

GCSE ONLINE TUTORING

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GCSE MATHEMATICS FOUNDATION TIER

UNIT 2: ALGEBRA

21 chapters | 252 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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FOUNDATION TIER

UNIT 2 | CHAPTER 1

FA1 - Algebraic notation

12 curated questions | complete solutions

Chapter focus

Interpret products, powers, quotients, coefficients and brackets.

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: FA1 - Algebraic notation

Q01 | 1 MARK

Write 3 multiplied by x , then add 5, in algebraic notation.

Q02 | 1 MARK

Write $y \times y \times y \times y \times 4$ using indices.

Chapter 1: FA1 - Algebraic notation

Q03 | 1 MARK

State the coefficient of p in $5p - 3$.

Q04 | 1 MARK

Write 6 multiplied by x , then add 5, in algebraic notation.

Chapter 1: FA1 - Algebraic notation

Q05 | 1 MARK

Write $y \times y \times y \times y \times 2$ using indices.

Q06 | 1 MARK

State the coefficient of p in $3p - 3$.

Chapter 1: FA1 - Algebraic notation

Q07 | 1 MARK

Write 4 multiplied by x , then add 5, in algebraic notation.

Q08 | 1 MARK

Write $y \times y \times y \times y \times 5$ using indices.

Chapter 1: FA1 - Algebraic notation

Q09 | 1 MARK

State the coefficient of p in $6p - 3$.

Q10 | 1 MARK

Write 2 multiplied by x , then add 5, in algebraic notation.

Chapter 1: FA1 - Algebraic notation

Q11 | 1 MARK

Write $y \times y \times y \times y \times 3$ using indices.

Q12 | 1 MARK

State the coefficient of p in $4p - 3$.

Worked solutions

Q01 | 1 MARK

Write multiplication without a multiplication sign.

ANSWER: $3x + 5$

Q02 | 1 MARK

There are three factors y.

ANSWER: $4y^3$

Worked solutions

Q03 | 1 MARK

The multiplier of p is 5.

ANSWER: 5

Q04 | 1 MARK

Write multiplication without a multiplication sign.

ANSWER: $6x + 5$

Worked solutions

Q05 | 1 MARK

There are three factors y .

ANSWER: $2y^3$

Q06 | 1 MARK

The multiplier of p is 3.

ANSWER: 3

Worked solutions

Q07 | 1 MARK

Write multiplication without a multiplication sign.

ANSWER: $4x + 5$

Q08 | 1 MARK

There are three factors y.

ANSWER: $5y^3$

Worked solutions

Q09 | 1 MARK

The multiplier of p is 6.

ANSWER: 6

Q10 | 1 MARK

Write multiplication without a multiplication sign.

ANSWER: $2x + 5$

Worked solutions

Q11 | 1 MARK

There are three factors y .

ANSWER: $3y^3$

Q12 | 1 MARK

The multiplier of p is 4.

ANSWER: 4

Chapter completion record

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FOUNDATION TIER

UNIT 2 | CHAPTER 2

FA2 - Substitution

12 curated questions | complete solutions

Chapter focus

Substitute numerical values into expressions and formulae.

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: FA2 - Substitution

Q01 | 2 MARKS

Find $3x + 5$ when $x = -2$.

Q02 | 2 MARKS

Find $4x + 7$ when $x = -1$.

Chapter 2: FA2 - Substitution

Q03 | 2 MARKS

Find $5x + 3$ when $x = 0$.

Q04 | 2 MARKS

Find $6x + 5$ when $x = 1$.

Chapter 2: FA2 - Substitution

Q05 | 2 MARKS

Find $2x + 7$ when $x = 2$.

Q06 | 2 MARKS

Find $3x + 3$ when $x = 3$.

Chapter 2: FA2 - Substitution

Q07 | 2 MARKS

Find $4x + 5$ when $x = 4$.

Q08 | 2 MARKS

Find $5x + 7$ when $x = 5$.

Chapter 2: FA2 - Substitution

Q09 | 2 MARKS

Find $6x + 3$ when $x = 6$.

Q10 | 2 MARKS

Find $2x + 5$ when $x = 7$.

Chapter 2: FA2 - Substitution

Q11 | 2 MARKS

Find $3x + 7$ when $x = 8$.

Q12 | 2 MARKS

Find $4x + 3$ when $x = 9$.

Worked solutions

Q01 | 2 MARKS

$$3(-2)+5=-1.$$

ANSWER: -1**Q02 | 2 MARKS**

$$4(-1)+7=3.$$

ANSWER: 3

Worked solutions

Q03 | 2 MARKS

$$5(0)+3=3.$$

ANSWER: 3**Q04 | 2 MARKS**

$$6(1)+5=11.$$

ANSWER: 11

Worked solutions

Q05 | 2 MARKS

$$2(2)+7=11.$$

ANSWER: 11

Q06 | 2 MARKS

$$3(3)+3=12.$$

ANSWER: 12

Worked solutions

Q07 | 2 MARKS

$$4(4)+5=21.$$

ANSWER: 21

Q08 | 2 MARKS

$$5(5)+7=32.$$

ANSWER: 32

Worked solutions

Q09 | 2 MARKS

$$6(6)+3=39.$$

ANSWER: 39

Q10 | 2 MARKS

$$2(7)+5=19.$$

ANSWER: 19

Worked solutions

Q11 | 2 MARKS

$$3(8)+7=31.$$

ANSWER: 31

Q12 | 2 MARKS

$$4(9)+3=39.$$

ANSWER: 39

Chapter completion record

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FOUNDATION TIER

UNIT 2 | CHAPTER 3

FA3 - Algebraic vocabulary

12 curated questions | complete solutions

Chapter focus

Distinguish expressions, equations, formulae, identities, terms and factors.

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: FA3 - Algebraic vocabulary

Q01 | 2 MARKS

Classify $3x+1$: expression, equation, formula, identity or inequality.

Q02 | 2 MARKS

Classify $y=4x-2$: expression, equation, formula, identity or inequality.

Chapter 3: FA3 - Algebraic vocabulary

Q03 | 2 MARKS

Classify $A=3lw$: expression, equation, formula, identity or inequality.

Q04 | 2 MARKS

Classify $6(x+4)=6x+24$: expression, equation, formula, identity or inequality.

Chapter 3: FA3 - Algebraic vocabulary

Q05 | 2 MARKS

Classify $x < 8$: expression, equation, formula, identity or inequality.

Q06 | 2 MARKS

Classify $3x + 6$: expression, equation, formula, identity or inequality.

Chapter 3: FA3 - Algebraic vocabulary

Q07 | 2 MARKS

Classify $y=4x-7$: expression, equation, formula, identity or inequality.

Q08 | 2 MARKS

Classify $A=8lw$: expression, equation, formula, identity or inequality.

