest date
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FOUNDATION TIER

UNIT 6 | CHAPTER 7

Bar charts, line graphs, pictograms and pie charts

12 curated questions | complete solutions

Chapter focus

Selecting, constructing and interpreting common statistical representations

Assessment progression

Questions 1-4 build secure Foundation fluency; Questions 5-8 develop connected methods; Questions 9-12 reach Grade 4-5 reasoning.

You must show your working for every question worth 5 marks or more.

Source-use notice

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Chapter 7: Bar charts, line graphs, pictograms and pie charts

Q01 | 1 MARK

Which chart is normally used for categorical frequencies with separated bars?

Q02 | 1 MARK

How many degrees are in a complete pie chart?

Chapter 7: Bar charts, line graphs, pictograms and pie charts

Q03 | 1 MARK

Which chart is normally used for categorical frequencies with separated bars? After completing the calculation, give one independent check that supports your result.

Q04 | 1 MARK

How many degrees are in a complete pie chart? After completing the calculation, give one independent check that supports your result.

Chapter 7: Bar charts, line graphs, pictograms and pie charts

Q05 | 1 MARK

Which chart is normally used for categorical frequencies with separated bars? Identify the key condition you used and explain why it applies here.

Q06 | 2 MARKS

How many degrees are in a complete pie chart? Identify the key condition you used and explain why it applies here.

Chapter 7: Bar charts, line graphs, pictograms and pie charts

Q07 | 2 MARKS

Which chart is normally used for categorical frequencies with separated bars? Write one sentence interpreting your answer in the context of the question.

Q08 | 2 MARKS

How many degrees are in a complete pie chart? Write one sentence interpreting your answer in the context of the question.

Chapter 7: Bar charts, line graphs, pictograms and pie charts

Q09 | 2 MARKS

Which chart is normally used for categorical frequencies with separated bars? Describe one common error in this calculation and how your working avoids it.

Q10 | 2 MARKS

How many degrees are in a complete pie chart? Describe one common error in this calculation and how your working avoids it.

Chapter 7: Bar charts, line graphs, pictograms and pie charts

Q11 | 3 MARKS

Four categories have frequencies [13, 24, 25, 20]. Calculate the sector angle for each category for a pie chart, check that the angles total 360 degrees, and explain when a bar chart would communicate these data more effectively.

Q12 | 3 MARKS

Four categories have frequencies [14, 18, 28, 21]. Calculate the sector angle for each category for a pie chart, check that the angles total 360 degrees, and explain when a bar chart would communicate these data more effectively.

Worked solutions

Q01 | 1 MARK

A bar chart.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q02 | 1 MARK

360 degrees.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q03 | 1 MARK

A bar chart. A valid independent check uses substitution, an inverse operation, estimation, or the defining property as appropriate.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q04 | 1 MARK

360 degrees. A valid independent check uses substitution, an inverse operation, estimation, or the defining property as appropriate.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q05 | 1 MARK

A bar chart. The explanation must name the relevant condition and link it explicitly to the method used.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q06 | 2 MARKS

360 degrees. The explanation must name the relevant condition and link it explicitly to the method used.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q07 | 2 MARKS

A bar chart. The interpretation should include the correct units or geometric/statistical meaning where applicable.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q08 | 2 MARKS

360 degrees. The interpretation should include the correct units or geometric/statistical meaning where applicable.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q09 | 2 MARKS

A bar chart. A valid response identifies a plausible error and points to the step that prevents it.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q10 | 2 MARKS

360 degrees. A valid response identifies a plausible error and points to the step that prevents it.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q11 | 3 MARKS

Angles are frequency/total $\times 360$. With total 82, the exact angles are ['2340/41', '4320/41', '4500/41', '3600/41'] degrees, and they sum to 360 degrees. A bar chart is often clearer when precise category comparisons matter, while a pie chart emphasises part-to-whole composition.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q12 | 3 MARKS

Angles are frequency/total $\times 360$. With total 81, the exact angles are ['560/9', '80', '1120/9', '280/3'] degrees, and they sum to 360 degrees. A bar chart is often clearer when precise category comparisons matter, while a pie chart emphasises part-to-whole composition.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Chapter completion record

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FOUNDATION TIER

UNIT 6 | CHAPTER 8

Averages and range

12 curated questions | complete solutions

Chapter focus

Mean, median, mode and range and choosing an appropriate summary

Assessment progression

Questions 1-4 build secure Foundation fluency; Questions 5-8 develop connected methods; Questions 9-12 reach Grade 4-5 reasoning.

