

GCSE ONLINE TUTORING

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GCSE MATHEMATICS FOUNDATION TIER

UNIT 1: NUMBER

16 chapters | 192 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	Ordering and comparing numbers
3	Four operations with integers
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7	Prime factors and product structure
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15	Standard form
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FOUNDATION TIER

UNIT 1 | CHAPTER 1

Place value and number language

12 curated questions | complete solutions

Chapter focus

Place value, reading, writing and partitioning integers and decimals

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: Place value and number language

Q01 | 1 MARK

Write the value of the digit 4 in 3040.

Q02 | 1 MARK

Write the value of the digit 4 in 3114.

Chapter 1: Place value and number language

Q03 | 1 MARK

Write the value of the digit 4 in 3188.

Q04 | 2 MARKS

Partition 3262 into place-value parts.

Chapter 1: Place value and number language

Q05 | 2 MARKS

Partition 3336 into place-value parts.

Q06 | 2 MARKS

Partition 3410 into place-value parts.

Chapter 1: Place value and number language

Q07 | 2 MARKS

Partition 3484 into place-value parts.

Q08 | 2 MARKS

Partition 3558 into place-value parts.

Chapter 1: Place value and number language

Q09 | 3 MARKS

Write 22466 in words and partition it by place value. Then state the value of the digit 2 in 22466, and write 1.85 as a sum of place-value parts.

Q10 | 3 MARKS

Write 23642 in words and partition it by place value. Then state the value of the digit 3 in 23642, and write 2.66 as a sum of place-value parts.

Chapter 1: Place value and number language

Q11 | 4 MARKS

Write 24932 in words and partition it by place value. Then state the value of the digit 9 in 24932, and write 3.62 as a sum of place-value parts.

Q12 | 5 MARKS

You must show your working.

Write 26108 in words and partition it by place value. Then state the value of the digit 0 in 26108, and write 4.43 as a sum of place-value parts.

Worked solutions

Q01 | 1 MARK

The 4 is in the tens place, so its value is 40.

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

Q02 | 1 MARK

The 4 is in the tens place, so its value is 40.

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 4 is in the tens place, so its value is 40.

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

Q04 | 2 MARKS

$3000 + 200 + 60 + 2$.

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

Worked solutions

Q05 | 2 MARKS

$$3000 + 300 + 30 + 6.$$

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

Q06 | 2 MARKS

$$3000 + 400 + 10.$$

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

Worked solutions

Q07 | 2 MARKS

$$3000 + 400 + 80 + 4.$$

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

Q08 | 2 MARKS

$$3000 + 500 + 50 + 8.$$

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

Worked solutions

Q09 | 3 MARKS

Partition: $20000 + 2000 + 400 + 60 + 6$. The selected digit value is 20000. Decimal partition: $1 + 17/20$. A correct word form must preserve every place, including internal zeros.

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

Q10 | 3 MARKS

Partition: $20000 + 3000 + 600 + 40 + 2$. The selected digit value is 3000. Decimal partition: $2 + 33/50$. A correct word form must preserve every place, including internal zeros.

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

Worked solutions

Q11 | 4 MARKS

Partition: $20000 + 4000 + 900 + 30 + 2$. The selected digit value is 900. Decimal partition: $3 + 31/50$. A correct word form must preserve every place, including internal zeros.

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

Q12 | 5 MARKS

Partition: $20000 + 6000 + 100 + 8$. The selected digit value is 0. Decimal partition: $4 + 43/100$. A correct word form must preserve every place, including internal zeros.

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 1 | CHAPTER 2

Ordering and comparing numbers

12 curated questions | complete solutions

Chapter focus

Inequality symbols, number lines and mixed positive values

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 2: Ordering and comparing numbers

Q01 | 1 MARK

Insert <, > or =: $\frac{1}{5}$ ____ $\frac{1}{4}$.

Q02 | 1 MARK

Insert <, > or =: $\frac{2}{5}$ ____ $\frac{3}{4}$.

Chapter 2: Ordering and comparing numbers

Q03 | 1 MARK

Insert <, > or =: $\frac{3}{5}$ ____ $\frac{1}{2}$.

Q04 | 2 MARKS

Put $\frac{3}{10}$, $\frac{1}{4}$ and 0.6 in ascending order.

Chapter 2: Ordering and comparing numbers

Q05 | 2 MARKS

Put $\frac{1}{2}$, $\frac{3}{4}$ and 0.6 in ascending order.

Q06 | 2 MARKS

Put $\frac{1}{5}$, $\frac{1}{2}$ and 0.6 in ascending order.

Chapter 2: Ordering and comparing numbers

Q07 | 2 MARKS

Put $\frac{2}{5}$, $\frac{1}{4}$ and 0.6 in ascending order.

Q08 | 2 MARKS

Put $\frac{3}{5}$, $\frac{3}{4}$ and 0.6 in ascending order.

Chapter 2: Ordering and comparing numbers

Q09 | 3 MARKS

Write these values in ascending order: $\frac{3}{5}$, $\frac{43}{100}$, $\frac{1}{4}$, $\frac{4}{5}$. Use a common decimal or denominator, then insert $<$, $>$ or $=$ between the middle two values.

Q10 | 3 MARKS

Write these values in ascending order: $\frac{2}{5}$, $\frac{31}{100}$, $\frac{3}{4}$, $\frac{4}{5}$. Use a common decimal or denominator, then insert $<$, $>$ or $=$ between the middle two values.

Chapter 2: Ordering and comparing numbers

Q11 | 4 MARKS

Write these values in ascending order: $\frac{2}{5}$, $\frac{41}{100}$, $\frac{1}{4}$, $\frac{2}{5}$. Use a common decimal or denominator, then insert $<$, $>$ or $=$ between the middle two values.

Q12 | 5 MARKS

You must show your working.

Write these values in ascending order: $\frac{7}{10}$, $\frac{29}{100}$, $\frac{3}{4}$, $\frac{2}{5}$. Use a common decimal or denominator, then insert $<$, $>$ or $=$ between the middle two values.

Worked solutions

Q01 | 1 MARK

Convert to decimals and compare: $\frac{1}{5}$ < $\frac{1}{4}$.

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

Q02 | 1 MARK

Convert to decimals and compare: $\frac{2}{5}$ < $\frac{3}{4}$.

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

Worked solutions

Q03 | 1 MARK

Convert to decimals and compare: $\frac{3}{5} > \frac{1}{2}$.

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

Q04 | 2 MARKS

Using decimals, the order is $\frac{1}{4}$, $\frac{3}{10}$, $\frac{3}{5}$.

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

Worked solutions

Q05 | 2 MARKS

Using decimals, the order is $1/2$, $3/5$, $3/4$.

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

Q06 | 2 MARKS

Using decimals, the order is $1/5$, $1/2$, $3/5$.

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

Worked solutions

Q07 | 2 MARKS

Using decimals, the order is $1/4$, $2/5$, $3/5$.

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

Q08 | 2 MARKS

Using decimals, the order is $3/5$, $3/5$, $3/4$.

