

GCSE ONLINE TUTORING

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GCSE MATHEMATICS FOUNDATION TIER

UNIT 1: NUMBER

16 chapters | 192 curated questions | 1-4 marks

Student name: _____

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Contents and publication statement

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

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2	FN2 - Four operations and place value
3	FN3 - Inverse operations and calculation priority
4	FN4 - Prime structure, HCF and LCM
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FOUNDATION TIER

UNIT 1 | CHAPTER 1

FN1 - Ordering positive and negative numbers

12 curated questions | complete solutions

Chapter focus

Order integers, decimals and fractions and use equality and inequality symbols.

Assessment progression

Questions 1-4 secure essential Foundation skills; Questions 5-8 connect representations; Questions 9-12 develop Grade 4-5 reasoning and interpretation.

Working expectation

Show every stage for questions worth 4 marks. For all other questions, write enough working for another student to follow your method.

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Chapter 1: FN1 - Ordering positive and negative numbers

Q01 | 2 MARKS

Order from smallest to largest: -3.3 , $-3/4$, 0.41 , -1 .

Q02 | 2 MARKS

Calculate $-20 + 9 - (-3)$.

Chapter 1: FN1 - Ordering positive and negative numbers

Q03 | 3 MARKS

Write all integers x satisfying $-13 < x \leq 7$ and divisible by 4.

Q04 | 2 MARKS

Order from smallest to largest: -3.6 , $-3/2$, 0.44 , -4 .

Chapter 1: FN1 - Ordering positive and negative numbers

Q05 | 2 MARKS

Calculate $-23 + 12 - (0)$.

Q06 | 3 MARKS

Write all integers x satisfying $-16 < x \leq 10$ and divisible by 4.

Chapter 1: FN1 - Ordering positive and negative numbers

Q07 | 2 MARKS

Order from smallest to largest: -3.9 , $-9/4$, 0.47 , -7 .

Q08 | 2 MARKS

Calculate $-26 + 15 - (3)$.

Chapter 1: FN1 - Ordering positive and negative numbers

Q09 | 3 MARKS

Write all integers x satisfying $-19 < x \leq 13$ and divisible by 4.

Q10 | 2 MARKS

Order from smallest to largest: -4.2 , $-3/1$, 0.5 , -10 .

Chapter 1: FN1 - Ordering positive and negative numbers

Q11 | 2 MARKS

Calculate $-29 + 18 - (6)$.

Q12 | 3 MARKS

Write all integers x satisfying $-22 < x \leq 16$ and divisible by 4.

Worked solutions

Q01 | 2 MARKS

Convert or compare using a number line, then place the most negative value first.

ANSWER: -3.3, -1, -3/4, 0.41

Q02 | 2 MARKS

$-20 + 9 - (-3) = -8$.

ANSWER: -8

Worked solutions

Q03 | 3 MARKS

List the integers in the interval, then retain only multiples of 4.

ANSWER: -12, -8, -4, 0, 4

Q04 | 2 MARKS

Convert or compare using a number line, then place the most negative value first.

ANSWER: -4, -3.6, -3/2, 0.44

Worked solutions

Q05 | 2 MARKS

$$-23 + 12 - (0) = -11.$$

ANSWER: -11**Q06 | 3 MARKS**

List the integers in the interval, then retain only multiples of 4.

ANSWER: -12, -8, -4, 0, 4, 8

Worked solutions

Q07 | 2 MARKS

Convert or compare using a number line, then place the most negative value first.

ANSWER: -7, -3.9, -9/4, 0.47

Q08 | 2 MARKS

$-26 + 15 - (3) = -14$.

ANSWER: -14

Worked solutions

Q09 | 3 MARKS

List the integers in the interval, then retain only multiples of 4.

ANSWER: -16, -12, -8, -4, 0, 4, 8, 12

Q10 | 2 MARKS

Convert or compare using a number line, then place the most negative value first.

ANSWER: -10, -4.2, -3/1, 0.5

Worked solutions

Q11 | 2 MARKS

$$-29 + 18 - (6) = -17.$$

ANSWER: -17**Q12 | 3 MARKS**

List the integers in the interval, then retain only multiples of 4.

ANSWER: -20, -16, -12, -8, -4, 0, 4, 8, 12, 16

Chapter completion record

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FOUNDATION TIER

UNIT 1 | CHAPTER 2

FN2 - Four operations and place value

12 curated questions | complete solutions

Chapter focus

Calculate with integers, decimals, fractions and mixed numbers using secure place value.

Assessment progression

Questions 1-4 secure essential Foundation skills; Questions 5-8 connect representations; Questions 9-12 develop Grade 4-5 reasoning and interpretation.

Working expectation

Show every stage for questions worth 4 marks. For all other questions, write enough working for another student to follow your method.

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Chapter 2: FN2 - Four operations and place value

Q01 | 2 MARKS

Calculate $4524 + 2747$.

Q02 | 2 MARKS

Calculate $9500 - 3993$.

Chapter 2: FN2 - Four operations and place value

Q03 | 2 MARKS

Calculate 27×16 .

Q04 | 2 MARKS

Calculate $132 \div 6$.

Chapter 2: FN2 - Four operations and place value

Q05 | 2 MARKS

Calculate $5072 + 3103$.

Q06 | 2 MARKS

Calculate $10500 - 4285$.

Chapter 2: FN2 - Four operations and place value

Q07 | 2 MARKS

Calculate 31×15 .

Q08 | 2 MARKS

Calculate $156 \div 6$.

Chapter 2: FN2 - Four operations and place value

Q09 | 2 MARKS

Calculate $5620 + 3459$.

Q10 | 2 MARKS

Calculate $11500 - 4577$.

Chapter 2: FN2 - Four operations and place value

Q11 | 2 MARKS

Calculate 35×14 .

Q12 | 2 MARKS

Calculate $180 \div 6$.

Worked solutions

Q01 | 2 MARKS

Align place values and add: $4524 + 2747 = 7271$.

ANSWER: 7271**Q02 | 2 MARKS**

Use column subtraction: $9500 - 3993 = 5507$.

ANSWER: 5507

Worked solutions

Q03 | 2 MARKS

$$27 \times 16 = 432.$$

ANSWER: 432

Q04 | 2 MARKS

$$132 \div 6 = 22; \text{ check } 22 \times 6 = 132.$$

ANSWER: 22

Worked solutions

Q05 | 2 MARKS

Align place values and add: $5072+3103=8175$.

ANSWER: 8175**Q06 | 2 MARKS**

Use column subtraction: $10500-4285=6215$.

ANSWER: 6215

Worked solutions

Q07 | 2 MARKS

$$31 \times 15 = 465.$$

ANSWER: 465

Q08 | 2 MARKS

$$156 \div 6 = 26; \text{ check } 26 \times 6 = 156.$$

ANSWER: 26

Worked solutions

Q09 | 2 MARKS

Align place values and add: $5620+3459=9079$.

ANSWER: 9079**Q10 | 2 MARKS**

Use column subtraction: $11500-4577=6923$.