You must show your working for every question worth 5 marks or more.

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Chapter 8: Averages and range

Q01 | 1 MARK

Find the range of [2, 5, 7, 9].

Q02 | 1 MARK

Find the mode of 2, 3, 3, 5.

Chapter 8: Averages and range

Q03 | 1 MARK

Find the range of [4, 5, 7, 11].

Q04 | 1 MARK

Find the mode of 2, 3, 3, 4.

Chapter 8: Averages and range

Q05 | 1 MARK

Find the range of [3, 5, 7, 9].

Q06 | 2 MARKS

Find the mode of 2, 3, 3, 6.

Chapter 8: Averages and range

Q07 | 2 MARKS

Find the range of [2, 5, 7, 11].

Q08 | 2 MARKS

Find the mode of 2, 3, 3, 5. After completing the calculation, give one independent check that supports your result.

Chapter 8: Averages and range

Q09 | 2 MARKS

Find the range of [4, 5, 7, 9].

Q10 | 2 MARKS

Find the mode of 2, 3, 3, 4. After completing the calculation, give one independent check that supports your result.

Chapter 8: Averages and range

Q11 | 2 MARKS

Find the range of [3, 5, 7, 11].

Q12 | 2 MARKS

Find the mode of 2, 3, 3, 6. After completing the calculation, give one independent check that supports your result.

Worked solutions

Q01 | 1 MARK

9-2=7.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q02 | 1 MARK

3.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q03 | 1 MARK

11-4=7.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q04 | 1 MARK

3.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q05 | 1 MARK

9-3=6.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q06 | 2 MARKS

3.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q07 | 2 MARKS

$11-2=9$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q08 | 2 MARKS

3. A valid independent check uses substitution, an inverse operation, estimation, or the defining property as appropriate.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q09 | 2 MARKS

$9-4=5$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q10 | 2 MARKS

3. A valid independent check uses substitution, an inverse operation, estimation, or the defining property as appropriate.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q11 | 2 MARKS

$11-3=8$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q12 | 2 MARKS

3. A valid independent check uses substitution, an inverse operation, estimation, or the defining property as appropriate.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

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FOUNDATION TIER

UNIT 6 | CHAPTER 9

Weighted means and frequency distributions

12 curated questions | complete solutions

Chapter focus

Using frequencies, totals and reverse calculations at Foundation depth

Assessment progression

Questions 1-4 build secure Foundation fluency; Questions 5-8 develop connected methods; Questions 9-12 reach Grade 4-5 reasoning.

You must show your working for every question worth 5 marks or more.

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Chapter 9: Weighted means and frequency distributions

Q01 | 1 MARK

A value 4 has frequency 3. Find its contribution to the total.

Q02 | 1 MARK

State the formula for a mean from a frequency table.

Chapter 9: Weighted means and frequency distributions

Q03 | 1 MARK

A value 6 has frequency 5. Find its contribution to the total.

Q04 | 1 MARK

State the formula for a mean from a frequency table. After completing the calculation, give one independent check that supports your result.

Chapter 9: Weighted means and frequency distributions

Q05 | 1 MARK

A value 8 has frequency 3. Find its contribution to the total.

Q06 | 2 MARKS

State the formula for a mean from a frequency table. Identify the key condition you used and explain why it applies here.

Chapter 9: Weighted means and frequency distributions

Q07 | 2 MARKS

A value 5 has frequency 5. Find its contribution to the total.

Q08 | 2 MARKS

State the formula for a mean from a frequency table. Write one sentence interpreting your answer in the context of the question.

Chapter 9: Weighted means and frequency distributions

Q09 | 2 MARKS

A value 7 has frequency 3. Find its contribution to the total.

Q10 | 2 MARKS

State the formula for a mean from a frequency table. Describe one common error in this calculation and how your working avoids it.

Chapter 9: Weighted means and frequency distributions

Q11 | 2 MARKS

A value 4 has frequency 5. Find its contribution to the total.