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

Worked solutions

Q09 | 3 MARKS

As decimals they are [0.6, 0.43, 0.25, 0.8]. Ascending order is $\frac{1}{4}$, $\frac{43}{100}$, $\frac{3}{5}$, $\frac{4}{5}$. The middle comparison is $\frac{43}{100} < \frac{3}{5}$, with equality only when their values coincide.

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

Q10 | 3 MARKS

As decimals they are [0.4, 0.31, 0.75, 0.8]. Ascending order is $\frac{31}{100}$, $\frac{2}{5}$, $\frac{3}{4}$, $\frac{4}{5}$. The middle comparison is $\frac{2}{5} < \frac{3}{4}$, with equality only when their values coincide.

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

Worked solutions

Q11 | 4 MARKS

As decimals they are [0.4, 0.41, 0.25, 0.4]. Ascending order is $\frac{1}{4}$, $\frac{2}{5}$, $\frac{2}{5}$, $\frac{41}{100}$. The middle comparison is $\frac{2}{5} \leq \frac{2}{5}$, with equality only when their values coincide.

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

Q12 | 5 MARKS

As decimals they are [0.7, 0.29, 0.75, 0.4]. Ascending order is $\frac{29}{100}$, $\frac{2}{5}$, $\frac{7}{10}$, $\frac{3}{4}$. The middle comparison is $\frac{2}{5} \leq \frac{7}{10}$, with equality only when their values coincide.

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 1 | CHAPTER 3

Four operations with integers

12 curated questions | complete solutions

Chapter focus

Written and mental methods, money and checking by inverse operations

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: Four operations with integers

Q01 | 1 MARK

Calculate $450+120$.

Q02 | 1 MARK

Calculate $476+134$.

Chapter 3: Four operations with integers

Q03 | 1 MARK

Calculate $502 + 148$.

Q04 | 2 MARKS

Calculate $528 - 162$ and check by addition.

Chapter 3: Four operations with integers

Q05 | 2 MARKS

Calculate $554 - 176$ and check by addition.

Q06 | 2 MARKS

Calculate $580 - 190$ and check by addition.

Chapter 3: Four operations with integers

Q07 | 2 MARKS

Calculate $606 - 204$ and check by addition.

Q08 | 2 MARKS

Calculate $632 - 218$ and check by addition.

Chapter 3: Four operations with integers

Q09 | 3 MARKS

Calculate $1866 - 317$ using a written method and calculate 23×8 . Check the subtraction by inverse addition and use an estimate to check the product.

Q10 | 3 MARKS

Calculate $2162 - 299$ using a written method and calculate 31×8 . Check the subtraction by inverse addition and use an estimate to check the product.

Chapter 3: Four operations with integers

Q11 | 4 MARKS

Calculate $2532 - 299$ using a written method and calculate 26×10 . Check the subtraction by inverse addition and use an estimate to check the product.

Q12 | 5 MARKS

You must show your working.

Calculate $2828 - 281$ using a written method and calculate 34×10 . Check the subtraction by inverse addition and use an estimate to check the product.

Worked solutions

Q01 | 1 MARK

570.

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

Q02 | 1 MARK

610.

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

Worked solutions

Q03 | 1 MARK

650.

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

Q04 | 2 MARKS

$528 - 162 = 366$; check: $366 + 162 = 528$.

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

Worked solutions

Q05 | 2 MARKS

$554 - 176 = 378$; check: $378 + 176 = 554$.

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

Q06 | 2 MARKS

$580 - 190 = 390$; check: $390 + 190 = 580$.

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

Worked solutions

Q07 | 2 MARKS

$606 - 204 = 402$; check: $402 + 204 = 606$.

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

Q08 | 2 MARKS

$632 - 218 = 414$; check: $414 + 218 = 632$.

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

Worked solutions

Q09 | 3 MARKS

$1866 - 317 = 1549$. Inverse check: $1549 + 317 = 1866$. Product = 184. Rounding the factors to convenient tens gives a nearby value; the exact answer should have the expected size and final digit.

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

Q10 | 3 MARKS

$2162 - 299 = 1863$. Inverse check: $1863 + 299 = 2162$. Product = 248. Rounding the factors to convenient tens gives a nearby value; the exact answer should have the expected size and final digit.

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

Worked solutions

Q11 | 4 MARKS

$2532 - 299 = 2233$. Inverse check: $2233 + 299 = 2532$. Product = 260. Rounding the factors to convenient tens gives a nearby value; the exact answer should have the expected size and final digit.

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

Q12 | 5 MARKS

$2828 - 281 = 2547$. Inverse check: $2547 + 281 = 2828$. Product = 340. Rounding the factors to convenient tens gives a nearby value; the exact answer should have the expected size and final digit.

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 1 | CHAPTER 4

Directed numbers

12 curated questions | complete solutions

Chapter focus

Positive and negative arithmetic in numerical and contextual settings

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: Directed numbers

Q01 | 1 MARK

Calculate $-8+5$.

Q02 | 1 MARK

Calculate $-6+7$.

Chapter 4: Directed numbers

Q03 | 1 MARK

Calculate $-4+5$.

Q04 | 2 MARKS

The temperature is -8 degrees C and rises by 10 degrees. Find the new temperature.

Chapter 4: Directed numbers

Q05 | 2 MARKS

The temperature is -6 degrees C and rises by 12 degrees. Find the new temperature.

Q06 | 2 MARKS

The temperature is -4 degrees C and rises by 9 degrees. Find the new temperature.

Chapter 4: Directed numbers

Q07 | 2 MARKS

The temperature is -8 degrees C and rises by 11 degrees. Find the new temperature.

Q08 | 2 MARKS

The temperature is -6 degrees C and rises by 13 degrees. Find the new temperature.

Chapter 4: Directed numbers

Q09 | 3 MARKS

A temperature starts at -12 degrees C, rises by 26 degrees, then falls by 7 degrees. Find the final temperature and the total change from the start. Represent the two moves on a number line.

Q10 | 3 MARKS

A temperature starts at -4 degrees C, rises by 24 degrees, then falls by 11 degrees. Find the final temperature and the total change from the start. Represent the two moves on a number line.

Chapter 4: Directed numbers

Q11 | 4 MARKS

A temperature starts at -12 degrees C, rises by 24 degrees, then falls by 7 degrees. Find the final temperature and the total change from the start. Represent the two moves on a number line.

Q12 | 5 MARKS

You must show your working.

A temperature starts at -4 degrees C, rises by 22 degrees, then falls by 11 degrees. Find the final temperature and the total change from the start. Represent the two moves on a number line.

Worked solutions

Q01 | 1 MARK

-3.

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

Q02 | 1 MARK

1.

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

Worked solutions

Q03 | 1 MARK

1.

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

Q04 | 2 MARKS

$-8+10=2$ degrees C.

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

Worked solutions

Q05 | 2 MARKS

$-6+12=6$ degrees C.

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

Q06 | 2 MARKS

$-4+9=5$ degrees C.

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

Worked solutions

Q07 | 2 MARKS

$-8+11=3$ degrees C.

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

Q08 | 2 MARKS

$-6+13=7$ degrees C.

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

Worked solutions

Q09 | 3 MARKS

Final temperature = $-12 + 26 - 7 = 7$ degrees C. Total change = $7 - (-12) = 19$ degrees. On a number line move right 26, then left 7; direction controls the signs.