ANSWER: 6923

Worked solutions

Q11 | 2 MARKS

$$35 \times 14 = 490.$$

ANSWER: 490

Q12 | 2 MARKS

$$180 \div 6 = 30; \text{ check } 30 \times 6 = 180.$$

ANSWER: 30

Chapter completion record

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FOUNDATION TIER

UNIT 1 | CHAPTER 3

FN3 - Inverse operations and calculation priority

12 curated questions | complete solutions

Chapter focus

Use inverse operations, cancellation and the conventional order of operations.

Assessment progression

Questions 1-4 secure essential Foundation skills; Questions 5-8 connect representations; Questions 9-12 develop Grade 4-5 reasoning and interpretation.

Working expectation

Show every stage for questions worth 4 marks. For all other questions, write enough working for another student to follow your method.

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Chapter 3: FN3 - Inverse operations and calculation priority

Q01 | 2 MARKS

Work out $5 + 4 \times 3$.

Q02 | 3 MARKS

Find the missing number: $5x + 9 = 44$.

Chapter 3: FN3 - Inverse operations and calculation priority

Q03 | 3 MARKS

Calculate $108 \div 6 \times 3$. Explain the order used.

Q04 | 2 MARKS

Work out $8 + 3 \times 3$.

Chapter 3: FN3 - Inverse operations and calculation priority

Q05 | 3 MARKS

Find the missing number: $5x + 12 = 62$.

Q06 | 3 MARKS

Calculate $144 \div 6 \times 3$. Explain the order used.

Chapter 3: FN3 - Inverse operations and calculation priority

Q07 | 2 MARKS

Work out $6 + 6 \times 3$.

Q08 | 3 MARKS

Find the missing number: $5x + 15 = 80$.

Chapter 3: FN3 - Inverse operations and calculation priority

Q09 | 3 MARKS

Calculate $180 \div 6 \times 3$. Explain the order used.

Q10 | 2 MARKS

Work out $4 + 5 \times 3$.

Chapter 3: FN3 - Inverse operations and calculation priority

Q11 | 3 MARKS

Find the missing number: $5x + 18 = 98$.

Q12 | 3 MARKS

Calculate $216 \div 6 \times 3$. Explain the order used.

Worked solutions

Q01 | 2 MARKS

Multiply first: $4 \times 3 = 12$; then add 5 to get 17.

ANSWER: 17

Q02 | 3 MARKS

Subtract 9, then divide by 5: $x = 7$.

ANSWER: 7

Worked solutions

Q03 | 3 MARKS

Division and multiplication have equal priority, so work left to right: $108 \div 6 = 18$, then $\times 3 = 54$.

ANSWER: 54

Q04 | 2 MARKS

Multiply first: $3 \times 3 = 9$; then add 8 to get 17.

ANSWER: 17

Worked solutions

Q05 | 3 MARKS

Subtract 12, then divide by 5: $x=10$.

ANSWER: 10**Q06 | 3 MARKS**

Division and multiplication have equal priority, so work left to right: $144 \div 6 = 24$, then $\times 3 = 72$.

ANSWER: 72

Worked solutions

Q07 | 2 MARKS

Multiply first: $6 \times 3 = 18$; then add 6 to get 24.

ANSWER: 24**Q08 | 3 MARKS**

Subtract 15, then divide by 5: $x = 13$.

ANSWER: 13

Worked solutions

Q09 | 3 MARKS

Division and multiplication have equal priority, so work left to right: $180 \div 6 = 30$, then $\times 3 = 90$.

ANSWER: 90**Q10 | 2 MARKS**

Multiply first: $5 \times 3 = 15$; then add 4 to get 19.

ANSWER: 19

Worked solutions

Q11 | 3 MARKS

Subtract 18, then divide by 5: $x=16$.

ANSWER: 16

Q12 | 3 MARKS

Division and multiplication have equal priority, so work left to right: $216 \div 6 = 36$, then $\times 3 = 108$.

ANSWER: 108

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FOUNDATION TIER

UNIT 1 | CHAPTER 4

FN4 - Prime structure, HCF and LCM

12 curated questions | complete solutions

Chapter focus

Use factors, multiples, primes, prime factorisation, HCF and LCM.

Assessment progression

Questions 1-4 secure essential Foundation skills; Questions 5-8 connect representations; Questions 9-12 develop Grade 4-5 reasoning and interpretation.

Working expectation

Show every stage for questions worth 4 marks. For all other questions, write enough working for another student to follow your method.

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Chapter 4: FN4 - Prime structure, HCF and LCM

Q01 | 2 MARKS

List every factor of 18.

Q02 | 3 MARKS

Find the HCF of 24 and 30.

Chapter 4: FN4 - Prime structure, HCF and LCM

Q03 | 3 MARKS

Find the LCM of 30 and 36.

Q04 | 2 MARKS

List every factor of 36.

Chapter 4: FN4 - Prime structure, HCF and LCM

Q05 | 3 MARKS

Find the HCF of 42 and 18.

Q06 | 3 MARKS

Find the LCM of 48 and 24.

Chapter 4: FN4 - Prime structure, HCF and LCM

Q07 | 2 MARKS

List every factor of 54.

Q08 | 3 MARKS

Find the HCF of 60 and 36.

Chapter 4: FN4 - Prime structure, HCF and LCM

Q09 | 3 MARKS

Find the LCM of 66 and 42.

Q10 | 2 MARKS

List every factor of 72.

Chapter 4: FN4 - Prime structure, HCF and LCM

Q11 | 3 MARKS

Find the HCF of 78 and 24.

Q12 | 3 MARKS

Find the LCM of 84 and 30.

Worked solutions

Q01 | 2 MARKS

Use factor pairs in ascending order.

ANSWER: 1, 2, 3, 6, 9, 18

Q02 | 3 MARKS

Prime-factorise or list factors. The greatest shared factor is 6.

ANSWER: 6

Worked solutions

Q03 | 3 MARKS

Use all required prime factors; the least common multiple is 180.

ANSWER: 180

Q04 | 2 MARKS

Use factor pairs in ascending order.

ANSWER: 1, 2, 3, 4, 6, 9, 12, 18, 36

Worked solutions

Q05 | 3 MARKS

Prime-factorise or list factors. The greatest shared factor is 6.

ANSWER: 6**Q06 | 3 MARKS**

Use all required prime factors; the least common multiple is 48.

ANSWER: 48

Worked solutions

Q07 | 2 MARKS

Use factor pairs in ascending order.

ANSWER: 1, 2, 3, 6, 9, 18, 27, 54

Q08 | 3 MARKS

Prime-factorise or list factors. The greatest shared factor is 12.

ANSWER: 12

Worked solutions

Q09 | 3 MARKS

Use all required prime factors; the least common multiple is 462.

ANSWER: 462**Q10 | 2 MARKS**

Use factor pairs in ascending order.

ANSWER: 1, 2, 3, 4, 6, 8, 9, 12, 18, 24, 36, 72

Worked solutions

Q11 | 3 MARKS

Prime-factorise or list factors. The greatest shared factor is 6.

ANSWER: 6

Q12 | 3 MARKS

Use all required prime factors; the least common multiple is 420.

ANSWER: 420

Chapter completion record

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FOUNDATION TIER

UNIT 1 | CHAPTER 5

FN5 - Systematic listing

12 curated questions | complete solutions

Chapter focus

List outcomes systematically so none are omitted or repeated.

Assessment progression

Questions 1-4 secure essential Foundation skills; Questions 5-8 connect representations; Questions 9-12 develop Grade 4-5 reasoning and interpretation.