Chapter 3: FA3 - Algebraic vocabulary

Q09 | 2 MARKS

Classify $6(x+9)=6x+54$: expression, equation, formula, identity or inequality.

Q10 | 2 MARKS

Classify $x < 13$: expression, equation, formula, identity or inequality.

Chapter 3: FA3 - Algebraic vocabulary

Q11 | 2 MARKS

Classify $3x+11$: expression, equation, formula, identity or inequality.

Q12 | 2 MARKS

Classify $y=4x-12$: expression, equation, formula, identity or inequality.

Worked solutions

Q01 | 2 MARKS

$3x+1$ is a expression by its mathematical role and symbol.

ANSWER: Expression**Q02 | 2 MARKS**

$y=4x-2$ is a equation by its mathematical role and symbol.

ANSWER: Equation

Worked solutions

Q03 | 2 MARKS

$A=3lw$ is a formula by its mathematical role and symbol.

ANSWER: Formula

Q04 | 2 MARKS

$6(x+4)=6x+24$ is a identity by its mathematical role and symbol.

ANSWER: Identity

Worked solutions

Q05 | 2 MARKS

$x < 8$ is a inequality by its mathematical role and symbol.

ANSWER: Inequality

Q06 | 2 MARKS

$3x + 6$ is a expression by its mathematical role and symbol.

ANSWER: Expression

Worked solutions

Q07 | 2 MARKS

$y=4x-7$ is a equation by its mathematical role and symbol.

ANSWER: Equation

Q08 | 2 MARKS

$A=8lw$ is a formula by its mathematical role and symbol.

ANSWER: Formula

Worked solutions

Q09 | 2 MARKS

$6(x+9)=6x+54$ is a identity by its mathematical role and symbol.

ANSWER: Identity

Q10 | 2 MARKS

$x<13$ is a inequality by its mathematical role and symbol.

ANSWER: Inequality

Worked solutions

Q11 | 2 MARKS

$3x+11$ is a expression by its mathematical role and symbol.

ANSWER: Expression

Q12 | 2 MARKS

$y=4x-12$ is a equation by its mathematical role and symbol.

ANSWER: Equation

Chapter completion record

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FOUNDATION TIER

UNIT 2 | CHAPTER 4

FA4 - Manipulating expressions

12 curated questions | complete solutions

Chapter focus

Collect, expand, factorise and simplify expressions.

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: FA4 - Manipulating expressions

Q01 | 2 MARKS

Simplify $3x + 5x - 3$.

Q02 | 2 MARKS

Expand $4(7x - 2)$.

Chapter 4: FA4 - Manipulating expressions

Q03 | 2 MARKS

Factorise $15x + 15$.

Q04 | 3 MARKS

Expand $(x + 6)(x + 5)$.

Chapter 4: FA4 - Manipulating expressions

Q05 | 3 MARKS

Factorise $x^2 + 9x + 14$.

Q06 | 2 MARKS

Factorise $x^2 - 9$.

Chapter 4: FA4 - Manipulating expressions

Q07 | 2 MARKS

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

Q08 | 2 MARKS

Simplify $y^{12} \div y^5$.

Chapter 4: FA4 - Manipulating expressions

Q09 | 2 MARKS

Simplify $6\sqrt{2} + 3\sqrt{2}$.

Q10 | 3 MARKS

Expand $(x - 2)(x + 5)$.

Chapter 4: FA4 - Manipulating expressions

Q11 | 3 MARKS

Factorise $x^2 - 10x + 21$.

Q12 | 3 MARKS

Simplify $(4x^2y)(3xy^3)$.

Worked solutions

Q01 | 2 MARKS

Collect the like x terms.

ANSWER: $8x - 3$ **Q02 | 2 MARKS**

Multiply both terms by the number outside.

ANSWER: $28x - 8$

Worked solutions

Q03 | 2 MARKS

Take out the common factor.

ANSWER: $5(3x + 3)$

Q04 | 3 MARKS

$x^2 + 5x + 6x + 30$; collect the middle terms.

ANSWER: $x^2 + 11x + 30$

Worked solutions

Q05 | 3 MARKS

Find two numbers with sum 9 and product 14.

ANSWER: $(x + 2)(x + 7)$

Q06 | 2 MARKS

Use $a^2 - b^2 = (a - b)(a + b)$.

ANSWER: $(x - 3)(x + 3)$

Worked solutions

Q07 | 2 MARKS

For the same base, add the indices: $3+4=7$.

ANSWER: x^7 **Q08 | 2 MARKS**

For the same base, subtract the indices: $12-5=7$.

ANSWER: y^7

Worked solutions

Q09 | 2 MARKS

Like surds have the same irrational factor, so add their coefficients.

ANSWER: $9\sqrt{2}$ **Q10 | 3 MARKS**

$x^2+5x-2x-10$; collect the middle terms.

ANSWER: $x^2 + 3x - 10$

Worked solutions

Q11 | 3 MARKS

Find two negative numbers with sum -10 and product 21.

ANSWER: $(x - 3)(x - 7)$

Q12 | 3 MARKS

Multiply coefficients and add the indices of matching variables.

ANSWER: $12x^3y^4$

Chapter completion record

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FOUNDATION TIER

UNIT 2 | CHAPTER 5

FA5 - Using and rearranging formulae

12 curated questions | complete solutions

Chapter focus

Use standard formulae and change the subject of simple formulae.

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 5: FA5 - Using and rearranging formulae

Q01 | 2 MARKS

Make x the subject of $y = 3x$.

Q02 | 2 MARKS

Make x the subject of $y = x + 6$.

Chapter 5: FA5 - Using and rearranging formulae

Q03 | 3 MARKS

Make w the subject of $P = 2l + 5w$.

Q04 | 2 MARKS

Make x the subject of $y = 6x$.

Chapter 5: FA5 - Using and rearranging formulae

Q05 | 2 MARKS

Make x the subject of $y = x + 9$.

Q06 | 3 MARKS

Make w the subject of $P = 2l + 8w$.

Chapter 5: FA5 - Using and rearranging formulae

Q07 | 2 MARKS

Make x the subject of $y = 9x$.

Q08 | 2 MARKS

Make x the subject of $y = x + 12$.

Chapter 5: FA5 - Using and rearranging formulae

Q09 | 3 MARKS

Make w the subject of $P = 2l + 11w$.

Q10 | 2 MARKS

Make x the subject of $y = 12x$.

Chapter 5: FA5 - Using and rearranging formulae

Q11 | 2 MARKS

Make x the subject of $y = x + 15$.

Q12 | 3 MARKS

Make w the subject of $P = 2l + 14w$.

Worked solutions

Q01 | 2 MARKS

Divide both sides by 3.

ANSWER: $x = y/3$

Q02 | 2 MARKS

Subtract 6 from both sides.