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

Q10 | 3 MARKS

Final temperature = $-4 + 24 - 11 = 9$ degrees C. Total change = $9 - (-4) = 13$ degrees. On a number line move right 24, then left 11; direction controls the signs.

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

Worked solutions

Q11 | 4 MARKS

Final temperature = $-12 + 24 - 7 = 5$ degrees C. Total change = $5 - (-12) = 17$ degrees. On a number line move right 24, then left 7; direction controls the signs.

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

Q12 | 5 MARKS

Final temperature = $-4 + 22 - 11 = 7$ degrees C. Total change = $7 - (-4) = 11$ degrees. On a number line move right 22, then left 11; direction controls the signs.

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 1 | CHAPTER 5

Order of operations and inverse operations

12 curated questions | complete solutions

Chapter focus

Brackets, powers, operation priority and missing-number reasoning

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: Order of operations and inverse operations

Q01 | 1 MARK

Calculate $2+3\times 3$.

Q02 | 1 MARK

Calculate $4+7\times 3$.

Chapter 5: Order of operations and inverse operations

Q03 | 1 MARK

Calculate $6+3\times3$.

Q04 | 2 MARKS

Calculate $(8+7)\times3$ and explain which operation is first.

Chapter 5: Order of operations and inverse operations

Q05 | 2 MARKS

Calculate $(3+3) \times 3$ and explain which operation is first.

Q06 | 2 MARKS

Calculate $(5+7) \times 3$ and explain which operation is first.

Chapter 5: Order of operations and inverse operations

Q07 | 2 MARKS

Calculate $(7+3) \times 3$ and explain which operation is first.

Q08 | 2 MARKS

Calculate $(2+7) \times 3$ and explain which operation is first.

Chapter 5: Order of operations and inverse operations

Q09 | 3 MARKS

Calculate $(6+7) \times 4 - 6^2$, showing the operation order. Then find the missing number in $(x+6) \times 4 - 6^2 = 16$ by reversing the operations.

Q10 | 3 MARKS

Calculate $(7+7) \times 10 - 7^2$, showing the operation order. Then find the missing number in $(x+7) \times 10 - 7^2 = 91$ by reversing the operations.

Chapter 5: Order of operations and inverse operations

Q11 | 4 MARKS

Calculate $(3+3) \times 4 - 3^2$, showing the operation order. Then find the missing number in $(x+3) \times 4 - 3^2 = 15$ by reversing the operations.

Q12 | 5 MARKS

You must show your working.

Calculate $(4+3) \times 10 - 4^2$, showing the operation order. Then find the missing number in $(x+4) \times 10 - 4^2 = 54$ by reversing the operations.

Worked solutions

Q01 | 1 MARK

Multiply first: $3 \times 3 = 9$; answer 11.

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

Q02 | 1 MARK

Multiply first: $7 \times 3 = 21$; answer 25.

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

Worked solutions

Q03 | 1 MARK

Multiply first: $3 \times 3 = 9$; answer 15.

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

Q04 | 2 MARKS

Brackets first: $8 + 7 = 15$, then $\times 3$ gives 45.

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

Worked solutions

Q05 | 2 MARKS

Brackets first: $3+3=6$, then $\times 3$ gives 18.

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

Q06 | 2 MARKS

Brackets first: $5+7=12$, then $\times 3$ gives 36.

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

Worked solutions

Q07 | 2 MARKS

Brackets first: $7+3=10$, then $\times 3$ gives 30.

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

Q08 | 2 MARKS

Brackets first: $2+7=9$, then $\times 3$ gives 27.

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

Worked solutions

Q09 | 3 MARKS

Brackets first: $6+7=13$; power: $6^2=36$; then multiply and subtract to get 16. Reverse: add 36, divide by 4, then subtract 6, giving $x=7$.

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

Q10 | 3 MARKS

Brackets first: $7+7=14$; power: $7^2=49$; then multiply and subtract to get 91. Reverse: add 49, divide by 10, then subtract 7, giving $x=7$.

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

Worked solutions

Q11 | 4 MARKS

Brackets first: $3+3=6$; power: $3^2=9$; then multiply and subtract to get 15. Reverse: add 9, divide by 4, then subtract 3, giving $x=3$.

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

Q12 | 5 MARKS

Brackets first: $4+3=7$; power: $4^2=16$; then multiply and subtract to get 54. Reverse: add 16, divide by 10, then subtract 4, giving $x=3$.

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 1 | CHAPTER 6

Factors, multiples and primes

12 curated questions | complete solutions

Chapter focus

Definitions, divisibility, prime numbers, HCF and LCM

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: Factors, multiples and primes

Q01 | 1 MARK

Write one factor of 20 other than 1.

Q02 | 1 MARK

Write one factor of 24 other than 1.

Chapter 6: Factors, multiples and primes

Q03 | 1 MARK

Write one factor of 28 other than 1.

Q04 | 2 MARKS

Find the HCF of 24 and 36.

Chapter 6: Factors, multiples and primes

Q05 | 2 MARKS

Find the HCF of 28 and 42.

Q06 | 2 MARKS

Find the HCF of 32 and 48.

Chapter 6: Factors, multiples and primes

Q07 | 2 MARKS

Find the HCF of 36 and 54.

Q08 | 2 MARKS

Find the HCF of 40 and 60.

Chapter 6: Factors, multiples and primes

Q09 | 3 MARKS

List the factors of 36 and identify its prime factors. Find the HCF and LCM of 36 and 70, then explain which answer solves a grouping problem and which solves a repeating-event problem.

Q10 | 3 MARKS

List the factors of 36 and identify its prime factors. Find the HCF and LCM of 36 and 80, then explain which answer solves a grouping problem and which solves a repeating-event problem.

Chapter 6: Factors, multiples and primes

Q11 | 4 MARKS

List the factors of 48 and identify its prime factors. Find the HCF and LCM of 48 and 40, then explain which answer solves a grouping problem and which solves a repeating-event problem.

Q12 | 5 MARKS

You must show your working.

List the factors of 48 and identify its prime factors. Find the HCF and LCM of 48 and 50, then explain which answer solves a grouping problem and which solves a repeating-event problem.

Worked solutions

Q01 | 1 MARK

One valid answer is 2.

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

Q02 | 1 MARK

One valid answer is 2.

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

Worked solutions

Q03 | 1 MARK

One valid answer is 2.

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

Q04 | 2 MARKS

The HCF is 12.

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

Worked solutions

Q05 | 2 MARKS

The HCF is 14.

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

Q06 | 2 MARKS

The HCF is 16.

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 HCF is 18.

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

Q08 | 2 MARKS

The HCF is 20.

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

Worked solutions

Q09 | 3 MARKS

Factors of 36: [1, 2, 3, 4, 6, 9, 12, 18, 36]; prime factors among them are [2, 3]. HCF=2; LCM=1260. HCF makes the greatest equal groups; LCM gives the first common repeat.

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

Q10 | 3 MARKS

Factors of 36: [1, 2, 3, 4, 6, 9, 12, 18, 36]; prime factors among them are [2, 3]. HCF=4; LCM=720. HCF makes the greatest equal groups; LCM gives the first common repeat.