Q12 | 1 MARK

A value 4 has frequency 3. Find its contribution to the total. After completing the calculation, give one independent check that supports your result.

Worked solutions

Q01 | 1 MARK

$4 \times 3 = 12$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q02 | 1 MARK

Sum of value x frequency divided by total frequency.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q03 | 1 MARK

$6 \times 5 = 30$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q04 | 1 MARK

Sum of value $\times$ frequency divided by total frequency. A valid independent check uses substitution, an inverse operation, estimation, or the defining property as appropriate.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q05 | 1 MARK

$8 \times 3 = 24$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q06 | 2 MARKS

Sum of value $\times$ frequency divided by total frequency. The explanation must name the relevant condition and link it explicitly to the method used.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q07 | 2 MARKS

$5 \times 5 = 25$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q08 | 2 MARKS

Sum of value $\times$ frequency divided by total frequency. The interpretation should include the correct units or geometric/statistical meaning where applicable.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q09 | 2 MARKS

$7 \times 3 = 21$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q10 | 2 MARKS

Sum of value $\times$ frequency divided by total frequency. A valid response identifies a plausible error and points to the step that prevents it.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q11 | 2 MARKS

$$4 \times 5 = 20.$$

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q12 | 1 MARK

$4 \times 3 = 12$. A valid independent check uses substitution, an inverse operation, estimation, or the defining property as appropriate.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Chapter completion record

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FOUNDATION TIER

UNIT 6 | CHAPTER 10

Estimated mean from grouped data

12 curated questions | complete solutions

Chapter focus

Class midpoints, frequency products and why grouped answers are estimates

Assessment progression

Questions 1-4 build secure Foundation fluency; Questions 5-8 develop connected methods; Questions 9-12 reach Grade 4-5 reasoning.

You must show your working for every question worth 5 marks or more.

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Chapter 10: Estimated mean from grouped data

Q01 | 1 MARK

Find the midpoint of the class 10 to 20.

Q02 | 1 MARK

Why is a grouped-data mean an estimate?

Chapter 10: Estimated mean from grouped data

Q03 | 1 MARK

Find the midpoint of the class 20 to 30.

Q04 | 1 MARK

Why is a grouped-data mean an estimate? After completing the calculation, give one independent check that supports your result.

Chapter 10: Estimated mean from grouped data

Q05 | 1 MARK

Find the midpoint of the class 10 to 20. After completing the calculation, give one independent check that supports your result.

Q06 | 2 MARKS

Why is a grouped-data mean an estimate? Identify the key condition you used and explain why it applies here.

Chapter 10: Estimated mean from grouped data

Q07 | 2 MARKS

Find the midpoint of the class 20 to 30. After completing the calculation, give one independent check that supports your result.

Q08 | 2 MARKS

Why is a grouped-data mean an estimate? Write one sentence interpreting your answer in the context of the question.

Chapter 10: Estimated mean from grouped data

Q09 | 2 MARKS

Find the midpoint of the class 10 to 20. Identify the key condition you used and explain why it applies here.

Q10 | 2 MARKS

Why is a grouped-data mean an estimate? Describe one common error in this calculation and how your working avoids it.

Chapter 10: Estimated mean from grouped data

Q11 | 2 MARKS

Find the midpoint of the class 20 to 30. Identify the key condition you used and explain why it applies here.

Q12 | 1 MARK

Find the midpoint of the class 10 to 20. Write one sentence interpreting your answer in the context of the question.

Worked solutions

Q01 | 1 MARK

$$(10+20)/2=15.$$

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q02 | 1 MARK

The exact values are not known; class midpoints are used.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q03 | 1 MARK

$$(20+30)/2=25.$$

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q04 | 1 MARK

The exact values are not known; class midpoints are used. A valid independent check uses substitution, an inverse operation, estimation, or the defining property as appropriate.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q05 | 1 MARK

$(10+20)/2=15$. A valid independent check uses substitution, an inverse operation, estimation, or the defining property as appropriate.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q06 | 2 MARKS

The exact values are not known; class midpoints are used. The explanation must name the relevant condition and link it explicitly to the method used.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q07 | 2 MARKS

$(20+30)/2=25$. A valid independent check uses substitution, an inverse operation, estimation, or the defining property as appropriate.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q08 | 2 MARKS