Working expectation

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Chapter 5: FN5 - Systematic listing

Q01 | 3 MARKS

A code uses one letter from ['A', 'B'] and one number from [1, 2, 3]. List all codes.

Q02 | 3 MARKS

A coin is tossed and a spinner numbered 1 to 4 is spun. List every outcome.

Chapter 5: FN5 - Systematic listing

Q03 | 3 MARKS

List all ordered pairs of positive integers (a,b) for which $a+b=7$.

Q04 | 3 MARKS

A code uses one letter from ['A', 'B'] and one number from [1, 2, 3, 4, 5, 6]. List all codes.

Chapter 5: FN5 - Systematic listing

Q05 | 3 MARKS

A coin is tossed and a spinner numbered 1 to 7 is spun. List every outcome.

Q06 | 3 MARKS

List all ordered pairs of positive integers (a,b) for which $a+b=10$.

Chapter 5: FN5 - Systematic listing

Q07 | 3 MARKS

A code uses one letter from ['A', 'B'] and one number from [1, 2, 3, 4, 5, 6, 7, 8, 9]. List all codes.

Q08 | 3 MARKS

A coin is tossed and a spinner numbered 1 to 10 is spun. List every outcome.

Chapter 5: FN5 - Systematic listing

Q09 | 3 MARKS

List all ordered pairs of positive integers (a,b) for which $a+b=13$.

Q10 | 3 MARKS

A code uses one letter from ['A', 'B'] and one number from [1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12]. List all codes.

Chapter 5: FN5 - Systematic listing

Q11 | 3 MARKS

A coin is tossed and a spinner numbered 1 to 13 is spun. List every outcome.

Q12 | 3 MARKS

List all ordered pairs of positive integers (a,b) for which $a+b=16$.

Worked solutions

Q01 | 3 MARKS

Use an ordered grid: $2 \times 3 = 6$ codes.

ANSWER: A1, A2, A3, B1, B2, B3

Q02 | 3 MARKS

Pair each of H and T with every spinner value: 8 outcomes.

ANSWER: H1, H2, H3, H4, T1, T2, T3, T4

Worked solutions

Q03 | 3 MARKS

Increase a systematically from 1 and decrease b so the sum stays fixed.

ANSWER: (1,6), (2,5), (3,4), (4,3), (5,2), (6,1)

Q04 | 3 MARKS

Use an ordered grid: $2 \times 6 = 12$ codes.

ANSWER: A1, A2, A3, A4, A5, A6, B1, B2, B3, B4, B5, B6

Worked solutions

Q05 | 3 MARKS

Pair each of H and T with every spinner value: 14 outcomes.

ANSWER: H1, H2, H3, H4, H5, H6, H7, T1, T2, T3, T4, T5, T6, T7

Q06 | 3 MARKS

Increase a systematically from 1 and decrease b so the sum stays fixed.

ANSWER: (1,9), (2,8), (3,7), (4,6), (5,5), (6,4), (7,3), (8,2), (9,1)

Worked solutions

Q07 | 3 MARKS

Use an ordered grid: $2 \times 9 = 18$ codes.

ANSWER: A1, A2, A3, A4, A5, A6, A7, A8, A9, B1, B2, B3, B4, B5, B6, B7, B8, B9

Q08 | 3 MARKS

Pair each of H and T with every spinner value: 20 outcomes.

ANSWER: H1, H2, H3, H4, H5, H6, H7, H8, H9, H10, T1, T2, T3, T4, T5, T6, T7, T8, T9, T10

Worked solutions

Q09 | 3 MARKS

Increase a systematically from 1 and decrease b so the sum stays fixed.

ANSWER: (1,12), (2,11), (3,10), (4,9), (5,8), (6,7), (7,6), (8,5), (9,4), (10,3), (11,2), (12,1)

Q10 | 3 MARKS

Use an ordered grid: $2 \times 12 = 24$ codes.

ANSWER: A1, A2, A3, A4, A5, A6, A7, A8, A9, A10, A11, A12, B1, B2, B3, B4, B5, B6, B7, B8, B9, B10, B11, B12

Worked solutions

Q11 | 3 MARKS

Pair each of H and T with every spinner value: 26 outcomes.

ANSWER: H1, H2, H3, H4, H5, H6, H7, H8, H9, H10, H11, H12, H13, T1, T2, T3, T4, T5, T6, T7, T8, T9, T10, T11, T12, T13

Q12 | 3 MARKS

Increase a systematically from 1 and decrease b so the sum stays fixed.

ANSWER: (1,15), (2,14), (3,13), (4,12), (5,11), (6,10), (7,9), (8,8), (9,7), (10,6), (11,5), (12,4), (13,3), (14,2), (15,1)

Chapter completion record

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FOUNDATION TIER

UNIT 1 | CHAPTER 6

FN6 - Powers and roots

12 curated questions | complete solutions

Chapter focus

Use positive integer powers and associated square, cube and higher roots.

Assessment progression

Questions 1-4 secure essential Foundation skills; Questions 5-8 connect representations; Questions 9-12 develop Grade 4-5 reasoning and interpretation.

Working expectation

Show every stage for questions worth 4 marks. For all other questions, write enough working for another student to follow your method.

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Chapter 6: FN6 - Powers and roots

Q01 | 2 MARKS

Evaluate 3^3 .

Q02 | 1 MARK

Find $\sqrt{100}$.

Chapter 6: FN6 - Powers and roots

Q03 | 1 MARK

Find the cube root of 216.

Q04 | 2 MARKS

Evaluate 6^3 .

Chapter 6: FN6 - Powers and roots

Q05 | 1 MARK

Find $\sqrt{169}$.

Q06 | 1 MARK

Find the cube root of 729.

Chapter 6: FN6 - Powers and roots

Q07 | 2 MARKS

Evaluate 4^3 .

Q08 | 1 MARK

Find $\sqrt{256}$.

Chapter 6: FN6 - Powers and roots

Q09 | 1 MARK

Find the cube root of 64.

Q10 | 2 MARKS

Evaluate 2^3 .

Chapter 6: FN6 - Powers and roots

Q11 | 1 MARK

Find $\sqrt{361}$.

Q12 | 1 MARK

Find the cube root of 343.

Worked solutions

Q01 | 2 MARKS

Multiply 3 by itself 3 times: 27.

ANSWER: 27

Q02 | 1 MARK

$10 \times 10 = 100$.

ANSWER: 10

Worked solutions

Q03 | 1 MARK

$6 \times 6 \times 6 = 216$.

ANSWER: 6

Q04 | 2 MARKS

Multiply 6 by itself 3 times: 216.

ANSWER: 216

Worked solutions

Q05 | 1 MARK

$$13 \times 13 = 169.$$

ANSWER: 13

Q06 | 1 MARK

$$9 \times 9 \times 9 = 729.$$

ANSWER: 9

Worked solutions

Q07 | 2 MARKS

Multiply 4 by itself 3 times: 64.

ANSWER: 64

Q08 | 1 MARK

$16 \times 16 = 256$.

ANSWER: 16

Worked solutions

Q09 | 1 MARK

$4 \times 4 \times 4 = 64$.

ANSWER: 4

Q10 | 2 MARKS

Multiply 2 by itself 3 times: 8.