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

Worked solutions

Q11 | 4 MARKS

Factors of 48: [1, 2, 3, 4, 6, 8, 12, 16, 24, 48]; prime factors among them are [2, 3]. HCF=8; LCM=240. HCF makes the greatest equal groups; LCM gives the first common repeat.

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

Q12 | 5 MARKS

Factors of 48: [1, 2, 3, 4, 6, 8, 12, 16, 24, 48]; prime factors among them are [2, 3]. HCF=2; LCM=1200. HCF makes the greatest equal groups; LCM gives the first common repeat.

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 1 | CHAPTER 7

Prime factors and product structure

12 curated questions | complete solutions

Chapter focus

Prime-factor decomposition and using it for HCF and LCM

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 7: Prime factors and product structure

Q01 | 1 MARK

Write 12 as a product of prime factors.

Q02 | 1 MARK

Write 16 as a product of prime factors.

Chapter 7: Prime factors and product structure

Q03 | 1 MARK

Write 20 as a product of prime factors.

Q04 | 2 MARKS

Write 24 and 30 as prime-factor products.

Chapter 7: Prime factors and product structure

Q05 | 2 MARKS

Write 28 and 34 as prime-factor products.

Q06 | 2 MARKS

Write 32 and 38 as prime-factor products.

Chapter 7: Prime factors and product structure

Q07 | 2 MARKS

Write 36 and 42 as prime-factor products.

Q08 | 2 MARKS

Write 40 and 46 as prime-factor products.

Chapter 7: Prime factors and product structure

Q09 | 3 MARKS

Write 144 and 192 as products of prime factors. Use the prime factors to find their HCF and LCM, and verify that $\text{HCF} \times \text{LCM} = 144 \times 192$.

Q10 | 3 MARKS

Write 192 and 256 as products of prime factors. Use the prime factors to find their HCF and LCM, and verify that $\text{HCF} \times \text{LCM} = 192 \times 256$.

Chapter 7: Prime factors and product structure

Q11 | 4 MARKS

Write 252 and 336 as products of prime factors. Use the prime factors to find their HCF and LCM, and verify that $\text{HCF} \times \text{LCM} = 252 \times 336$.

Q12 | 5 MARKS

You must show your working.

Write 300 and 400 as products of prime factors. Use the prime factors to find their HCF and LCM, and verify that $\text{HCF} \times \text{LCM} = 300 \times 400$.

Worked solutions

Q01 | 1 MARK

$2 \times 2 \times 3$.

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

Q02 | 1 MARK

$2 \times 2 \times 2 \times 2$.

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

Worked solutions

Q03 | 1 MARK

$2 \times 2 \times 5$.

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

Q04 | 2 MARKS

$24 = 2 \times 2 \times 2 \times 3$; $30 = 2 \times 3 \times 5$.

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

Worked solutions

Q05 | 2 MARKS

$$28=2 \times 2 \times 7; 34=2 \times 17.$$

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

Q06 | 2 MARKS

$$32=2 \times 2 \times 2 \times 2 \times 2; 38=2 \times 19.$$

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

Worked solutions

Q07 | 2 MARKS

$$36=2 \times 2 \times 3 \times 3; 42=2 \times 3 \times 7.$$

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

Q08 | 2 MARKS

$$40=2 \times 2 \times 2 \times 5; 46=2 \times 23.$$

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

Worked solutions

Q09 | 3 MARKS

$144=2 \times 2 \times 2 \times 2 \times 3 \times 3$; $192=2 \times 2 \times 2 \times 2 \times 2 \times 3$. Taking shared factors with lowest powers gives $\text{HCF}=48$; all factors with greatest powers give $\text{LCM}=576$. Check: $48 \times 576=27648$ and $144 \times 192=27648$.

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

Q10 | 3 MARKS

$192=2 \times 2 \times 2 \times 2 \times 2 \times 3$; $256=2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2$. Taking shared factors with lowest powers gives $\text{HCF}=64$; all factors with greatest powers give $\text{LCM}=768$. Check: $64 \times 768=49152$ and $192 \times 256=49152$.

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

Worked solutions

Q11 | 4 MARKS

$252 = 2 \times 2 \times 3 \times 3 \times 7$; $336 = 2 \times 2 \times 2 \times 3 \times 7$. Taking shared factors with lowest powers gives $HCF = 84$; all factors with greatest powers give $LCM = 1008$. Check: $84 \times 1008 = 84672$ and $252 \times 336 = 84672$.

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

Q12 | 5 MARKS

$300 = 2 \times 2 \times 3 \times 5 \times 5$; $400 = 2 \times 2 \times 2 \times 2 \times 5 \times 5$. Taking shared factors with lowest powers gives $HCF = 100$; all factors with greatest powers give $LCM = 1200$. Check: $100 \times 1200 = 120000$ and $300 \times 400 = 120000$.

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 1 | CHAPTER 8

Powers, roots and index notation

12 curated questions | complete solutions

Chapter focus

Squares, cubes, roots and Foundation index laws

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: Powers, roots and index notation

Q01 | 1 MARK

Calculate 2^2 .

Q02 | 1 MARK

Calculate 4^2 .

Chapter 8: Powers, roots and index notation

Q03 | 1 MARK

Calculate 6^2 .

Q04 | 2 MARKS

Calculate 8^3 and the cube root of 512.

Chapter 8: Powers, roots and index notation

Q05 | 2 MARKS

Calculate 10^3 and the cube root of 1000.

Q06 | 2 MARKS

Calculate 12^3 and the cube root of 1728.

Chapter 8: Powers, roots and index notation

Q07 | 2 MARKS

Calculate 14^3 and the cube root of 2744.

Q08 | 2 MARKS

Calculate 16^3 and the cube root of 4096.

Chapter 8: Powers, roots and index notation

Q09 | 3 MARKS

Calculate 8^2 , $\sqrt{64}$ and the cube root of 125. Then simplify $8^2 \times 8^2$ as a single power and explain the index rule used.

Q10 | 3 MARKS

Calculate 10^4 , $\sqrt{100}$ and the cube root of 27. Then simplify $10^2 \times 10^4$ as a single power and explain the index rule used.

Chapter 8: Powers, roots and index notation

Q11 | 4 MARKS

Calculate 14^2 , $\sqrt{196}$ and the cube root of 27. Then simplify $14^2 \times 14^2$ as a single power and explain the index rule used.

Q12 | 5 MARKS

You must show your working.

Calculate 16^4 , $\sqrt{256}$ and the cube root of 216. Then simplify $16^2 \times 16^4$ as a single power and explain the index rule used.

Worked solutions

Q01 | 1 MARK

4.

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

Q02 | 1 MARK

16.

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

Worked solutions

Q03 | 1 MARK

36.

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

Q04 | 2 MARKS

$8^3=512$; cube root=8.

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

Worked solutions

Q05 | 2 MARKS

$10^3=1000$; cube root=10.

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

Q06 | 2 MARKS

$12^3=1728$; cube root=12.

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

Worked solutions

Q07 | 2 MARKS

$14^3=2744$; cube root=14.