ANSWER: $x = y - 6$

Worked solutions

Q03 | 3 MARKS

Subtract 21, then divide by 5.

ANSWER: $w = (P - 21)/5$

Q04 | 2 MARKS

Divide both sides by 6.

ANSWER: $x = y/6$

Worked solutions

Q05 | 2 MARKS

Subtract 9 from both sides.

ANSWER: $x = y - 9$

Q06 | 3 MARKS

Subtract 21, then divide by 8.

ANSWER: $w = (P - 21)/8$

Worked solutions

Q07 | 2 MARKS

Divide both sides by 9.

ANSWER: $x = y/9$

Q08 | 2 MARKS

Subtract 12 from both sides.

ANSWER: $x = y - 12$

Worked solutions

Q09 | 3 MARKS

Subtract 2l, then divide by 11.

ANSWER: $w = (P - 2l)/11$

Q10 | 2 MARKS

Divide both sides by 12.

ANSWER: $x = y/12$

Worked solutions

Q11 | 2 MARKS

Subtract 15 from both sides.

ANSWER: $x = y - 15$

Q12 | 3 MARKS

Subtract 21, then divide by 14.

ANSWER: $w = (P - 21)/14$

Chapter completion record

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FOUNDATION TIER

UNIT 2 | CHAPTER 6

FA6 - Equations and identities

12 curated questions | complete solutions

Chapter focus

Distinguish equations from identities and justify equivalence.

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: FA6 - Equations and identities

Q01 | 2 MARKS

Show that $3(x+5)$ is identical to $3x+15$.

Q02 | 2 MARKS

Solve $4x + 7 = 31$.

Chapter 6: FA6 - Equations and identities

Q03 | 2 MARKS

Show that $5(x+3)$ is identical to $5x+15$.

Q04 | 2 MARKS

Solve $6x + 5 = 53$.

Chapter 6: FA6 - Equations and identities

Q05 | 2 MARKS

Show that $2(x+7)$ is identical to $2x+14$.

Q06 | 2 MARKS

Solve $3x + 3 = 33$.

Chapter 6: FA6 - Equations and identities

Q07 | 2 MARKS

Show that $4(x+5)$ is identical to $4x+20$.

Q08 | 2 MARKS

Solve $5x + 7 = 67$.

Chapter 6: FA6 - Equations and identities

Q09 | 2 MARKS

Show that $6(x+3)$ is identical to $6x+18$.

Q10 | 2 MARKS

Solve $2x + 5 = 33$.

Chapter 6: FA6 - Equations and identities

Q11 | 2 MARKS

Show that $3(x+7)$ is identical to $3x+21$.

Q12 | 2 MARKS

Solve $4x + 3 = 67$.

Worked solutions

Q01 | 2 MARKS

Expand the left side; it equals the right side for every x .

ANSWER: $3(x+5)=3x+15$

Q02 | 2 MARKS

Subtract 7, then divide by 4. This is an equation true at $x=6$.

ANSWER: $x = 6$

Worked solutions

Q03 | 2 MARKS

Expand the left side; it equals the right side for every x .

ANSWER: $5(x+3)=5x+15$ **Q04 | 2 MARKS**

Subtract 5, then divide by 6. This is an equation true at $x=8$.

ANSWER: $x = 8$

Worked solutions

Q05 | 2 MARKS

Expand the left side; it equals the right side for every x .

ANSWER: $2(x+7)=2x+14$ **Q06 | 2 MARKS**

Subtract 3, then divide by 3. This is an equation true at $x=10$.

ANSWER: $x = 10$

Worked solutions

Q07 | 2 MARKS

Expand the left side; it equals the right side for every x .

ANSWER: $4(x+5)=4x+20$ **Q08 | 2 MARKS**

Subtract 7, then divide by 5. This is an equation true at $x=12$.

ANSWER: $x = 12$

Worked solutions

Q09 | 2 MARKS

Expand the left side; it equals the right side for every x .

ANSWER: $6(x+3)=6x+18$ **Q10 | 2 MARKS**

Subtract 5, then divide by 2. This is an equation true at $x=14$.

ANSWER: $x = 14$

Worked solutions

Q11 | 2 MARKS

Expand the left side; it equals the right side for every x .

ANSWER: $3(x+7)=3x+21$

Q12 | 2 MARKS

Subtract 3, then divide by 4. This is an equation true at $x=16$.

ANSWER: $x = 16$

Chapter completion record

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FOUNDATION TIER

UNIT 2 | CHAPTER 7

FA7 - Functions

12 curated questions | complete solutions

Chapter focus

Interpret simple functions using inputs and outputs.

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: FA7 - Functions

Q01 | 2 MARKS

$f(x)=3x+5$. Find $f(-1)$.

Q02 | 2 MARKS

$f(x)=4x+7$. Find $f(0)$.

Chapter 7: FA7 - Functions

Q03 | 2 MARKS

$f(x)=5x+3$. Find $f(1)$.

Q04 | 2 MARKS

$f(x)=6x+5$. Find $f(2)$.

Chapter 7: FA7 - Functions

Q05 | 2 MARKS

$f(x)=2x+7$. Find $f(3)$.

Q06 | 2 MARKS

$f(x)=3x+3$. Find $f(4)$.

Chapter 7: FA7 - Functions

Q07 | 2 MARKS

$f(x)=4x+5$. Find $f(5)$.

Q08 | 2 MARKS

$f(x)=5x+7$. Find $f(6)$.

Chapter 7: FA7 - Functions

Q09 | 2 MARKS

$f(x)=6x+3$. Find $f(7)$.

Q10 | 2 MARKS

$f(x)=2x+5$. Find $f(8)$.

Chapter 7: FA7 - Functions

Q11 | 2 MARKS

$f(x)=3x+7$. Find $f(9)$.

Q12 | 2 MARKS

$f(x)=4x+3$. Find $f(10)$.

Worked solutions

Q01 | 2 MARKS

$$f(-1)=3(-1)+5=2.$$

ANSWER: 2**Q02 | 2 MARKS**

$$f(0)=4(0)+7=7.$$

ANSWER: 7

Worked solutions

Q03 | 2 MARKS

$$f(1)=5(1)+3=8.$$

ANSWER: 8**Q04 | 2 MARKS**

$$f(2)=6(2)+5=17.$$

ANSWER: 17

Worked solutions

Q05 | 2 MARKS

$$f(3)=2(3)+7=13.$$

ANSWER: 13**Q06 | 2 MARKS**

$$f(4)=3(4)+3=15.$$

ANSWER: 15

Worked solutions

Q07 | 2 MARKS

$$f(5)=4(5)+5=25.$$

ANSWER: 25**Q08 | 2 MARKS**

$$f(6)=5(6)+7=37.$$

ANSWER: 37

Worked solutions

Q09 | 2 MARKS

$$f(7)=6(7)+3=45.$$

ANSWER: 45**Q10 | 2 MARKS**

$$f(8)=2(8)+5=21.$$

ANSWER: 21

Worked solutions

Q11 | 2 MARKS

$$f(9)=3(9)+7=34.$$

ANSWER: 34

Q12 | 2 MARKS

$$f(10)=4(10)+3=43.$$

ANSWER: 43

Chapter completion record

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FOUNDATION TIER

UNIT 2 | CHAPTER 8

FA8 - Coordinates

12 curated questions | complete solutions

Chapter focus

Work accurately with coordinates in all four quadrants.