ANSWER: 8

Worked solutions

Q11 | 1 MARK

$$19 \times 19 = 361.$$

ANSWER: 19

Q12 | 1 MARK

$$7 \times 7 \times 7 = 343.$$

ANSWER: 7

Chapter completion record

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FOUNDATION TIER

UNIT 1 | CHAPTER 7

FN7 - Integer indices and roots

12 curated questions | complete solutions

Chapter focus

Calculate with roots and integer indices at Foundation Tier.

Assessment progression

Questions 1-4 secure essential Foundation skills; Questions 5-8 connect representations; Questions 9-12 develop Grade 4-5 reasoning and interpretation.

Working expectation

Show every stage for questions worth 4 marks. For all other questions, write enough working for another student to follow your method.

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Chapter 7: FN7 - Integer indices and roots

Q01 | 2 MARKS

Simplify $3^3 \times 3^2$.

Q02 | 2 MARKS

Calculate $4^0 + 4^2$.

Chapter 7: FN7 - Integer indices and roots

Q03 | 3 MARKS

Write 5^{-2} as a fraction and evaluate it.

Q04 | 2 MARKS

Simplify $2^3 \times 2^2$.

Chapter 7: FN7 - Integer indices and roots

Q05 | 2 MARKS

Calculate $3^0 + 3^2$.

Q06 | 3 MARKS

Write 4^{-2} as a fraction and evaluate it.

Chapter 7: FN7 - Integer indices and roots

Q07 | 2 MARKS

Simplify $5^3 \times 5^2$.

Q08 | 2 MARKS

Calculate $2^0 + 2^2$.

Chapter 7: FN7 - Integer indices and roots

Q09 | 3 MARKS

Write 3^{-2} as a fraction and evaluate it.

Q10 | 2 MARKS

Simplify $4^3 \times 4^2$.

Chapter 7: FN7 - Integer indices and roots

Q11 | 2 MARKS

Calculate $5^0 + 5^2$.

Q12 | 3 MARKS

Write 2^{-2} as a fraction and evaluate it.

Worked solutions

Q01 | 2 MARKS

Add indices for the same base: $3+2=5$.

ANSWER: 3^5 **Q02 | 2 MARKS**

$4^0=1$ and $4^2=16$; total 17.

ANSWER: 17

Worked solutions

Q03 | 3 MARKS

A negative index means reciprocal: $5^{-2} = 1/5^2 = 1/25$.

ANSWER: $1/25$ **Q04 | 2 MARKS**

Add indices for the same base: $3+2=5$.

ANSWER: 2^5

Worked solutions

Q05 | 2 MARKS

$3^0=1$ and $3^2=9$; total 10.

ANSWER: 10**Q06 | 3 MARKS**

A negative index means reciprocal: $4^{-2}=1/4^2=1/16$.

ANSWER: 1/16

Worked solutions

Q07 | 2 MARKS

Add indices for the same base: $3+2=5$.

ANSWER: 5^5

Q08 | 2 MARKS

$2^0=1$ and $2^2=4$; total 5.

ANSWER: 5

Worked solutions

Q09 | 3 MARKS

A negative index means reciprocal: $3^{-2} = 1/3^2 = 1/9$.

ANSWER: $1/9$

Q10 | 2 MARKS

Add indices for the same base: $3+2=5$.

ANSWER: 4^5

Worked solutions

Q11 | 2 MARKS

$5^0=1$ and $5^2=25$; total 26.

ANSWER: 26**Q12 | 3 MARKS**

A negative index means reciprocal: $2^{-2}=1/2^2=1/4$.

ANSWER: 1/4

Chapter completion record

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FOUNDATION TIER

UNIT 1 | CHAPTER 8

FN8 - Exact fractions and multiples of π

12 curated questions | complete solutions

Chapter focus

Keep calculations exact with fractions and multiples of π .

Assessment progression

Questions 1-4 secure essential Foundation skills; Questions 5-8 connect representations; Questions 9-12 develop Grade 4-5 reasoning and interpretation.

Working expectation

Show every stage for questions worth 4 marks. For all other questions, write enough working for another student to follow your method.

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Chapter 8: FN8 - Exact fractions and multiples of pi

Q01 | 3 MARKS

Calculate $\frac{3}{4} + \frac{1}{2}$ exactly.

Q02 | 2 MARKS

A circle has radius 4 cm. Give its area exactly.

Chapter 8: FN8 - Exact fractions and multiples of pi

Q03 | 2 MARKS

Calculate $\frac{6}{5} \times \frac{2}{3}$ exactly.

Q04 | 3 MARKS

Calculate $\frac{6}{3} + \frac{1}{2}$ exactly.

Chapter 8: FN8 - Exact fractions and multiples of pi

Q05 | 2 MARKS

A circle has radius 7 cm. Give its area exactly.

Q06 | 2 MARKS

Calculate $\frac{4}{4} \times \frac{2}{3}$ exactly.

Chapter 8: FN8 - Exact fractions and multiples of pi

Q07 | 3 MARKS

Calculate $\frac{4}{6} + \frac{1}{2}$ exactly.

Q08 | 2 MARKS

A circle has radius 10 cm. Give its area exactly.

Chapter 8: FN8 - Exact fractions and multiples of pi

Q09 | 2 MARKS

Calculate $\frac{7}{3} \times \frac{2}{3}$ exactly.

Q10 | 3 MARKS

Calculate $\frac{2}{5} + \frac{1}{2}$ exactly.

Chapter 8: FN8 - Exact fractions and multiples of pi

Q11 | 2 MARKS

A circle has radius 13 cm. Give its area exactly.

Q12 | 2 MARKS

Calculate $\frac{5}{2} \times \frac{2}{3}$ exactly.

Worked solutions

Q01 | 3 MARKS

Use a common denominator and simplify to $\frac{5}{4}$.

ANSWER: $\frac{5}{4}$

Q02 | 2 MARKS

$\text{Area} = \pi r^2 = \pi \times 4^2 = 16\pi \text{ cm}^2$.

ANSWER: $16\pi \text{ cm}^2$

Worked solutions

Q03 | 2 MARKS

Multiply numerators and denominators, then simplify to $\frac{4}{5}$.

ANSWER: $\frac{4}{5}$

Q04 | 3 MARKS

Use a common denominator and simplify to $\frac{5}{2}$.

ANSWER: $\frac{5}{2}$

Worked solutions

Q05 | 2 MARKS

Area= $\pi r^2 = \pi \times 7^2 = 49\pi \text{ cm}^2$.

ANSWER: $49\pi \text{ cm}^2$

Q06 | 2 MARKS

Multiply numerators and denominators, then simplify to $\frac{2}{3}$.

ANSWER: $\frac{2}{3}$

Worked solutions

Q07 | 3 MARKS

Use a common denominator and simplify to $\frac{7}{6}$.

ANSWER: $\frac{7}{6}$ **Q08 | 2 MARKS**

Area = $\pi r^2 = \pi \times 10^2 = 100\pi \text{ cm}^2$.

ANSWER: $100\pi \text{ cm}^2$

Worked solutions

Q09 | 2 MARKS

Multiply numerators and denominators, then simplify to $14/9$.

ANSWER: $14/9$ **Q10 | 3 MARKS**

Use a common denominator and simplify to $9/10$.