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

Q08 | 2 MARKS

$16^3=4096$; cube root=16.

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

Worked solutions

Q09 | 3 MARKS

$8^2=64$; $\sqrt{64}=8$; cube root of $125=5$. Same-base multiplication adds powers, so $8^2 \times 8^2 = 8^4$.

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

Q10 | 3 MARKS

$10^4=10000$; $\sqrt{100}=10$; cube root of $27=3$. Same-base multiplication adds powers, so $10^2 \times 10^4 = 10^6$.

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

Worked solutions

Q11 | 4 MARKS

$14^2=196$; $\sqrt{196}=14$; cube root of $27=3$. Same-base multiplication adds powers, so $14^2 \times 14^2=14^4$.

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

Q12 | 5 MARKS

$16^4=65536$; $\sqrt{256}=16$; cube root of $216=6$. Same-base multiplication adds powers, so $16^2 \times 16^4=16^6$.

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 1 | CHAPTER 9

Equivalent fractions and fractions of amounts

12 curated questions | complete solutions

Chapter focus

Simplification, equivalence, mixed forms and quantities

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: Equivalent fractions and fractions of amounts

Q01 | 1 MARK

Simplify $\frac{2}{10}$.

Q02 | 1 MARK

Simplify $\frac{6}{14}$.

Chapter 9: Equivalent fractions and fractions of amounts

Q03 | 1 MARK

Simplify $10/18$.

Q04 | 2 MARKS

Find $7/11$ of 66.

Chapter 9: Equivalent fractions and fractions of amounts

Q05 | 2 MARKS

Find $\frac{9}{13}$ of 78.

Q06 | 2 MARKS

Find $\frac{11}{15}$ of 90.

Chapter 9: Equivalent fractions and fractions of amounts

Q07 | 2 MARKS

Find $\frac{13}{17}$ of 102.

Q08 | 2 MARKS

Find $\frac{15}{19}$ of 114.

Chapter 9: Equivalent fractions and fractions of amounts

Q09 | 3 MARKS

Simplify $12/30$, find an equivalent fraction with denominator 60, and calculate $4/10$ of 80. If the result is shared equally between 6 people, find each share.

Q10 | 3 MARKS

Simplify $30/33$, find an equivalent fraction with denominator 66, and calculate $10/11$ of 176. If the result is shared equally between 7 people, find each share.

Chapter 9: Equivalent fractions and fractions of amounts

Q11 | 4 MARKS

Simplify $\frac{9}{21}$, find an equivalent fraction with denominator 42, and calculate $\frac{3}{7}$ of 56. If the result is shared equally between 3 people, find each share.

Q12 | 5 MARKS

You must show your working.

Simplify $\frac{12}{24}$, find an equivalent fraction with denominator 48, and calculate $\frac{4}{8}$ of 128. If the result is shared equally between 4 people, find each share.

Worked solutions

Q01 | 1 MARK

1/5.

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

Q02 | 1 MARK

3/7.

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.

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

Q04 | 2 MARKS

$7/11 \times 66 = 42$.

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

Worked solutions

Q05 | 2 MARKS

$$9/13 \times 78 = 54.$$

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

Q06 | 2 MARKS

$$11/15 \times 90 = 66.$$

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

Worked solutions

Q07 | 2 MARKS

$$13/17 \times 102 = 78.$$

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

Q08 | 2 MARKS

$$15/19 \times 114 = 90.$$

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

Worked solutions

Q09 | 3 MARKS

$12/30=2/5$. Equivalent denominator 60: $24/60$. Fraction of amount= $4/10 \times 80=32$; each share= $16/3$.

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

Q10 | 3 MARKS

$30/33=10/11$. Equivalent denominator 66: $60/66$. Fraction of amount= $10/11 \times 176=160$; each share= $160/7$.

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

Worked solutions

Q11 | 4 MARKS

$9/21=3/7$. Equivalent denominator 42: $18/42$. Fraction of amount= $3/7 \times 56=24$; each share= 8 .

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

Q12 | 5 MARKS

$12/24=1/2$. Equivalent denominator 48: $24/48$. Fraction of amount= $4/8 \times 128=64$; each share= 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 1 | CHAPTER 10

Calculating with fractions

12 curated questions | complete solutions

Chapter focus

Addition, subtraction, multiplication and division of fractions

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: Calculating with fractions

Q01 | 1 MARK

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

Q02 | 1 MARK

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

Chapter 10: Calculating with fractions

Q03 | 1 MARK

Calculate $\frac{1}{8} + \frac{2}{8}$.

Q04 | 2 MARKS

Calculate $\frac{1}{10} + \frac{1}{20}$. Give the answer in simplest form.

Chapter 10: Calculating with fractions

Q05 | 2 MARKS

Calculate $\frac{1}{12} + \frac{1}{24}$. Give the answer in simplest form.

Q06 | 2 MARKS

Calculate $\frac{1}{14} + \frac{1}{28}$. Give the answer in simplest form.

Chapter 10: Calculating with fractions

Q07 | 2 MARKS

Calculate $\frac{1}{16} + \frac{1}{32}$. Give the answer in simplest form.

Q08 | 2 MARKS

Calculate $\frac{1}{18} + \frac{1}{36}$. Give the answer in simplest form.

Chapter 10: Calculating with fractions

Q09 | 3 MARKS

Calculate $\frac{1}{4} + \frac{6}{8}$ and $\frac{1}{4} \times \frac{6}{8}$ in simplest form. Then calculate $\frac{1}{4}$ divided by $\frac{6}{8}$ and explain the reciprocal step.

Q10 | 3 MARKS

Calculate $\frac{2}{6} + \frac{7}{9}$ and $\frac{2}{6} \times \frac{7}{9}$ in simplest form. Then calculate $\frac{2}{6}$ divided by $\frac{7}{9}$ and explain the reciprocal step.

Chapter 10: Calculating with fractions

Q11 | 4 MARKS

Calculate $\frac{1}{4} + \frac{9}{11}$ and $\frac{1}{4} \times \frac{9}{11}$ in simplest form. Then calculate $\frac{1}{4}$ divided by $\frac{9}{11}$ and explain the reciprocal step.

Q12 | 5 MARKS

You must show your working.

Calculate $\frac{5}{6} + \frac{1}{12}$ and $\frac{5}{6} \times \frac{1}{12}$ in simplest form. Then calculate $\frac{5}{6}$ divided by $\frac{1}{12}$ and explain the reciprocal step.

Worked solutions

Q01 | 1 MARK

3/4.

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

Q02 | 1 MARK

1/2.

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

Worked solutions

Q03 | 1 MARK

$\frac{3}{8}$.

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

Q04 | 2 MARKS

$\frac{2}{20} + \frac{1}{20} = \frac{3}{20}$.

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

Worked solutions

Q05 | 2 MARKS

$$2/24 + 1/24 = 1/8.$$

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

Q06 | 2 MARKS

$$2/28 + 1/28 = 3/28.$$

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

Worked solutions

Q07 | 2 MARKS

$$2/32 + 1/32 = 3/32.$$

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

Q08 | 2 MARKS

$$2/36 + 1/36 = 1/12.$$

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

Worked solutions

Q09 | 3 MARKS

Common-denominator addition gives 1. Multiplication gives $3/16$. Division means multiply by the reciprocal:
 $1/4 \times 4/3 = 1/3$.