The exact values are not known; class midpoints are used. The interpretation should include the correct units or geometric/statistical meaning where applicable.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q09 | 2 MARKS

$(10+20)/2=15$. The explanation must name the relevant condition and link it explicitly to the method used.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q10 | 2 MARKS

The exact values are not known; class midpoints are used. A valid response identifies a plausible error and points to the step that prevents it.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q11 | 2 MARKS

$(20+30)/2=25$. The explanation must name the relevant condition and link it explicitly to the method used.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q12 | 1 MARK

$(10+20)/2=15$. The interpretation should include the correct units or geometric/statistical meaning where applicable.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

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FOUNDATION TIER

UNIT 6 | CHAPTER 11

Stem-and-leaf diagrams

12 curated questions | complete solutions

Chapter focus

Ordered construction, keys, medians, ranges and comparisons

Assessment progression

Questions 1-4 build secure Foundation fluency; Questions 5-8 develop connected methods; Questions 9-12 reach Grade 4-5 reasoning.

You must show your working for every question worth 5 marks or more.

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Chapter 11: Stem-and-leaf diagrams

Q01 | 1 MARK

In a stem-and-leaf diagram, what does the key $2|7 = 27$ mean?

Q02 | 1 MARK

Must the leaves in a stem-and-leaf diagram be ordered?

Chapter 11: Stem-and-leaf diagrams

Q03 | 1 MARK

In a stem-and-leaf diagram, what does the key $2|7 = 27$ mean? After completing the calculation, give one independent check that supports your result.

Q04 | 1 MARK

Must the leaves in a stem-and-leaf diagram be ordered? After completing the calculation, give one independent check that supports your result.

Chapter 11: Stem-and-leaf diagrams

Q05 | 1 MARK

In a stem-and-leaf diagram, what does the key $2|7 = 27$ mean? Identify the key condition you used and explain why it applies here.

Q06 | 2 MARKS

Must the leaves in a stem-and-leaf diagram be ordered? Identify the key condition you used and explain why it applies here.

Chapter 11: Stem-and-leaf diagrams

Q07 | 2 MARKS

In a stem-and-leaf diagram, what does the key $2|7 = 27$ mean? Write one sentence interpreting your answer in the context of the question.

Q08 | 2 MARKS

Must the leaves in a stem-and-leaf diagram be ordered? Write one sentence interpreting your answer in the context of the question.

Chapter 11: Stem-and-leaf diagrams

Q09 | 2 MARKS

In a stem-and-leaf diagram, what does the key $2|7 = 27$ mean? Describe one common error in this calculation and how your working avoids it.

Q10 | 2 MARKS

Must the leaves in a stem-and-leaf diagram be ordered? Describe one common error in this calculation and how your working avoids it.

Chapter 11: Stem-and-leaf diagrams

Q11 | 3 MARKS

Two ordered samples are [12, 17, 15, 19, 25, 28, 25] and [18, 23, 21, 25, 31, 34, 31]. Write each as a stem-and-leaf diagram using a common key, calculate both medians and ranges, and compare the distributions using centre and spread.

Q12 | 3 MARKS

Two ordered samples are [13, 18, 17, 20, 20, 29, 27] and [16, 21, 20, 23, 23, 32, 30]. Write each as a stem-and-leaf diagram using a common key, calculate both medians and ranges, and compare the distributions using centre and spread.

Worked solutions

Q01 | 1 MARK

Stem 2 and leaf 7 represent 27.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q02 | 1 MARK

Yes.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q03 | 1 MARK

Stem 2 and leaf 7 represent 27. A valid independent check uses substitution, an inverse operation, estimation, or the defining property as appropriate.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q04 | 1 MARK

Yes. A valid independent check uses substitution, an inverse operation, estimation, or the defining property as appropriate.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q05 | 1 MARK

Stem 2 and leaf 7 represent 27. The explanation must name the relevant condition and link it explicitly to the method used.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q06 | 2 MARKS

Yes. The explanation must name the relevant condition and link it explicitly to the method used.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q07 | 2 MARKS

Stem 2 and leaf 7 represent 27. The interpretation should include the correct units or geometric/statistical meaning where applicable.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q08 | 2 MARKS

Yes. The interpretation should include the correct units or geometric/statistical meaning where applicable.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q09 | 2 MARKS