ANSWER: $9/10$

Worked solutions

Q11 | 2 MARKS

Area= $\pi r^2 = \pi \times 13^2 = 169\pi \text{ cm}^2$.

ANSWER: $169\pi \text{ cm}^2$

Q12 | 2 MARKS

Multiply numerators and denominators, then simplify to $5/3$.

ANSWER: $5/3$

Chapter completion record

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FOUNDATION TIER

UNIT 1 | CHAPTER 9

FN9 - Standard form

12 curated questions | complete solutions

Chapter focus

Write, compare and calculate with $A \times 10^n$ where $1 \leq A < 10$.

Assessment progression

Questions 1-4 secure essential Foundation skills; Questions 5-8 connect representations; Questions 9-12 develop Grade 4-5 reasoning and interpretation.

Working expectation

Show every stage for questions worth 4 marks. For all other questions, write enough working for another student to follow your method.

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Chapter 9: FN9 - Standard form

Q01 | 2 MARKS

Write 15000 in standard form.

Q02 | 2 MARKS

Write 2.5×10^{-4} as an ordinary number.

Chapter 9: FN9 - Standard form

Q03 | 3 MARKS

Calculate $(5 \times 10^4)(6 \times 10^2)$. Give standard form.

Q04 | 2 MARKS

Write 0.00024 in standard form.

Chapter 9: FN9 - Standard form

Q05 | 2 MARKS

Write 3.1×10^6 as an ordinary number.

Q06 | 3 MARKS

Calculate $(4 \times 10^4)(4 \times 10^2)$. Give standard form.

Chapter 9: FN9 - Standard form

Q07 | 2 MARKS

Write $3.3\text{e}+06$ in standard form.

Q08 | 2 MARKS

Write 3.7×10^{-4} as an ordinary number.

Chapter 9: FN9 - Standard form

Q09 | 3 MARKS

Calculate $(3 \times 10^4)(7 \times 10^2)$. Give standard form.

Q10 | 2 MARKS

Write 0.00042 in standard form.

Chapter 9: FN9 - Standard form

Q11 | 2 MARKS

Write 4.3×10^6 as an ordinary number.

Q12 | 3 MARKS

Calculate $(2 \times 10^4)(5 \times 10^2)$. Give standard form.

Worked solutions

Q01 | 2 MARKS

Move the decimal so the first factor lies from 1 to 10; the power records the movement.

ANSWER: 1.5×10^4

Q02 | 2 MARKS

Move the decimal 4 places left.

ANSWER: 0.00025

Worked solutions

Q03 | 3 MARKS

Multiply coefficients and add powers, then normalise the coefficient.

ANSWER: 3×10^7

Q04 | 2 MARKS

Move the decimal so the first factor lies from 1 to 10; the power records the movement.

ANSWER: 2.4×10^{-4}

Worked solutions

Q05 | 2 MARKS

Move the decimal 6 places right.

ANSWER: $3.1\text{e}+06$

Q06 | 3 MARKS

Multiply coefficients and add powers, then normalise the coefficient.

ANSWER: 1.6×10^7

Worked solutions

Q07 | 2 MARKS

Move the decimal so the first factor lies from 1 to 10; the power records the movement.

ANSWER: 3.3×10^6 **Q08 | 2 MARKS**

Move the decimal 4 places left.

ANSWER: 0.00037

Worked solutions

Q09 | 3 MARKS

Multiply coefficients and add powers, then normalise the coefficient.

ANSWER: 2.1×10^7

Q10 | 2 MARKS

Move the decimal so the first factor lies from 1 to 10; the power records the movement.

ANSWER: 4.2×10^{-4}

Worked solutions

Q11 | 2 MARKS

Move the decimal 6 places right.

ANSWER: $4.3\text{e}+06$

Q12 | 3 MARKS

Multiply coefficients and add powers, then normalise the coefficient.

ANSWER: 1×10^7

Chapter completion record

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FOUNDATION TIER

UNIT 1 | CHAPTER 10

FN10 - Terminating decimals and fractions

12 curated questions | complete solutions

Chapter focus

Move fluently between terminating decimals and their exact fractions.

Assessment progression

Questions 1-4 secure essential Foundation skills; Questions 5-8 connect representations; Questions 9-12 develop Grade 4-5 reasoning and interpretation.

Working expectation

Show every stage for questions worth 4 marks. For all other questions, write enough working for another student to follow your method.

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Chapter 10: FN10 - Terminating decimals and fractions

Q01 | 2 MARKS

Write $\frac{1}{20}$ as a decimal.

Q02 | 2 MARKS

Write 0.05 as a fraction in simplest form.

Chapter 10: FN10 - Terminating decimals and fractions

Q03 | 2 MARKS

Write $\frac{3}{20}$ as a decimal.

Q04 | 2 MARKS

Write 0.1 as a fraction in simplest form.

Chapter 10: FN10 - Terminating decimals and fractions

Q05 | 2 MARKS

Write $\frac{1}{4}$ as a decimal.

Q06 | 2 MARKS

Write 0.15 as a fraction in simplest form.

Chapter 10: FN10 - Terminating decimals and fractions

Q07 | 2 MARKS

Write $\frac{7}{20}$ as a decimal.

Q08 | 2 MARKS

Write 0.2 as a fraction in simplest form.

Chapter 10: FN10 - Terminating decimals and fractions

Q09 | 2 MARKS

Write $\frac{9}{20}$ as a decimal.

Q10 | 2 MARKS

Write 0.25 as a fraction in simplest form.

Chapter 10: FN10 - Terminating decimals and fractions

Q11 | 2 MARKS

Write $11/20$ as a decimal.

Q12 | 2 MARKS

Write 0.3 as a fraction in simplest form.

Worked solutions

Q01 | 2 MARKS

Divide numerator by denominator: 0.05.

ANSWER: 0.05**Q02 | 2 MARKS**

Write over a power of 10 and cancel to 1/20.

ANSWER: 1/20

Worked solutions

Q03 | 2 MARKS

Divide numerator by denominator: 0.15.

ANSWER: 0.15

Q04 | 2 MARKS

Write over a power of 10 and cancel to 1/10.

ANSWER: 1/10

Worked solutions

Q05 | 2 MARKS

Divide numerator by denominator: 0.25.

ANSWER: 0.25

Q06 | 2 MARKS

Write over a power of 10 and cancel to $\frac{3}{20}$.

ANSWER: $\frac{3}{20}$

Worked solutions

Q07 | 2 MARKS

Divide numerator by denominator: 0.35.

ANSWER: 0.35**Q08 | 2 MARKS**

Write over a power of 10 and cancel to $\frac{1}{5}$.

ANSWER: $\frac{1}{5}$

Worked solutions

Q09 | 2 MARKS

Divide numerator by denominator: 0.45.

ANSWER: 0.45**Q10 | 2 MARKS**

Write over a power of 10 and cancel to $\frac{1}{4}$.

ANSWER: $\frac{1}{4}$

Worked solutions

Q11 | 2 MARKS

Divide numerator by denominator: 0.55.

ANSWER: 0.55

Q12 | 2 MARKS

Write over a power of 10 and cancel to $\frac{3}{10}$.