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

Q10 | 3 MARKS

Common-denominator addition gives $10/9$. Multiplication gives $7/27$. Division means multiply by the reciprocal:
 $1/3 \times 9/7 = 3/7$.

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

Worked solutions

Q11 | 4 MARKS

Common-denominator addition gives $47/44$. Multiplication gives $9/44$. Division means multiply by the reciprocal: $1/4 \times 11/9 = 11/36$.

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

Q12 | 5 MARKS

Common-denominator addition gives $11/12$. Multiplication gives $5/72$. Division means multiply by the reciprocal: $5/6 \times 12 = 10$.

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 1 | CHAPTER 11

Decimal calculations

12 curated questions | complete solutions

Chapter focus

Place value, four operations, money and sensible checking

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: Decimal calculations

Q01 | 1 MARK

Calculate $12.5 + 2.0$.

Q02 | 1 MARK

Calculate $13.1 + 2.2$.

Chapter 11: Decimal calculations

Q03 | 1 MARK

Calculate $13.7 + 2.4$.

Q04 | 2 MARKS

Calculate 14.3×10 and 14.3 divided by 10 .

Chapter 11: Decimal calculations

Q05 | 2 MARKS

Calculate 14.9×10 and 14.9 divided by 10 .

Q06 | 2 MARKS

Calculate 15.5×10 and 15.5 divided by 10 .

Chapter 11: Decimal calculations

Q07 | 2 MARKS

Calculate 16.1×10 and 16.1 divided by 10 .

Q08 | 2 MARKS

Calculate 16.7×10 and 16.7 divided by 10 .

Chapter 11: Decimal calculations

Q09 | 3 MARKS

Calculate $25.1+2.4$, 25.1×2.4 , and 25.1 divided by 2.4 . Show a place-value method and round the quotient to two decimal places.

Q10 | 3 MARKS

Calculate $30.7+3.2$, 30.7×3.2 , and 30.7 divided by 3.2 . Show a place-value method and round the quotient to two decimal places.

Chapter 11: Decimal calculations

Q11 | 4 MARKS

Calculate $37.7 + 2.4$, 37.7×2.4 , and 37.7 divided by 2.4 . Show a place-value method and round the quotient to two decimal places.

Q12 | 5 MARKS

You must show your working.

Calculate $43.3 + 3.2$, 43.3×3.2 , and 43.3 divided by 3.2 . Show a place-value method and round the quotient to two decimal places.

Worked solutions

Q01 | 1 MARK

14.5.

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

Q02 | 1 MARK

15.3.

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

Worked solutions

Q03 | 1 MARK

16.1.

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

Q04 | 2 MARKS

143 and 1.43.

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

Worked solutions

Q05 | 2 MARKS

149 and 1.49.

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

Q06 | 2 MARKS

155 and 1.55.

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

Worked solutions

Q07 | 2 MARKS

161 and 1.61.

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

Q08 | 2 MARKS

167 and 1.67.

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

Worked solutions

Q09 | 3 MARKS

Sum=27.5. Product=60.24. Quotient=10.458333..., so to two decimal places it is 10.46. Multiplying both dividend and divisor by 10 removes the decimal from the divisor without changing the quotient.

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

Q10 | 3 MARKS

Sum=33.9. Product=98.24. Quotient=9.593750..., so to two decimal places it is 9.59. Multiplying both dividend and divisor by 10 removes the decimal from the divisor without changing the quotient.

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

Worked solutions

Q11 | 4 MARKS

Sum=40.1. Product=90.48. Quotient=15.708333..., so to two decimal places it is 15.71. Multiplying both dividend and divisor by 10 removes the decimal from the divisor without changing the quotient.

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

Q12 | 5 MARKS

Sum=46.5. Product=138.56. Quotient=13.531250..., so to two decimal places it is 13.53. Multiplying both dividend and divisor by 10 removes the decimal from the divisor without changing the quotient.

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 1 | CHAPTER 12

Fractions, decimals and percentages

12 curated questions | complete solutions

Chapter focus

Conversion, comparison and ordering across 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.

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Chapter 12: Fractions, decimals and percentages

Q01 | 1 MARK

Write 5% as a decimal.

Q02 | 1 MARK

Write 7% as a decimal.

Chapter 12: Fractions, decimals and percentages

Q03 | 1 MARK

Write 9% as a decimal.

Q04 | 2 MARKS

Write 11% as a fraction in simplest form and as a decimal.

Chapter 12: Fractions, decimals and percentages

Q05 | 2 MARKS

Write 13% as a fraction in simplest form and as a decimal.

Q06 | 2 MARKS

Write 15% as a fraction in simplest form and as a decimal.

Chapter 12: Fractions, decimals and percentages

Q07 | 2 MARKS

Write 17% as a fraction in simplest form and as a decimal.

Q08 | 2 MARKS

Write 19% as a fraction in simplest form and as a decimal.

Chapter 12: Fractions, decimals and percentages

Q09 | 3 MARKS

Convert $\frac{1}{2}$ to a decimal and percentage. Convert 0.6 to a fraction in simplest form. Order $\frac{1}{2}$, 0.6 and 53% from smallest to largest.

Q10 | 3 MARKS

Convert $\frac{6}{11}$ to a decimal and percentage. Convert 0.4 to a fraction in simplest form. Order $\frac{6}{11}$, 0.4 and 36% from smallest to largest.

Chapter 12: Fractions, decimals and percentages

Q11 | 4 MARKS

Convert $\frac{2}{13}$ to a decimal and percentage. Convert 0.4 to a fraction in simplest form. Order $\frac{2}{13}$, 0.4 and 46% from smallest to largest.

Q12 | 5 MARKS

You must show your working.

Convert $\frac{3}{14}$ to a decimal and percentage. Convert 0.7 to a fraction in simplest form. Order $\frac{3}{14}$, 0.7 and 54% from smallest to largest.

Worked solutions

Q01 | 1 MARK

0.05.

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

Q02 | 1 MARK

0.07.

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

Worked solutions

Q03 | 1 MARK

0.09.

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

Q04 | 2 MARKS

11/100 and 0.11.

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

Worked solutions

Q05 | 2 MARKS

13/100 and 0.13.

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

Q06 | 2 MARKS

3/20 and 0.15.

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

Worked solutions

Q07 | 2 MARKS

17/100 and 0.17.

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

Q08 | 2 MARKS

19/100 and 0.19.

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

Worked solutions

Q09 | 3 MARKS

$\frac{1}{2}=0.5=50\%$. $0.6=\frac{3}{5}$. Converting all to decimals gives $[0.5, 0.6, 0.53]$, so the order is $\frac{1}{2}$, $\frac{53}{100}$, $\frac{3}{5}$.

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

Q10 | 3 MARKS

$\frac{6}{11}=0.545455=54.5455\%$. $0.4=\frac{2}{5}$. Converting all to decimals gives $[0.5454545454545454, 0.4, 0.36]$, so the order is $\frac{9}{25}$, $\frac{2}{5}$, $\frac{6}{11}$.