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: FA8 - Coordinates

Q01 | 2 MARKS

Find the midpoint of $(-5,4)$ and $(-1,6)$.

Q02 | 2 MARKS

Find the midpoint of $(-4,3)$ and $(0,5)$.

Chapter 8: FA8 - Coordinates

Q03 | 2 MARKS

Find the midpoint of $(-3,2)$ and $(1,4)$.

Q04 | 2 MARKS

Find the midpoint of $(-2,1)$ and $(2,3)$.

Chapter 8: FA8 - Coordinates

Q05 | 2 MARKS

Find the midpoint of $(-1,0)$ and $(3,2)$.

Q06 | 2 MARKS

Find the midpoint of $(0,-1)$ and $(4,1)$.

Chapter 8: FA8 - Coordinates

Q07 | 2 MARKS

Find the midpoint of (1,5) and (5,7).

Q08 | 2 MARKS

Find the midpoint of (2,4) and (6,6).

Chapter 8: FA8 - Coordinates

Q09 | 2 MARKS

Find the midpoint of (3,3) and (7,5).

Q10 | 2 MARKS

Find the midpoint of (4,2) and (8,4).

Chapter 8: FA8 - Coordinates

Q11 | 2 MARKS

Find the midpoint of (5,1) and (9,3).

Q12 | 2 MARKS

Find the midpoint of (6,0) and (10,2).

Worked solutions

Q01 | 2 MARKS

Average the x-coordinates and the y-coordinates.

ANSWER: (-3, 5)**Q02 | 2 MARKS**

Average the x-coordinates and the y-coordinates.

ANSWER: (-2, 4)

Worked solutions

Q03 | 2 MARKS

Average the x-coordinates and the y-coordinates.

ANSWER: (-1, 3)

Q04 | 2 MARKS

Average the x-coordinates and the y-coordinates.

ANSWER: (0, 2)

Worked solutions

Q05 | 2 MARKS

Average the x-coordinates and the y-coordinates.

ANSWER: (1, 1)

Q06 | 2 MARKS

Average the x-coordinates and the y-coordinates.

ANSWER: (2, 0)

Worked solutions

Q07 | 2 MARKS

Average the x-coordinates and the y-coordinates.

ANSWER: (3, 6)**Q08 | 2 MARKS**

Average the x-coordinates and the y-coordinates.

ANSWER: (4, 5)

Worked solutions

Q09 | 2 MARKS

Average the x-coordinates and the y-coordinates.

ANSWER: (5, 4)

Q10 | 2 MARKS

Average the x-coordinates and the y-coordinates.

ANSWER: (6, 3)

Worked solutions

Q11 | 2 MARKS

Average the x-coordinates and the y-coordinates.

ANSWER: (7, 2)

Q12 | 2 MARKS

Average the x-coordinates and the y-coordinates.

ANSWER: (8, 1)

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FOUNDATION TIER

UNIT 2 | CHAPTER 9

FA9 - Straight-line graphs

12 curated questions | complete solutions

Chapter focus

Plot and find equations of straight lines, including parallel lines.

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: FA9 - Straight-line graphs

Q01 | 2 MARKS

Write the equation of the line with gradient 3 and y-intercept 5.

Q02 | 2 MARKS

A line is parallel to $y=4x-4$ and crosses the y-axis at 7. Find its equation.

Chapter 9: FA9 - Straight-line graphs

Q03 | 2 MARKS

Does (2,13) lie on $y=5x+3$? Justify.

Q04 | 4 MARKS

You must show your working.

Find the equation of the line through (1,11) and (3,23).

Chapter 9: FA9 - Straight-line graphs

Q05 | 2 MARKS

Write the equation of the line with gradient 2 and y-intercept 7.

Q06 | 2 MARKS

A line is parallel to $y=3x-4$ and crosses the y-axis at 3. Find its equation.

Chapter 9: FA9 - Straight-line graphs

Q07 | 2 MARKS

Does (2,13) lie on $y=4x+5$? Justify.

Q08 | 4 MARKS

You must show your working.

Find the equation of the line through (1,12) and (3,22).

Chapter 9: FA9 - Straight-line graphs

Q09 | 2 MARKS

Write the equation of the line with gradient 6 and y-intercept 3.

Q10 | 2 MARKS

A line is parallel to $y=2x-4$ and crosses the y-axis at 5. Find its equation.

Chapter 9: FA9 - Straight-line graphs

Q11 | 2 MARKS

Does (2,13) lie on $y=3x+7$? Justify.

Q12 | 4 MARKS

You must show your working.

Find the equation of the line through (1,7) and (3,15).

Worked solutions

Q01 | 2 MARKS

Use $y=mx+c$.

ANSWER: $y = 3x + 5$

Q02 | 2 MARKS

Parallel lines have the same gradient.

ANSWER: $y = 4x + 7$

Worked solutions

Q03 | 2 MARKS

Substitute $x=2$: $y=5x+3=13$.

ANSWER: Yes

Q04 | 4 MARKS

Gradient= $(23-11)/(3-1)=6$. Substitute (1,11) to obtain $c=5$.

ANSWER: $y = 6x + 5$

Worked solutions

Q05 | 2 MARKS

Use $y=mx+c$.

ANSWER: $y = 2x + 7$

Q06 | 2 MARKS

Parallel lines have the same gradient.

ANSWER: $y = 3x + 3$

Worked solutions

Q07 | 2 MARKS

Substitute $x=2$: $y=4x+5=13$.

ANSWER: Yes

Q08 | 4 MARKS

Gradient= $(22-12)/(3-1)=5$. Substitute $(1,12)$ to obtain $c=7$.

ANSWER: $y = 5x + 7$

Worked solutions

Q09 | 2 MARKS

Use $y=mx+c$.

ANSWER: $y = 6x + 3$

Q10 | 2 MARKS

Parallel lines have the same gradient.

ANSWER: $y = 2x + 5$

Worked solutions

Q11 | 2 MARKS

Substitute $x=2$: $y=3x+7=13$.

ANSWER: Yes

Q12 | 4 MARKS

Gradient= $(15-7)/(3-1)=4$. Substitute (1,7) to obtain $c=3$.