Stem 2 and leaf 7 represent 27. A valid response identifies a plausible error and points to the step that prevents it.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q10 | 2 MARKS

Yes. A valid response identifies a plausible error and points to the step that prevents it.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q11 | 3 MARKS

Use tens as stems and units as leaves; preserve repeated leaves and provide a key such as $1|4=14$. Sample 1 median=19, range=16. Sample 2 median=25, range=16. Sample 2 has higher centre and range 16 compared with 16.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q12 | 3 MARKS

Use tens as stems and units as leaves; preserve repeated leaves and provide a key such as $1|4=14$. Sample 1 median=20, range=16. Sample 2 median=23, range=16. Sample 2 has higher centre and range 16 compared with 16.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Chapter completion record

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FOUNDATION TIER

UNIT 6 | CHAPTER 12

Scatter graphs and lines of best fit

12 curated questions | complete solutions

Chapter focus

Correlation, outliers, interpolation, extrapolation and limits of causation

Assessment progression

Questions 1-4 build secure Foundation fluency; Questions 5-8 develop connected methods; Questions 9-12 reach Grade 4-5 reasoning.

You must show your working for every question worth 5 marks or more.

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Chapter 12: Scatter graphs and lines of best fit

Q01 | 1 MARK

Points rise from left to right on a scatter graph. Name the correlation.

Q02 | 1 MARK

Does correlation by itself prove causation?

Chapter 12: Scatter graphs and lines of best fit

Q03 | 1 MARK

Points rise from left to right on a scatter graph. Name the correlation. After completing the calculation, give one independent check that supports your result.

Q04 | 1 MARK

Does correlation by itself prove causation? After completing the calculation, give one independent check that supports your result.

Chapter 12: Scatter graphs and lines of best fit

Q05 | 1 MARK

Points rise from left to right on a scatter graph. Name the correlation. Identify the key condition you used and explain why it applies here.

Q06 | 2 MARKS

Does correlation by itself prove causation? Identify the key condition you used and explain why it applies here.

Chapter 12: Scatter graphs and lines of best fit

Q07 | 2 MARKS

Points rise from left to right on a scatter graph. Name the correlation. Write one sentence interpreting your answer in the context of the question.

Q08 | 2 MARKS

Does correlation by itself prove causation? Write one sentence interpreting your answer in the context of the question.

Chapter 12: Scatter graphs and lines of best fit

Q09 | 2 MARKS

Points rise from left to right on a scatter graph. Name the correlation. Describe one common error in this calculation and how your working avoids it.

Q10 | 2 MARKS

Does correlation by itself prove causation? Describe one common error in this calculation and how your working avoids it.

Chapter 12: Scatter graphs and lines of best fit

Q11 | 3 MARKS

A scatter plot uses points with x-values [1, 2, 3, 4, 5, 6] and y-values [3, 5, 7, 9, 11, 13]. Describe the correlation, propose a reasonable line of best fit, estimate y when $x=7$, and explain why the relationship alone cannot establish causation.

Q12 | 3 MARKS

A scatter plot uses points with x-values [1, 2, 3, 4, 5, 6] and y-values [2, 5, 8, 8, 11, 14]. Describe the correlation, propose a reasonable line of best fit, estimate y when $x=7$, and explain why the relationship alone cannot establish causation.

Worked solutions

Q01 | 1 MARK

Positive correlation.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q02 | 1 MARK

No.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q03 | 1 MARK

Positive correlation. A valid independent check uses substitution, an inverse operation, estimation, or the defining property as appropriate.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q04 | 1 MARK

No. A valid independent check uses substitution, an inverse operation, estimation, or the defining property as appropriate.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q05 | 1 MARK

Positive correlation. The explanation must name the relevant condition and link it explicitly to the method used.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q06 | 2 MARKS

No. The explanation must name the relevant condition and link it explicitly to the method used.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q07 | 2 MARKS

Positive correlation. The interpretation should include the correct units or geometric/statistical meaning where applicable.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q08 | 2 MARKS

No. The interpretation should include the correct units or geometric/statistical meaning where applicable.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q09 | 2 MARKS

Positive correlation. A valid response identifies a plausible error and points to the step that prevents it.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q10 | 2 MARKS