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

Worked solutions

Q11 | 4 MARKS

$\frac{2}{13} = 0.153846 = 15.3846\%$. $0.4 = \frac{2}{5}$. Converting all to decimals gives $[0.15384615384615385, 0.4, 0.46]$, so the order is $\frac{2}{13}, \frac{2}{5}, \frac{23}{50}$.

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

Q12 | 5 MARKS

$\frac{3}{14} = 0.214286 = 21.4286\%$. $0.7 = \frac{7}{10}$. Converting all to decimals gives $[0.21428571428571427, 0.7, 0.54]$, so the order is $\frac{3}{14}, \frac{27}{50}, \frac{7}{10}$.

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 1 | CHAPTER 13

Percentages of amounts and percentage change

12 curated questions | complete solutions

Chapter focus

Mental and calculator methods, increase, decrease and reverse change

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: Percentages of amounts and percentage change

Q01 | 1 MARK

Find 10% of 100.

Q02 | 1 MARK

Find 20% of 140.

Chapter 13: Percentages of amounts and percentage change

Q03 | 1 MARK

Find 30% of 180.

Q04 | 2 MARKS

Increase 220 by 15%.

Chapter 13: Percentages of amounts and percentage change

Q05 | 2 MARKS

Increase 260 by 25%.

Q06 | 2 MARKS

Increase 300 by 10%.

Chapter 13: Percentages of amounts and percentage change

Q07 | 2 MARKS

Increase 340 by 20%.

Q08 | 2 MARKS

Increase 380 by 30%.

Chapter 13: Percentages of amounts and percentage change

Q09 | 3 MARKS

Find 15% of GBP 600. Increase GBP 600 by 15%, then reverse your increase to recover the original amount. Explain why subtracting 15% of the new amount would not reverse it exactly.

Q10 | 3 MARKS

Find 15% of GBP 760. Increase GBP 760 by 15%, then reverse your increase to recover the original amount. Explain why subtracting 15% of the new amount would not reverse it exactly.

Chapter 13: Percentages of amounts and percentage change

Q11 | 4 MARKS

Find 25% of GBP 960. Increase GBP 960 by 25%, then reverse your increase to recover the original amount. Explain why subtracting 25% of the new amount would not reverse it exactly.

Q12 | 5 MARKS

You must show your working.

Find 25% of GBP 1120. Increase GBP 1120 by 25%, then reverse your increase to recover the original amount. Explain why subtracting 25% of the new amount would not reverse it exactly.

Worked solutions

Q01 | 1 MARK

10.

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

Q02 | 1 MARK

28.

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

Worked solutions

Q03 | 1 MARK

54.

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

Q04 | 2 MARKS

Increase=33; result=253.

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

Worked solutions

Q05 | 2 MARKS

Increase=65; result=325.

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

Q06 | 2 MARKS

Increase=30; result=330.

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

Worked solutions

Q07 | 2 MARKS

Increase=68; result=408.

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

Q08 | 2 MARKS

Increase=114; result=494.

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

Worked solutions

Q09 | 3 MARKS

15% of GBP 600=GBP 90.00. Increased amount=GBP 690.00. Reverse by dividing by multiplier 1.15: GBP 690.00/1.15=GBP 600.00. The decrease would use a different base amount.

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

Q10 | 3 MARKS

15% of GBP 760=GBP 114.00. Increased amount=GBP 874.00. Reverse by dividing by multiplier 1.15: GBP 874.00/1.15=GBP 760.00. The decrease would use a different base amount.

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

Worked solutions

Q11 | 4 MARKS

25% of GBP 960=GBP 240.00. Increased amount=GBP 1200.00. Reverse by dividing by multiplier 1.25: GBP 1200.00/1.25=GBP 960.00. The decrease would use a different base amount.

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

Q12 | 5 MARKS

25% of GBP 1120=GBP 280.00. Increased amount=GBP 1400.00. Reverse by dividing by multiplier 1.25: GBP 1400.00/1.25=GBP 1120.00. The decrease would use a different base amount.

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 1 | CHAPTER 14

Calculator methods and multi-step problems

12 curated questions | complete solutions

Chapter focus

Efficient entry, brackets, interpretation and rounding money or measures

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: Calculator methods and multi-step problems

Q01 | 1 MARK

Use a calculator to evaluate 12×7 .

Q02 | 1 MARK

Use a calculator to evaluate 14×9 .

Chapter 14: Calculator methods and multi-step problems

Q03 | 1 MARK

Use a calculator to evaluate 16×7 .

Q04 | 2 MARKS

Calculate GBP 4.85×5 . Give a money answer.

Chapter 14: Calculator methods and multi-step problems

Q05 | 2 MARKS

Calculate GBP 5.05×3 . Give a money answer.

Q06 | 2 MARKS

Calculate GBP 5.25×5 . Give a money answer.

Chapter 14: Calculator methods and multi-step problems

Q07 | 2 MARKS

Calculate GBP 5.45×3 . Give a money answer.

Q08 | 2 MARKS

Calculate GBP 5.65×5 . Give a money answer.

Chapter 14: Calculator methods and multi-step problems

Q09 | 3 MARKS

6 identical items cost GBP 8.45 each. A customer pays with GBP 70. Write one calculator expression using brackets if needed, find the change, and state a sensible check using rounded prices.

Q10 | 3 MARKS

14 identical items cost GBP 8.15 each. A customer pays with GBP 80. Write one calculator expression using brackets if needed, find the change, and state a sensible check using rounded prices.

Chapter 14: Calculator methods and multi-step problems

Q11 | 4 MARKS

6 identical items cost GBP 8.15 each. A customer pays with GBP 60. Write one calculator expression using brackets if needed, find the change, and state a sensible check using rounded prices.

Q12 | 5 MARKS

You must show your working.

14 identical items cost GBP 7.85 each. A customer pays with GBP 80. Write one calculator expression using brackets if needed, find the change, and state a sensible check using rounded prices.

Worked solutions

Q01 | 1 MARK

84.

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

Q02 | 1 MARK

126.

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

Worked solutions

Q03 | 1 MARK

112.

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

Q04 | 2 MARKS

GBP 24.25.

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

Worked solutions

Q05 | 2 MARKS

GBP 15.15.

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

Q06 | 2 MARKS

GBP 26.25.

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

Worked solutions

Q07 | 2 MARKS

GBP 16.35.

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

Q08 | 2 MARKS

GBP 28.25.

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

Worked solutions

Q09 | 3 MARKS

Cost= 6×8.45 =GBP 50.70. Change= $70 - 50.70$ =GBP 19.30. Rounding GBP 8.45 to about GBP 8 gives an estimated cost near GBP 48, confirming the size of the exact result.

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

Q10 | 3 MARKS

Cost= 14×8.15 =GBP 114.10. Change= $80 - 114.10$ =GBP -34.10. Rounding GBP 8.15 to about GBP 8 gives an estimated cost near GBP 112, confirming the size of the exact result.