ANSWER: $y = 4x + 3$

Chapter completion record

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FOUNDATION TIER

UNIT 2 | CHAPTER 10

FA10 - Gradient and intercept

12 curated questions | complete solutions

Chapter focus

Interpret gradients and intercepts graphically and algebraically.

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: FA10 - Gradient and intercept

Q01 | 2 MARKS

For $y=3x-5$, state the gradient and y-intercept.

Q02 | 3 MARKS

Find the gradient through (1,7) and (4,19).

Chapter 10: FA10 - Gradient and intercept

Q03 | 2 MARKS

For $y=5x-3$, state the gradient and y-intercept.

Q04 | 3 MARKS

Find the gradient through (1,5) and (4,23).

Chapter 10: FA10 - Gradient and intercept

Q05 | 2 MARKS

For $y=2x-7$, state the gradient and y-intercept.

Q06 | 3 MARKS

Find the gradient through (1,3) and (4,12).

Chapter 10: FA10 - Gradient and intercept

Q07 | 2 MARKS

For $y=4x-5$, state the gradient and y-intercept.

Q08 | 3 MARKS

Find the gradient through (1,7) and (4,22).

Chapter 10: FA10 - Gradient and intercept

Q09 | 2 MARKS

For $y=6x-3$, state the gradient and y-intercept.

Q10 | 3 MARKS

Find the gradient through (1,5) and (4,11).

Chapter 10: FA10 - Gradient and intercept

Q11 | 2 MARKS

For $y=3x-7$, state the gradient and y-intercept.

Q12 | 3 MARKS

Find the gradient through (1,3) and (4,15).

Worked solutions

Q01 | 2 MARKS

Compare with $y=mx+c$.

ANSWER: gradient 3; intercept -5

Q02 | 3 MARKS

Gradient= $(19-7)/(4-1)=12/3=4$.

ANSWER: 4

Worked solutions

Q03 | 2 MARKS

Compare with $y=mx+c$.

ANSWER: gradient 5; intercept -3

Q04 | 3 MARKS

Gradient= $(23-5)/(4-1)=18/3=6$.

ANSWER: 6

Worked solutions

Q05 | 2 MARKS

Compare with $y=mx+c$.

ANSWER: gradient 2; intercept -7

Q06 | 3 MARKS

Gradient= $(12-3)/(4-1)=9/3=3$.

ANSWER: 3

Worked solutions

Q07 | 2 MARKS

Compare with $y=mx+c$.

ANSWER: gradient 4; intercept -5

Q08 | 3 MARKS

Gradient= $(22-7)/(4-1)=15/3=5$.

ANSWER: 5

Worked solutions

Q09 | 2 MARKS

Compare with $y=mx+c$.

ANSWER: gradient 6; intercept -3

Q10 | 3 MARKS

Gradient= $(11-5)/(4-1)=6/3=2$.

ANSWER: 2

Worked solutions

Q11 | 2 MARKS

Compare with $y=mx+c$.

ANSWER: gradient 3; intercept -7

Q12 | 3 MARKS

Gradient= $(15-3)/(4-1)=12/3=4$.

ANSWER: 4

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FOUNDATION TIER

UNIT 2 | CHAPTER 11

FA11 - Quadratic graph features

12 curated questions | complete solutions

Chapter focus

Interpret roots, intercepts and turning points of quadratic graphs.

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: FA11 - Quadratic graph features

Q01 | 2 MARKS

A quadratic has roots -3 and 4. State its x-intercepts.

Q02 | 2 MARKS

State the turning point of $y=(x-4)^2-7$.

Chapter 11: FA11 - Quadratic graph features

Q03 | 3 MARKS

Deduce the roots of $y=(x-5)(x+3)$.

Q04 | 2 MARKS

A quadratic has roots -2 and 7. State its x-intercepts.

Chapter 11: FA11 - Quadratic graph features

Q05 | 2 MARKS

State the turning point of $y=(x-2)^2-7$.

Q06 | 3 MARKS

Deduce the roots of $y=(x-3)(x+3)$.

Chapter 11: FA11 - Quadratic graph features

Q07 | 2 MARKS

A quadratic has roots -5 and 5. State its x-intercepts.

Q08 | 2 MARKS

State the turning point of $y=(x-5)^2-7$.

Chapter 11: FA11 - Quadratic graph features

Q09 | 3 MARKS

Deduce the roots of $y=(x-6)(x+3)$.

Q10 | 2 MARKS

A quadratic has roots -4 and 3. State its x-intercepts.

Chapter 11: FA11 - Quadratic graph features

Q11 | 2 MARKS

State the turning point of $y=(x-3)^2-7$.

Q12 | 3 MARKS

Deduce the roots of $y=(x-4)(x+3)$.

Worked solutions

Q01 | 2 MARKS

At a root, $y=0$.

ANSWER: (-3,0) and (4,0)

Q02 | 2 MARKS

The square is smallest when $x=4$.

ANSWER: (4, -7)

Worked solutions

Q03 | 3 MARKS

At a root $y=0$, so either $x-5=0$ or $x+3=0$.

ANSWER: $x=5$ and $x=-3$

Q04 | 2 MARKS

At a root, $y=0$.

ANSWER: $(-2,0)$ and $(7,0)$

Worked solutions

Q05 | 2 MARKS

The square is smallest when $x=2$.

ANSWER: (2, -7)**Q06 | 3 MARKS**

At a root $y=0$, so either $x-3=0$ or $x+3=0$.

ANSWER: $x=3$ and $x=-3$

Worked solutions

Q07 | 2 MARKS

At a root, $y=0$.

ANSWER: $(-5,0)$ and $(5,0)$

Q08 | 2 MARKS

The square is smallest when $x=5$.

ANSWER: $(5, -7)$

Worked solutions

Q09 | 3 MARKS

At a root $y=0$, so either $x-6=0$ or $x+3=0$.

ANSWER: $x=6$ and $x=-3$

Q10 | 2 MARKS

At a root, $y=0$.

ANSWER: $(-4,0)$ and $(3,0)$

Worked solutions

Q11 | 2 MARKS

The square is smallest when $x=3$.

ANSWER: (3, -7)**Q12 | 3 MARKS**

At a root $y=0$, so either $x-4=0$ or $x+3=0$.

ANSWER: $x=4$ and $x=-3$

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FOUNDATION TIER

UNIT 2 | CHAPTER 12

FA12 - Recognising graph families

12 curated questions | complete solutions

Chapter focus

Recognise and sketch linear, quadratic, cubic and reciprocal graphs.

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: FA12 - Recognising graph families

Q01 | 1 MARK

Name the graph family for $y=2x-1$.

Q02 | 1 MARK

Name the graph family for $y=x^2+2$.