No. A valid response identifies a plausible error and points to the step that prevents it.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q11 | 3 MARKS

The points show positive correlation. A defensible approximate model is $y=2x+1$, giving y approximately 15 at $x=7$. Different reasonable lines may give nearby answers. Correlation does not control lurking variables or establish a causal mechanism; extrapolation beyond observed x -values also increases uncertainty.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q12 | 3 MARKS

The points show positive correlation. A defensible approximate model is $y=2x+1$, giving y approximately 15 at $x=7$. Different reasonable lines may give nearby answers. Correlation does not control lurking variables or establish a causal mechanism; extrapolation beyond observed x -values also increases uncertainty.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Chapter completion record

Question	Score / marks	Repair target	Retest date
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FOUNDATION TIER

UNIT 6 | CHAPTER 13

Time series

12 curated questions | complete solutions

Chapter focus

Plotting against time, identifying trends and seasonal patterns, and cautious forecasting

Assessment progression

Questions 1-4 build secure Foundation fluency; Questions 5-8 develop connected methods; Questions 9-12 reach Grade 4-5 reasoning.

You must show your working for every question worth 5 marks or more.

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Chapter 13: Time series

Q01 | 1 MARK

Sales rise gradually over several years. Name the long-term pattern.

Q02 | 1 MARK

A pattern repeats every 12 months. Name this feature.

Chapter 13: Time series

Q03 | 1 MARK

Sales rise gradually over several years. Name the long-term pattern. After completing the calculation, give one independent check that supports your result.

Q04 | 1 MARK

A pattern repeats every 12 months. Name this feature. After completing the calculation, give one independent check that supports your result.

Chapter 13: Time series

Q05 | 1 MARK

Sales rise gradually over several years. Name the long-term pattern. Identify the key condition you used and explain why it applies here.

Q06 | 2 MARKS

A pattern repeats every 12 months. Name this feature. Identify the key condition you used and explain why it applies here.

Chapter 13: Time series

Q07 | 2 MARKS

Sales rise gradually over several years. Name the long-term pattern. Write one sentence interpreting your answer in the context of the question.

Q08 | 2 MARKS

A pattern repeats every 12 months. Name this feature. Write one sentence interpreting your answer in the context of the question.

Chapter 13: Time series

Q09 | 2 MARKS

Sales rise gradually over several years. Name the long-term pattern. Describe one common error in this calculation and how your working avoids it.

Q10 | 2 MARKS

A pattern repeats every 12 months. Name this feature. Describe one common error in this calculation and how your working avoids it.

Chapter 13: Time series

Q11 | 3 MARKS

Monthly values are [55, 60, 58, 65, 63, 70]. Draw a time-series graph using equally spaced months, describe the overall trend, identify one short-term fall and make a cautious estimate for the next month.

Q12 | 3 MARKS

Monthly values are [56, 61, 59, 66, 64, 71]. Draw a time-series graph using equally spaced months, describe the overall trend, identify one short-term fall and make a cautious estimate for the next month.

Worked solutions

Q01 | 1 MARK

An upward trend.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q02 | 1 MARK

Seasonal variation.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q03 | 1 MARK

An upward trend. A valid independent check uses substitution, an inverse operation, estimation, or the defining property as appropriate.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q04 | 1 MARK

Seasonal variation. A valid independent check uses substitution, an inverse operation, estimation, or the defining property as appropriate.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q05 | 1 MARK

An upward trend. The explanation must name the relevant condition and link it explicitly to the method used.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q06 | 2 MARKS

Seasonal variation. The explanation must name the relevant condition and link it explicitly to the method used.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q07 | 2 MARKS

An upward trend. The interpretation should include the correct units or geometric/statistical meaning where applicable.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q08 | 2 MARKS

Seasonal variation. The interpretation should include the correct units or geometric/statistical meaning where applicable.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q09 | 2 MARKS

An upward trend. A valid response identifies a plausible error and points to the step that prevents it.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q10 | 2 MARKS

Seasonal variation. A valid response identifies a plausible error and points to the step that prevents it.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q11 | 3 MARKS

The plotted points show an overall upward trend. A fall occurs from month 2 to 3. A reasonable next estimate is about 73, but it is uncertain because the series varies and only six months are shown.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q12 | 3 MARKS

The plotted points show an overall upward trend. A fall occurs from month 2 to 3. A reasonable next estimate is about 74, but it is uncertain because the series varies and only six months are shown.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Chapter completion record

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FOUNDATION TIER

UNIT 6 | CHAPTER 14

Comparing data and misleading representations

12 curated questions | complete solutions

Chapter focus

Comparing centre and spread, detecting misleading scales and evaluating conclusions

Assessment progression

Questions 1-4 build secure Foundation fluency; Questions 5-8 develop connected methods; Questions 9-12 reach Grade 4-5 reasoning.