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

Worked solutions

Q11 | 4 MARKS

Cost = $6 \times 8.15 = \text{GBP } 48.90$. Change = $60 - 48.90 = \text{GBP } 11.10$. Rounding GBP 8.15 to about GBP 8 gives an estimated cost near GBP 48, confirming the size of the exact result.

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

Q12 | 5 MARKS

Cost = $14 \times 7.85 = \text{GBP } 109.90$. Change = $80 - 109.90 = \text{GBP } -29.90$. Rounding GBP 7.85 to about GBP 8 gives an estimated cost near GBP 112, confirming the size of the exact result.

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 1 | CHAPTER 15

Standard form

12 curated questions | complete solutions

Chapter focus

Writing, interpreting and calculating with Foundation standard form

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 15: Standard form

Q01 | 1 MARK

Write 2000 in standard form.

Q02 | 1 MARK

Write 400000 in standard form.

Chapter 15: Standard form

Q03 | 1 MARK

Write 60000000 in standard form.

Q04 | 2 MARKS

Write 2×10^4 as an ordinary number.

Chapter 15: Standard form

Q05 | 2 MARKS

Write 4×10^6 as an ordinary number.

Q06 | 2 MARKS

Write 6×10^3 as an ordinary number.

Chapter 15: Standard form

Q07 | 2 MARKS

Write 2×10^5 as an ordinary number.

Q08 | 2 MARKS

Write 4×10^7 as an ordinary number.

Chapter 15: Standard form

Q09 | 3 MARKS

Write 1400 in standard form. Calculate $(1.4 \times 10^3) \times (5 \times 10^1)$ and give the answer in standard form, explaining how the coefficient is normalised.

Q10 | 3 MARKS

Write 140000 in standard form. Calculate $(1.4 \times 10^5) \times (3 \times 10^3)$ and give the answer in standard form, explaining how the coefficient is normalised.

Chapter 15: Standard form

Q11 | 4 MARKS

Write 1600 in standard form. Calculate $(1.6 \times 10^3) \times (3 \times 10^1)$ and give the answer in standard form, explaining how the coefficient is normalised.

Q12 | 5 MARKS

You must show your working.

Write 160000 in standard form. Calculate $(1.6 \times 10^5) \times (6 \times 10^3)$ and give the answer in standard form, explaining how the coefficient is normalised.

Worked solutions

Q01 | 1 MARK

2×10^3 .

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

Q02 | 1 MARK

4×10^5 .

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

Worked solutions

Q03 | 1 MARK

6×10^7 .

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

Q04 | 2 MARKS

20000.

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

Worked solutions

Q05 | 2 MARKS

4000000.

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

Q06 | 2 MARKS

6000.

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

Worked solutions

Q07 | 2 MARKS

200000.

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

Q08 | 2 MARKS

40000000.

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

Worked solutions

Q09 | 3 MARKS

$1400 = 1.4 \times 10^3$. Multiply coefficients and add powers, then move the decimal if the coefficient is at least 10. The normalised result is 7×10^4 , with $1 \leq \text{coefficient} < 10$.

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

Q10 | 3 MARKS

$140000 = 1.4 \times 10^5$. Multiply coefficients and add powers, then move the decimal if the coefficient is at least 10. The normalised result is 4.2×10^8 , with $1 \leq \text{coefficient} < 10$.

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

Worked solutions

Q11 | 4 MARKS

$1600 = 1.6 \times 10^3$. Multiply coefficients and add powers, then move the decimal if the coefficient is at least 10. The normalised result is 4.8×10^4 , with $1 \leq \text{coefficient} < 10$.

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

Q12 | 5 MARKS

$160000 = 1.6 \times 10^5$. Multiply coefficients and add powers, then move the decimal if the coefficient is at least 10. The normalised result is 9.6×10^8 , with $1 \leq \text{coefficient} < 10$.

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 1 | CHAPTER 16

Rounding, estimation and bounds

12 curated questions | complete solutions

Chapter focus

Decimal places, significant figures, estimates and simple error intervals

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 16: Rounding, estimation and bounds

Q01 | 1 MARK

Round 123.4 to the nearest whole number.

Q02 | 1 MARK

Round 127.6 to the nearest whole number.

Chapter 16: Rounding, estimation and bounds

Q03 | 1 MARK

Round 131.8 to the nearest whole number.

Q04 | 2 MARKS

Round 136.0 to 1 significant figure and 1 decimal place.

Chapter 16: Rounding, estimation and bounds

Q05 | 2 MARKS

Round 140.2 to 1 significant figure and 1 decimal place.

Q06 | 2 MARKS

Round 144.4 to 1 significant figure and 1 decimal place.

Chapter 16: Rounding, estimation and bounds

Q07 | 2 MARKS

Round 148.6 to 1 significant figure and 1 decimal place.

Q08 | 2 MARKS

Round 152.8 to 1 significant figure and 1 decimal place.

Chapter 16: Rounding, estimation and bounds

Q09 | 3 MARKS

Round 255.036 to 1 decimal place(s) and 2 significant figures. Estimate $(255.0 \times 23)/7$ using one significant figure values. Write the error interval for your decimal-place rounded value.

Q10 | 3 MARKS

Round 313.516 to 3 decimal place(s) and 2 significant figures. Estimate $(313.5 \times 24)/5$ using one significant figure values. Write the error interval for your decimal-place rounded value.

Chapter 16: Rounding, estimation and bounds

Q11 | 4 MARKS

Round 386.616 to 1 decimal place(s) and 2 significant figures. Estimate $(386.6 \times 20)/5$ using one significant figure values. Write the error interval for your decimal-place rounded value.

Q12 | 5 MARKS

You must show your working.

Round 445.096 to 3 decimal place(s) and 2 significant figures. Estimate $(445.1 \times 21)/8$ using one significant figure values. Write the error interval for your decimal-place rounded value.

Worked solutions

Q01 | 1 MARK

123.

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

Q02 | 1 MARK

128.

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

Worked solutions

Q03 | 1 MARK

132.

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

Q04 | 2 MARKS

100 and 136.0.

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

Worked solutions

Q05 | 2 MARKS

100 and 140.2.

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

Q06 | 2 MARKS

100 and 144.4.

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

Worked solutions

Q07 | 2 MARKS

100 and 148.6.

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

Q08 | 2 MARKS

200 and 152.8.

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

Worked solutions

Q09 | 3 MARKS

To 1 d.p.: 255.0. To 2 s.f.: 260. A one-significant-figure estimate is approximately 857.143. Error interval: $254.95 \leq x < 255.05$; the upper bound is excluded.

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

Q10 | 3 MARKS

To 3 d.p.: 313.516. To 2 s.f.: 310. A one-significant-figure estimate is approximately 1200. Error interval: $313.516 \leq x < 313.517$; the upper bound is excluded.

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

Worked solutions

Q11 | 4 MARKS

To 1 d.p.: 386.6. To 2 s.f.: 390. A one-significant-figure estimate is approximately 1600. Error interval: $386.55 \leq x < 386.65$; the upper bound is excluded.

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

Q12 | 5 MARKS

To 3 d.p.: 445.096. To 2 s.f.: 450. A one-significant-figure estimate is approximately 1000. Error interval: $445.096 \leq x < 445.096$; the upper bound is excluded.

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

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