Chapter 12: FA12 - Recognising graph families

Q03 | 1 MARK

Name the graph family for $y=x^3-3$.

Q04 | 1 MARK

Name the graph family for $y=6/x$.

Chapter 12: FA12 - Recognising graph families

Q05 | 1 MARK

Name the graph family for $y=6x-5$.

Q06 | 1 MARK

Name the graph family for $y=x^2+6$.

Chapter 12: FA12 - Recognising graph families

Q07 | 1 MARK

Name the graph family for $y=x^3-7$.

Q08 | 1 MARK

Name the graph family for $y=10/x$.

Chapter 12: FA12 - Recognising graph families

Q09 | 1 MARK

Name the graph family for $y=10x-9$.

Q10 | 1 MARK

Name the graph family for $y=x^2+10$.

Chapter 12: FA12 - Recognising graph families

Q11 | 1 MARK

Name the graph family for $y=x^3-11$.

Q12 | 1 MARK

Name the graph family for $y=14/x$.

Worked solutions

Q01 | 1 MARK

The equation has the characteristic linear form.

ANSWER: Linear

Q02 | 1 MARK

The equation has the characteristic quadratic form.

ANSWER: Quadratic

Worked solutions

Q03 | 1 MARK

The equation has the characteristic cubic form.

ANSWER: Cubic

Q04 | 1 MARK

The equation has the characteristic reciprocal form.

ANSWER: Reciprocal

Worked solutions

Q05 | 1 MARK

The equation has the characteristic linear form.

ANSWER: Linear

Q06 | 1 MARK

The equation has the characteristic quadratic form.

ANSWER: Quadratic

Worked solutions

Q07 | 1 MARK

The equation has the characteristic cubic form.

ANSWER: Cubic

Q08 | 1 MARK

The equation has the characteristic reciprocal form.

ANSWER: Reciprocal

Worked solutions

Q09 | 1 MARK

The equation has the characteristic linear form.

ANSWER: Linear

Q10 | 1 MARK

The equation has the characteristic quadratic form.

ANSWER: Quadratic

Worked solutions

Q11 | 1 MARK

The equation has the characteristic cubic form.

ANSWER: Cubic

Q12 | 1 MARK

The equation has the characteristic reciprocal form.

ANSWER: Reciprocal

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FOUNDATION TIER

UNIT 2 | CHAPTER 13

FA13 - Graphs in context

12 curated questions | complete solutions

Chapter focus

Use real-life graphs to interpret and solve problems.

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: FA13 - Graphs in context

Q01 | 3 MARKS

A distance-time graph rises 120 m in 25 s. Find its gradient and interpret it.

Q02 | 2 MARKS

A distance-time graph is horizontal from 30 s to 45 s. Interpret this section.

Chapter 13: FA13 - Graphs in context

Q03 | 3 MARKS

A distance-time graph rises 160 m in 35 s. Find its gradient and interpret it.

Q04 | 2 MARKS

A distance-time graph is horizontal from 40 s to 55 s. Interpret this section.

Chapter 13: FA13 - Graphs in context

Q05 | 3 MARKS

A distance-time graph rises 200 m in 45 s. Find its gradient and interpret it.

Q06 | 2 MARKS

A distance-time graph is horizontal from 50 s to 65 s. Interpret this section.

Chapter 13: FA13 - Graphs in context

Q07 | 3 MARKS

A distance-time graph rises 240 m in 55 s. Find its gradient and interpret it.

Q08 | 2 MARKS

A distance-time graph is horizontal from 60 s to 75 s. Interpret this section.

Chapter 13: FA13 - Graphs in context

Q09 | 3 MARKS

A distance-time graph rises 280 m in 65 s. Find its gradient and interpret it.

Q10 | 2 MARKS

A distance-time graph is horizontal from 70 s to 85 s. Interpret this section.

Chapter 13: FA13 - Graphs in context

Q11 | 3 MARKS

A distance-time graph rises 320 m in 75 s. Find its gradient and interpret it.

Q12 | 2 MARKS

A distance-time graph is horizontal from 80 s to 95 s. Interpret this section.

Worked solutions

Q01 | 3 MARKS

Gradient=distance÷time, so it is the average speed.

ANSWER: 4.8 m/s

Q02 | 2 MARKS

The distance is unchanged.

ANSWER: Stationary for 15 seconds

Worked solutions

Q03 | 3 MARKS

Gradient=distance÷time, so it is the average speed.

ANSWER: 4.57143 m/s

Q04 | 2 MARKS

The distance is unchanged.

ANSWER: Stationary for 15 seconds

Worked solutions

Q05 | 3 MARKS

Gradient=distance÷time, so it is the average speed.

ANSWER: 4.44444 m/s

Q06 | 2 MARKS

The distance is unchanged.

ANSWER: Stationary for 15 seconds

Worked solutions

Q07 | 3 MARKS

Gradient=distance÷time, so it is the average speed.

ANSWER: 4.36364 m/s

Q08 | 2 MARKS

The distance is unchanged.

ANSWER: Stationary for 15 seconds

Worked solutions

Q09 | 3 MARKS

Gradient=distance÷time, so it is the average speed.

ANSWER: 4.30769 m/s

Q10 | 2 MARKS

The distance is unchanged.

ANSWER: Stationary for 15 seconds

Worked solutions

Q11 | 3 MARKS

Gradient=distance÷time, so it is the average speed.

ANSWER: 4.26667 m/s

Q12 | 2 MARKS

The distance is unchanged.

ANSWER: Stationary for 15 seconds

Chapter completion record

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FOUNDATION TIER

UNIT 2 | CHAPTER 14

FA14 - Linear equations

12 curated questions | complete solutions

Chapter focus

Solve linear equations, including unknowns on both sides.

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: FA14 - Linear equations

Q01 | 2 MARKS

Solve $3x + 5 = 17$.

Q02 | 3 MARKS

Solve $6x = 4x + 17$.

Chapter 14: FA14 - Linear equations

Q03 | 2 MARKS

Solve $5x + 3 = 33$.

Q04 | 3 MARKS

Solve $8x = 6x + 19$.

Chapter 14: FA14 - Linear equations

Q05 | 2 MARKS

Solve $2x + 7 = 23$.

Q06 | 3 MARKS

Solve $5x = 3x + 21$.

Chapter 14: FA14 - Linear equations

Q07 | 2 MARKS

Solve $4x + 5 = 45$.

Q08 | 3 MARKS

Solve $7x = 5x + 29$.

Chapter 14: FA14 - Linear equations

Q09 | 2 MARKS

Solve $6x + 3 = 75$.

Q10 | 3 MARKS

Solve $4x = 2x + 31$.

Chapter 14: FA14 - Linear equations

Q11 | 2 MARKS

Solve $3x + 7 = 49$.

Q12 | 3 MARKS

Solve $6x = 4x + 33$.