ANSWER: $\frac{3}{10}$

Chapter completion record

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FOUNDATION TIER

UNIT 1 | CHAPTER 11

FN11 - Fractions in ratio problems

12 curated questions | complete solutions

Chapter focus

Interpret the fractions represented by parts and totals in ratio situations.

Assessment progression

Questions 1-4 secure essential Foundation skills; Questions 5-8 connect representations; Questions 9-12 develop Grade 4-5 reasoning and interpretation.

Working expectation

Show every stage for questions worth 4 marks. For all other questions, write enough working for another student to follow your method.

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Chapter 11: FN11 - Fractions in ratio problems

Q01 | 2 MARKS

Red and blue counters are in the ratio 3:5. What fraction are red?

Q02 | 2 MARKS

In the ratio 4:7, what fraction is represented by the second part?

Chapter 11: FN11 - Fractions in ratio problems

Q03 | 3 MARKS

A sum of £72 is shared in the ratio 5:4. Find the larger share.

Q04 | 2 MARKS

Red and blue counters are in the ratio 2:6. What fraction are red?

Chapter 11: FN11 - Fractions in ratio problems

Q05 | 2 MARKS

In the ratio 3:3, what fraction is represented by the second part?

Q06 | 3 MARKS

A sum of £99 is shared in the ratio 4:5. Find the larger share.

Chapter 11: FN11 - Fractions in ratio problems

Q07 | 2 MARKS

Red and blue counters are in the ratio 5:7. What fraction are red?

Q08 | 2 MARKS

In the ratio 2:4, what fraction is represented by the second part?

Chapter 11: FN11 - Fractions in ratio problems

Q09 | 3 MARKS

A sum of £126 is shared in the ratio 3:6. Find the larger share.

Q10 | 2 MARKS

Red and blue counters are in the ratio 4:3. What fraction are red?

Chapter 11: FN11 - Fractions in ratio problems

Q11 | 2 MARKS

In the ratio 5:5, what fraction is represented by the second part?

Q12 | 3 MARKS

A sum of £153 is shared in the ratio 2:7. Find the larger share.

Worked solutions

Q01 | 2 MARKS

Total parts= $3+5=8$; red fraction= $3/8$.

ANSWER: $3/8$ **Q02 | 2 MARKS**

Total parts= 11 ; second-part fraction= $7/11$.

ANSWER: $7/11$

Worked solutions

Q03 | 3 MARKS

One part= $\pounds 72 \div 9 = \pounds 8$; larger share=5 parts.

ANSWER: £40.00**Q04 | 2 MARKS**

Total parts= $2+6=8$; red fraction= $2/8$.

ANSWER: 2/8

Worked solutions

Q05 | 2 MARKS

Total parts=6; second-part fraction=3/6.

ANSWER: 3/6**Q06 | 3 MARKS**

One part= $\pounds 99 \div 9 = \pounds 11$; larger share=5 parts.

ANSWER: £55.00

Worked solutions

Q07 | 2 MARKS

Total parts= $5+7=12$; red fraction= $5/12$.

ANSWER: $5/12$ **Q08 | 2 MARKS**

Total parts= 6 ; second-part fraction= $4/6$.

ANSWER: $4/6$

Worked solutions

Q09 | 3 MARKS

One part= $\pounds 126 \div 9 = \pounds 14$; larger share=6 parts.

ANSWER: £84.00**Q10 | 2 MARKS**

Total parts= $4+3=7$; red fraction= $\frac{4}{7}$.

ANSWER: $\frac{4}{7}$

Worked solutions

Q11 | 2 MARKS

Total parts=10; second-part fraction=5/10.

ANSWER: 5/10**Q12 | 3 MARKS**

One part= $\pounds 153 \div 9 = \pounds 17$; larger share=7 parts.

ANSWER: $\pounds 119.00$

Chapter completion record

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FOUNDATION TIER

UNIT 1 | CHAPTER 12

FN12 - Fractions and percentages as operators

12 curated questions | complete solutions

Chapter focus

Use fractions and percentages to operate on quantities.

Assessment progression

Questions 1-4 secure essential Foundation skills; Questions 5-8 connect representations; Questions 9-12 develop Grade 4-5 reasoning and interpretation.

Working expectation

Show every stage for questions worth 4 marks. For all other questions, write enough working for another student to follow your method.

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Chapter 12: FN12 - Fractions and percentages as operators

Q01 | 2 MARKS

Find $\frac{3}{5}$ of 50.

Q02 | 2 MARKS

Find 20% of £60.

Chapter 12: FN12 - Fractions and percentages as operators

Q03 | 3 MARKS

Increase £70 by 20%.

Q04 | 2 MARKS

Find $\frac{3}{5}$ of 80.

Chapter 12: FN12 - Fractions and percentages as operators

Q05 | 2 MARKS

Find 35% of £90.

Q06 | 3 MARKS

Increase £100 by 10%.

Chapter 12: FN12 - Fractions and percentages as operators

Q07 | 2 MARKS

Find $\frac{3}{5}$ of 110.

Q08 | 2 MARKS

Find 15% of £120.

Chapter 12: FN12 - Fractions and percentages as operators

Q09 | 3 MARKS

Increase £130 by 25%.

Q10 | 2 MARKS

Find $\frac{3}{5}$ of 140.

Chapter 12: FN12 - Fractions and percentages as operators

Q11 | 2 MARKS

Find 30% of £150.

Q12 | 3 MARKS

Increase £160 by 15%.

Worked solutions

Q01 | 2 MARKS

Multiply 50 by $\frac{3}{5}$; result 30.

ANSWER: 30**Q02 | 2 MARKS**

20% = $\frac{20}{100}$; multiply by £60 to get £12.00.

ANSWER: £12.00

Worked solutions

Q03 | 3 MARKS

Increase=£14.00; new amount=£84.00.

ANSWER: £84.00

Q04 | 2 MARKS

Multiply 80 by $\frac{3}{5}$; result 48.

ANSWER: 48

Worked solutions

Q05 | 2 MARKS

$35\% = 35/100$; multiply by £90 to get £31.50.

ANSWER: £31.50**Q06 | 3 MARKS**

Increase=£10.00; new amount=£110.00.

ANSWER: £110.00

Worked solutions

Q07 | 2 MARKS

Multiply 110 by $\frac{3}{5}$; result 66.

ANSWER: 66**Q08 | 2 MARKS**

15% = $\frac{15}{100}$; multiply by £120 to get £18.00.

ANSWER: £18.00

Worked solutions

Q09 | 3 MARKS

Increase=£32.50; new amount=£162.50.

ANSWER: £162.50

Q10 | 2 MARKS

Multiply 140 by $\frac{3}{5}$; result 84.

ANSWER: 84

Worked solutions

Q11 | 2 MARKS

$30\% = 30/100$; multiply by £150 to get £45.00.

ANSWER: £45.00

Q12 | 3 MARKS

Increase=£24.00; new amount=£184.00.

ANSWER: £184.00

Chapter completion record

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FOUNDATION TIER

UNIT 1 | CHAPTER 13

FN13 - Measures and compound measures

12 curated questions | complete solutions

Chapter focus

Use standard units and familiar compound measures accurately.

Assessment progression

Questions 1-4 secure essential Foundation skills; Questions 5-8 connect representations; Questions 9-12 develop Grade 4-5 reasoning and interpretation.