You must show your working for every question worth 5 marks or more.

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Chapter 14: Comparing data and misleading representations

Q01 | 1 MARK

A graph axis starts at 95 instead of 0 and makes a small change look large. Why may it mislead?

Q02 | 1 MARK

Which statistic measures spread: mean or range?

Chapter 14: Comparing data and misleading representations

Q03 | 1 MARK

A graph axis starts at 95 instead of 0 and makes a small change look large. Why may it mislead? After completing the calculation, give one independent check that supports your result.

Q04 | 1 MARK

Which statistic measures spread: mean or range? After completing the calculation, give one independent check that supports your result.

Chapter 14: Comparing data and misleading representations

Q05 | 1 MARK

A graph axis starts at 95 instead of 0 and makes a small change look large. Why may it mislead? Identify the key condition you used and explain why it applies here.

Q06 | 2 MARKS

Which statistic measures spread: mean or range? Identify the key condition you used and explain why it applies here.

Chapter 14: Comparing data and misleading representations

Q07 | 2 MARKS

A graph axis starts at 95 instead of 0 and makes a small change look large. Why may it mislead? Write one sentence interpreting your answer in the context of the question.

Q08 | 2 MARKS

Which statistic measures spread: mean or range? Write one sentence interpreting your answer in the context of the question.

Chapter 14: Comparing data and misleading representations

Q09 | 2 MARKS

A graph axis starts at 95 instead of 0 and makes a small change look large. Why may it mislead? Describe one common error in this calculation and how your working avoids it.

Q10 | 2 MARKS

Which statistic measures spread: mean or range? Describe one common error in this calculation and how your working avoids it.

Chapter 14: Comparing data and misleading representations

Q11 | 3 MARKS

Data set A has median 45 and range 15. Data set B has median 50 and range 8. Compare typical value and spread. A published graph starts its vertical axis at 44; explain how this could distort the comparison and give one improvement.

Q12 | 3 MARKS

Data set A has median 46 and range 16. Data set B has median 48 and range 9. Compare typical value and spread. A published graph starts its vertical axis at 45; explain how this could distort the comparison and give one improvement.

Worked solutions

Q01 | 1 MARK

The truncated scale exaggerates the difference.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q02 | 1 MARK

Range.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q03 | 1 MARK

The truncated scale exaggerates the difference. A valid independent check uses substitution, an inverse operation, estimation, or the defining property as appropriate.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q04 | 1 MARK

Range. A valid independent check uses substitution, an inverse operation, estimation, or the defining property as appropriate.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q05 | 1 MARK

The truncated scale exaggerates the difference. The explanation must name the relevant condition and link it explicitly to the method used.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q06 | 2 MARKS

Range. The explanation must name the relevant condition and link it explicitly to the method used.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q07 | 2 MARKS

The truncated scale exaggerates the difference. The interpretation should include the correct units or geometric/statistical meaning where applicable.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q08 | 2 MARKS

Range. The interpretation should include the correct units or geometric/statistical meaning where applicable.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q09 | 2 MARKS

The truncated scale exaggerates the difference. A valid response identifies a plausible error and points to the step that prevents it.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q10 | 2 MARKS

Range. A valid response identifies a plausible error and points to the step that prevents it.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q11 | 3 MARKS

B has the higher median (50 versus 45), so its typical value is higher. The smaller range is 8, belonging to B, so that set is more consistent by range. Starting at 44 can exaggerate small differences; show a clearly marked full scale or an unmistakable axis break.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q12 | 3 MARKS

B has the higher median (48 versus 46), so its typical value is higher. The smaller range is 9, belonging to B, so that set is more consistent by range. Starting at 45 can exaggerate small differences; show a clearly marked full scale or an unmistakable axis break.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

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