Worked solutions

Q01 | 2 MARKS

Subtract 5 and divide by 3.

ANSWER: $x = 4$

Q02 | 3 MARKS

Subtract 4x: $2x=17$; divide to get $x=5$.

ANSWER: $x = 5$

Worked solutions

Q03 | 2 MARKS

Subtract 3 and divide by 5.

ANSWER: $x = 6$ **Q04 | 3 MARKS**

Subtract 6x: $2x=19$; divide to get $x=7$.

ANSWER: $x = 7$

Worked solutions

Q05 | 2 MARKS

Subtract 7 and divide by 2.

ANSWER: $x = 8$ **Q06 | 3 MARKS**

Subtract 3x: $2x=21$; divide to get $x=9$.

ANSWER: $x = 9$

Worked solutions

Q07 | 2 MARKS

Subtract 5 and divide by 4.

ANSWER: $x = 10$ **Q08 | 3 MARKS**

Subtract 5x: $2x=29$; divide to get $x=11$.

ANSWER: $x = 11$

Worked solutions

Q09 | 2 MARKS

Subtract 3 and divide by 6.

ANSWER: $x = 12$ **Q10 | 3 MARKS**

Subtract 2x: $2x=31$; divide to get $x=13$.

ANSWER: $x = 13$

Worked solutions

Q11 | 2 MARKS

Subtract 7 and divide by 3.

ANSWER: $x = 14$ **Q12 | 3 MARKS**

Subtract 4x: $2x=33$; divide to get $x=15$.

ANSWER: $x = 15$

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FOUNDATION TIER

UNIT 2 | CHAPTER 15

FA15 - Factorisable quadratics

12 curated questions | complete solutions

Chapter focus

Solve simple quadratic equations by factorising or using a graph.

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: FA15 - Factorisable quadratics

Q01 | 3 MARKS

Solve $x^2 - 6x + 8 = 0$.

Q02 | 3 MARKS

Solve $x^2 - 8x + 15 = 0$.

Chapter 15: FA15 - Factorisable quadratics

Q03 | 3 MARKS

Solve $x^2 - 10x + 24 = 0$.

Q04 | 3 MARKS

Solve $x^2 - 12x + 35 = 0$.

Chapter 15: FA15 - Factorisable quadratics

Q05 | 3 MARKS

Solve $x^2 - 14x + 48 = 0$.

Q06 | 3 MARKS

Solve $x^2 - 16x + 63 = 0$.

Chapter 15: FA15 - Factorisable quadratics

Q07 | 3 MARKS

Solve $x^2 - 18x + 80 = 0$.

Q08 | 3 MARKS

Solve $x^2 - 20x + 99 = 0$.

Chapter 15: FA15 - Factorisable quadratics

Q09 | 3 MARKS

Solve $x^2 - 22x + 120 = 0$.

Q10 | 3 MARKS

Solve $x^2 - 24x + 143 = 0$.

Chapter 15: FA15 - Factorisable quadratics

Q11 | 3 MARKS

Solve $x^2 - 26x + 168 = 0$.

Q12 | 3 MARKS

Solve $x^2 - 28x + 195 = 0$.

Worked solutions

Q01 | 3 MARKS

Factorise to $(x-2)(x-4)=0$.

ANSWER: $x = 2$ or $x = 4$

Q02 | 3 MARKS

Factorise to $(x-3)(x-5)=0$.

ANSWER: $x = 3$ or $x = 5$

Worked solutions

Q03 | 3 MARKS

Factorise to $(x-4)(x-6)=0$.

ANSWER: $x = 4$ or $x = 6$

Q04 | 3 MARKS

Factorise to $(x-5)(x-7)=0$.

ANSWER: $x = 5$ or $x = 7$

Worked solutions

Q05 | 3 MARKS

Factorise to $(x-6)(x-8)=0$.

ANSWER: $x = 6$ or $x = 8$

Q06 | 3 MARKS

Factorise to $(x-7)(x-9)=0$.

ANSWER: $x = 7$ or $x = 9$

Worked solutions

Q07 | 3 MARKS

Factorise to $(x-8)(x-10)=0$.

ANSWER: $x = 8$ or $x = 10$

Q08 | 3 MARKS

Factorise to $(x-9)(x-11)=0$.

ANSWER: $x = 9$ or $x = 11$

Worked solutions

Q09 | 3 MARKS

Factorise to $(x-10)(x-12)=0$.

ANSWER: $x = 10$ or $x = 12$

Q10 | 3 MARKS

Factorise to $(x-11)(x-13)=0$.

ANSWER: $x = 11$ or $x = 13$

Worked solutions

Q11 | 3 MARKS

Factorise to $(x-12)(x-14)=0$.

ANSWER: $x = 12$ or $x = 14$

Q12 | 3 MARKS

Factorise to $(x-13)(x-15)=0$.

ANSWER: $x = 13$ or $x = 15$

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FOUNDATION TIER

UNIT 2 | CHAPTER 16

FA16 - Simultaneous equations

12 curated questions | complete solutions

Chapter focus

Solve two simultaneous linear equations algebraically or graphically.

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: FA16 - Simultaneous equations

Q01 | 3 MARKS

Solve $x+y=7$ and $x-y=-1$.

Q02 | 3 MARKS

Solve $x+y=9$ and $x-y=-1$.

Chapter 16: FA16 - Simultaneous equations

Q03 | 3 MARKS

Solve $x+y=11$ and $x-y=-1$.

Q04 | 3 MARKS

Solve $x+y=9$ and $x-y=3$.

Chapter 16: FA16 - Simultaneous equations

Q05 | 3 MARKS

Solve $x+y=6$ and $x-y=-2$.

Q06 | 3 MARKS

Solve $x+y=8$ and $x-y=-2$.

Chapter 16: FA16 - Simultaneous equations

Q07 | 3 MARKS

Solve $x+y=10$ and $x-y=-2$.

Q08 | 3 MARKS

Solve $x+y=8$ and $x-y=2$.

Chapter 16: FA16 - Simultaneous equations

Q09 | 3 MARKS

Solve $x+y=10$ and $x-y=2$.

Q10 | 3 MARKS

Solve $x+y=7$ and $x-y=-3$.

Chapter 16: FA16 - Simultaneous equations

Q11 | 3 MARKS

Solve $x+y=9$ and $x-y=-3$.

Q12 | 3 MARKS

Solve $x+y=7$ and $x-y=1$.

Worked solutions

Q01 | 3 MARKS

Add equations: $2x=6$, so $x=3$; then $y=4$.

ANSWER: $x=3$, $y=4$

Q02 | 3 MARKS

Add equations: $2x=8$, so $x=4$; then $y=5$.

ANSWER: $x=4$, $y=5$

Worked solutions

Q03 | 3 MARKS

Add equations: $2x=10$, so $x=5$; then $y=6$.