Working expectation

Show every stage for questions worth 4 marks. For all other questions, write enough working for another student to follow your method.

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Chapter 13: FN13 - Measures and compound measures

Q01 | 2 MARKS

Convert 1.5 km to metres.

Q02 | 3 MARKS

A cyclist travels 150 m in 30 s. Find average speed.

Chapter 13: FN13 - Measures and compound measures

Q03 | 2 MARKS

Work is paid at £11.00 per hour for 5 hours. Find the pay.

Q04 | 2 MARKS

Convert 2.4 km to metres.

Chapter 13: FN13 - Measures and compound measures

Q05 | 3 MARKS

A cyclist travels 195 m in 25 s. Find average speed.

Q06 | 2 MARKS

Work is paid at £12.50 per hour for 4 hours. Find the pay.

Chapter 13: FN13 - Measures and compound measures

Q07 | 2 MARKS

Convert 3.3 km to metres.

Q08 | 3 MARKS

A cyclist travels 240 m in 20 s. Find average speed.

Chapter 13: FN13 - Measures and compound measures

Q09 | 2 MARKS

Work is paid at £14.00 per hour for 3 hours. Find the pay.

Q10 | 2 MARKS

Convert 4.2 km to metres.

Chapter 13: FN13 - Measures and compound measures

Q11 | 3 MARKS

A cyclist travels 285 m in 35 s. Find average speed.

Q12 | 2 MARKS

Work is paid at £15.50 per hour for 2 hours. Find the pay.

Worked solutions

Q01 | 2 MARKS

Multiply kilometres by 1000.

ANSWER: 1500 m

Q02 | 3 MARKS

Speed=distance÷time= $150 \div 30 = 5$ m/s.

ANSWER: 5 m/s

Worked solutions

Q03 | 2 MARKS

Pay=rate x time=£11.00x5=£55.00.

ANSWER: £55.00

Q04 | 2 MARKS

Multiply kilometres by 1000.

ANSWER: 2400 m

Worked solutions

Q05 | 3 MARKS

Speed=distance÷time= $195 \div 25 = 7.8$ m/s.

ANSWER: 7.8 m/s**Q06 | 2 MARKS**

Pay=rate x time= $\pounds 12.50 \times 4 = \pounds 50.00$.

ANSWER: £50.00

Worked solutions

Q07 | 2 MARKS

Multiply kilometres by 1000.

ANSWER: 3300 m**Q08 | 3 MARKS**

Speed=distance÷time= $240 \div 20 = 12$ m/s.

ANSWER: 12 m/s

Worked solutions

Q09 | 2 MARKS

Pay=rate x time=£14.00x3=£42.00.

ANSWER: £42.00**Q10 | 2 MARKS**

Multiply kilometres by 1000.

ANSWER: 4200 m

Worked solutions

Q11 | 3 MARKS

Speed=distance÷time= $285 \div 35 = 8.14286$ m/s.

ANSWER: 8.14286 m/s

Q12 | 2 MARKS

Pay=rate x time= $\pounds 15.50 \times 2 = \pounds 31.00$.

ANSWER: £31.00

Chapter completion record

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FOUNDATION TIER

UNIT 1 | CHAPTER 14

FN14 - Estimation and checking

12 curated questions | complete solutions

Chapter focus

Estimate answers and use approximation to check calculations.

Assessment progression

Questions 1-4 secure essential Foundation skills; Questions 5-8 connect representations; Questions 9-12 develop Grade 4-5 reasoning and interpretation.

Working expectation

Show every stage for questions worth 4 marks. For all other questions, write enough working for another student to follow your method.

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Chapter 14: FN14 - Estimation and checking

Q01 | 3 MARKS

Estimate 19.9×4.0 by rounding each value to 1 significant figure.

Q02 | 3 MARKS

A calculator display gives 111 for 20.6×4.2 . Use estimation to decide whether it is reasonable.

Chapter 14: FN14 - Estimation and checking

Q03 | 3 MARKS

Estimate 21.3×4.4 by rounding each value to 1 significant figure.

Q04 | 3 MARKS

A calculator display gives 126 for 22.0×4.6 . Use estimation to decide whether it is reasonable.

Chapter 14: FN14 - Estimation and checking

Q05 | 3 MARKS

Estimate 22.7×3.8 by rounding each value to 1 significant figure.

Q06 | 3 MARKS

A calculator display gives 118 for 23.4×4.0 . Use estimation to decide whether it is reasonable.

Chapter 14: FN14 - Estimation and checking

Q07 | 3 MARKS

Estimate 24.1×4.2 by rounding each value to 1 significant figure.

Q08 | 3 MARKS

A calculator display gives 134 for 24.8×4.4 . Use estimation to decide whether it is reasonable.

Chapter 14: FN14 - Estimation and checking

Q09 | 3 MARKS

Estimate 25.5×4.6 by rounding each value to 1 significant figure.

Q10 | 3 MARKS

A calculator display gives 124 for 26.2×3.8 . Use estimation to decide whether it is reasonable.

Chapter 14: FN14 - Estimation and checking

Q11 | 3 MARKS

Estimate 26.9×4.0 by rounding each value to 1 significant figure.

Q12 | 3 MARKS

A calculator display gives 140 for 27.6×4.2 . Use estimation to decide whether it is reasonable.

Worked solutions

Q01 | 3 MARKS

$19.9 \approx 20$, $4.0 \approx 4$; multiply the rounded values.

ANSWER: about 80.0

Q02 | 3 MARKS

An estimate is about 80; compare the display with this size.

ANSWER: Reasonable

Worked solutions

Q03 | 3 MARKS

$21.3 \approx 20$, $4.4 \approx 4$; multiply the rounded values.

ANSWER: about 80.0

Q04 | 3 MARKS

An estimate is about 100; compare the display with this size.

ANSWER: Reasonable

Worked solutions

Q05 | 3 MARKS

$22.7 \approx 20$, $3.8 \approx 4$; multiply the rounded values.

ANSWER: about 80.0

Q06 | 3 MARKS

An estimate is about 80; compare the display with this size.

ANSWER: Not reasonable

Worked solutions

Q07 | 3 MARKS

$24.1 \approx 20$, $4.2 \approx 4$; multiply the rounded values.

ANSWER: about 80.0

Q08 | 3 MARKS

An estimate is about 80; compare the display with this size.

ANSWER: Not reasonable

Worked solutions

Q09 | 3 MARKS

$25.5 \approx 30$, $4.6 \approx 5$; multiply the rounded values.

ANSWER: about 150.0

Q10 | 3 MARKS

An estimate is about 120; compare the display with this size.

ANSWER: Reasonable

Worked solutions

Q11 | 3 MARKS

$26.9 \approx 30$, $4.0 \approx 4$; multiply the rounded values.

ANSWER: about 120.0

Q12 | 3 MARKS

An estimate is about 120; compare the display with this size.

ANSWER: Reasonable

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FOUNDATION TIER

UNIT 1 | CHAPTER 15

FN15 - Rounding and error intervals

12 curated questions | complete solutions

Chapter focus

Round appropriately and write simple error intervals.

Assessment progression

Questions 1-4 secure essential Foundation skills; Questions 5-8 connect representations; Questions 9-12 develop Grade 4-5 reasoning and interpretation.

Working expectation

Show every stage for questions worth 4 marks. For all other questions, write enough working for another student to follow your method.

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Chapter 15: FN15 - Rounding and error intervals

Q01 | 1 MARK

Round 4422 to the nearest hundred.

Q02 | 2 MARKS

Round 0.006961 to 3 significant figures.

Chapter 15: FN15 - Rounding and error intervals

Q03 | 3 MARKS

A length is 4.6 cm correct to the nearest 0.1 cm. Write its error interval.

Q04 | 1 MARK

Round 4833 to the nearest hundred.

Chapter 15: FN15 - Rounding and error intervals

Q05 | 2 MARKS

Round 0.007300 to 3 significant figures.

Q06 | 3 MARKS

A length is 5.2 cm correct to the nearest 0.1 cm. Write its error interval.

Chapter 15: FN15 - Rounding and error intervals

Q07 | 1 MARK

Round 5244 to the nearest hundred.

Q08 | 2 MARKS

Round 0.007639 to 3 significant figures.

Chapter 15: FN15 - Rounding and error intervals

Q09 | 3 MARKS

A length is 5.8 cm correct to the nearest 0.1 cm. Write its error interval.

Q10 | 1 MARK

Round 5655 to the nearest hundred.

Chapter 15: FN15 - Rounding and error intervals

Q11 | 2 MARKS

Round 0.007978 to 3 significant figures.

Q12 | 3 MARKS

A length is 6.4 cm correct to the nearest 0.1 cm. Write its error interval.

Worked solutions

Q01 | 1 MARK

Check the tens digit, giving 4400.

ANSWER: 4400

Q02 | 2 MARKS

Start counting at the first non-zero digit; result 0.00696.

ANSWER: 0.00696

Worked solutions

Q03 | 3 MARKS

Half a unit is 0.05 cm, so subtract and add 0.05; exclude the upper bound.

ANSWER: $4.55 \leq L < 4.65$

Q04 | 1 MARK

Check the tens digit, giving 4800.

ANSWER: 4800

Worked solutions

Q05 | 2 MARKS

Start counting at the first non-zero digit; result 0.0073.

ANSWER: 0.0073

Q06 | 3 MARKS

Half a unit is 0.05 cm, so subtract and add 0.05; exclude the upper bound.

ANSWER: $5.15 \leq L < 5.25$

Worked solutions

Q07 | 1 MARK

Check the tens digit, giving 5200.

ANSWER: 5200

Q08 | 2 MARKS

Start counting at the first non-zero digit; result 0.00764.

ANSWER: 0.00764

Worked solutions

Q09 | 3 MARKS

Half a unit is 0.05 cm, so subtract and add 0.05; exclude the upper bound.

ANSWER: $5.75 \leq L < 5.85$

Q10 | 1 MARK

Check the tens digit, giving 5700.

ANSWER: 5700

Worked solutions

Q11 | 2 MARKS

Start counting at the first non-zero digit; result 0.00798.

ANSWER: 0.00798

Q12 | 3 MARKS

Half a unit is 0.05 cm, so subtract and add 0.05; exclude the upper bound.

ANSWER: $6.35 \leq L < 6.45$

Chapter completion record

Question	Score / marks	Repair target	Retest date
1			
2			
3			
4			
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12			

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FOUNDATION TIER

UNIT 1 | CHAPTER 16

FN16 - Limits of accuracy and bounds

12 curated questions | complete solutions

Chapter focus

Apply upper and lower bounds in Foundation contexts.

Assessment progression

Questions 1-4 secure essential Foundation skills; Questions 5-8 connect representations; Questions 9-12 develop Grade 4-5 reasoning and interpretation.

Working expectation

Show every stage for questions worth 4 marks. For all other questions, write enough working for another student to follow your method.

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Chapter 16: FN16 - Limits of accuracy and bounds

Q01 | 2 MARKS

A length is 35 cm to the nearest centimetre. State its lower and upper bounds.

Q02 | 4 MARKS

You must show your working.

$a=12$ and $b=6$, each to the nearest integer. Find the upper bound of a/b .

Chapter 16: FN16 - Limits of accuracy and bounds

Q03 | 3 MARKS

A whole-number population is 450 to the nearest 10. State the greatest possible population.

Q04 | 2 MARKS

A length is 50 cm to the nearest centimetre. State its lower and upper bounds.

Chapter 16: FN16 - Limits of accuracy and bounds

Q05 | 4 MARKS

You must show your working.

$a=15$ and $b=5$, each to the nearest integer. Find the upper bound of a/b .

Q06 | 3 MARKS

A whole-number population is 480 to the nearest 10. State the greatest possible population.

Chapter 16: FN16 - Limits of accuracy and bounds

Q07 | 2 MARKS

A length is 65 cm to the nearest centimetre. State its lower and upper bounds.

Q08 | 4 MARKS

You must show your working.

$a=18$ and $b=4$, each to the nearest integer. Find the upper bound of a/b .

Chapter 16: FN16 - Limits of accuracy and bounds

Q09 | 3 MARKS

A whole-number population is 510 to the nearest 10. State the greatest possible population.

Q10 | 2 MARKS

A length is 80 cm to the nearest centimetre. State its lower and upper bounds.

Chapter 16: FN16 - Limits of accuracy and bounds

Q11 | 4 MARKS

You must show your working.

$a=21$ and $b=7$, each to the nearest integer. Find the upper bound of a/b .

Q12 | 3 MARKS

A whole-number population is 540 to the nearest 10. State the greatest possible population.

Worked solutions

Q01 | 2 MARKS

Half of 1 cm is 0.5 cm.

ANSWER: 34.5 cm and 35.5 cm

Q02 | 4 MARKS

Use upper $a=12.5$ and lower $b=5.5$: $12.5 \div 5.5 = 2.273$.

ANSWER: 2.273

Worked solutions

Q03 | 3 MARKS

The interval is $445 \leq P < 455$; greatest whole number is 454.

ANSWER: 454

Q04 | 2 MARKS

Half of 1 cm is 0.5 cm.

ANSWER: 49.5 cm and 50.5 cm

Worked solutions

Q05 | 4 MARKS

Use upper $a=15.5$ and lower $b=4.5$: $15.5 \div 4.5 = 3.444$.

ANSWER: 3.444

Q06 | 3 MARKS

The interval is $475 \leq P < 485$; greatest whole number is 484.

ANSWER: 484

Worked solutions

Q07 | 2 MARKS

Half of 1 cm is 0.5 cm.

ANSWER: 64.5 cm and 65.5 cm

Q08 | 4 MARKS

Use upper $a=18.5$ and lower $b=3.5$: $18.5 \div 3.5 = 5.286$.

ANSWER: 5.286

Worked solutions

Q09 | 3 MARKS

The interval is $505 \leq P < 515$; greatest whole number is 514.

ANSWER: 514**Q10 | 2 MARKS**

Half of 1 cm is 0.5 cm.

ANSWER: 79.5 cm and 80.5 cm

Worked solutions

Q11 | 4 MARKS

Use upper $a=21.5$ and lower $b=6.5$: $21.5 \div 6.5 = 3.308$.

ANSWER: 3.308

Q12 | 3 MARKS

The interval is $535 \leq P < 545$; greatest whole number is 544.

ANSWER: 544

Chapter completion record

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1			
2			
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