ANSWER: $x=5$, $y=6$

Q04 | 3 MARKS

Add equations: $2x=12$, so $x=6$; then $y=3$.

ANSWER: $x=6$, $y=3$

Worked solutions

Q05 | 3 MARKS

Add equations: $2x=4$, so $x=2$; then $y=4$.

ANSWER: $x=2$, $y=4$ **Q06 | 3 MARKS**

Add equations: $2x=6$, so $x=3$; then $y=5$.

ANSWER: $x=3$, $y=5$

Worked solutions

Q07 | 3 MARKS

Add equations: $2x=8$, so $x=4$; then $y=6$.

ANSWER: $x=4$, $y=6$ **Q08 | 3 MARKS**

Add equations: $2x=10$, so $x=5$; then $y=3$.

ANSWER: $x=5$, $y=3$

Worked solutions

Q09 | 3 MARKS

Add equations: $2x=12$, so $x=6$; then $y=4$.

ANSWER: $x=6$, $y=4$ **Q10 | 3 MARKS**

Add equations: $2x=4$, so $x=2$; then $y=5$.

ANSWER: $x=2$, $y=5$

Worked solutions

Q11 | 3 MARKS

Add equations: $2x=6$, so $x=3$; then $y=6$.

ANSWER: $x=3$, $y=6$ **Q12 | 3 MARKS**

Add equations: $2x=8$, so $x=4$; then $y=3$.

ANSWER: $x=4$, $y=3$

Chapter completion record

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FOUNDATION TIER

UNIT 2 | CHAPTER 17

FA17 - Forming equations

12 curated questions | complete solutions

Chapter focus

Translate situations into equations and interpret solutions.

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 17: FA17 - Forming equations

Q01 | 3 MARKS

A service costs £5 plus £3 per hour. The bill is £20. Form and solve an equation for the hours.

Q02 | 3 MARKS

A service costs £7 plus £4 per hour. The bill is £31. Form and solve an equation for the hours.

Chapter 17: FA17 - Forming equations

Q03 | 3 MARKS

A service costs £3 plus £5 per hour. The bill is £38. Form and solve an equation for the hours.

Q04 | 3 MARKS

A service costs £5 plus £6 per hour. The bill is £53. Form and solve an equation for the hours.

Chapter 17: FA17 - Forming equations

Q05 | 3 MARKS

A service costs £7 plus £2 per hour. The bill is £25. Form and solve an equation for the hours.

Q06 | 3 MARKS

A service costs £3 plus £3 per hour. The bill is £33. Form and solve an equation for the hours.

Chapter 17: FA17 - Forming equations

Q07 | 3 MARKS

A service costs £5 plus £4 per hour. The bill is £49. Form and solve an equation for the hours.

Q08 | 3 MARKS

A service costs £7 plus £5 per hour. The bill is £67. Form and solve an equation for the hours.

Chapter 17: FA17 - Forming equations

Q09 | 3 MARKS

A service costs £3 plus £6 per hour. The bill is £81. Form and solve an equation for the hours.

Q10 | 3 MARKS

A service costs £5 plus £2 per hour. The bill is £33. Form and solve an equation for the hours.

Chapter 17: FA17 - Forming equations

Q11 | 3 MARKS

A service costs £7 plus £3 per hour. The bill is £52. Form and solve an equation for the hours.

Q12 | 3 MARKS

A service costs £3 plus £4 per hour. The bill is £67. Form and solve an equation for the hours.

Worked solutions

Q01 | 3 MARKS

$3h+5=20$; subtract 5 and divide by 3, giving $h=5$.

ANSWER: 5 hours

Q02 | 3 MARKS

$4h+7=31$; subtract 7 and divide by 4, giving $h=6$.

ANSWER: 6 hours

Worked solutions

Q03 | 3 MARKS

$5h+3=38$; subtract 3 and divide by 5, giving $h=7$.

ANSWER: 7 hours

Q04 | 3 MARKS

$6h+5=53$; subtract 5 and divide by 6, giving $h=8$.

ANSWER: 8 hours

Worked solutions

Q05 | 3 MARKS

$2h+7=25$; subtract 7 and divide by 2, giving $h=9$.

ANSWER: 9 hours**Q06 | 3 MARKS**

$3h+3=33$; subtract 3 and divide by 3, giving $h=10$.

ANSWER: 10 hours

Worked solutions

Q07 | 3 MARKS

$4h+5=49$; subtract 5 and divide by 4, giving $h=11$.

ANSWER: 11 hours**Q08 | 3 MARKS**

$5h+7=67$; subtract 7 and divide by 5, giving $h=12$.

ANSWER: 12 hours

Worked solutions

Q09 | 3 MARKS

$6h+3=81$; subtract 3 and divide by 6, giving $h=13$.

ANSWER: 13 hours**Q10 | 3 MARKS**

$2h+5=33$; subtract 5 and divide by 2, giving $h=14$.

ANSWER: 14 hours

Worked solutions

Q11 | 3 MARKS

$3h+7=52$; subtract 7 and divide by 3, giving $h=15$.

ANSWER: 15 hours

Q12 | 3 MARKS

$4h+3=67$; subtract 3 and divide by 4, giving $h=16$.

ANSWER: 16 hours

Chapter completion record

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FOUNDATION TIER

UNIT 2 | CHAPTER 18

FA18 - Linear inequalities

12 curated questions | complete solutions

Chapter focus

Solve inequalities and represent solutions on a number line.

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 18: FA18 - Linear inequalities

Q01 | 2 MARKS

Solve $3x + 5 < 20$.

Q02 | 3 MARKS

Solve $-4x \leq -24$.

Chapter 18: FA18 - Linear inequalities

Q03 | 2 MARKS

Solve $5x + 3 < 38$.

Q04 | 3 MARKS

Solve $-6x \leq -48$.

Chapter 18: FA18 - Linear inequalities

Q05 | 2 MARKS

Solve $2x + 7 < 25$.

Q06 | 3 MARKS

Solve $-3x \leq -30$.

Chapter 18: FA18 - Linear inequalities

Q07 | 2 MARKS

Solve $4x + 5 < 49$.

Q08 | 3 MARKS

Solve $-5x \leq -60$.

Chapter 18: FA18 - Linear inequalities

Q09 | 2 MARKS

Solve $6x + 3 < 81$.

Q10 | 3 MARKS

Solve $-2x \leq -28$.

Chapter 18: FA18 - Linear inequalities

Q11 | 2 MARKS

Solve $3x + 7 < 52$.

Q12 | 3 MARKS

Solve $-4x \leq -64$.

Worked solutions

Q01 | 2 MARKS

Subtract 5 and divide by positive 3.

ANSWER: $x < 5$ **Q02 | 3 MARKS**

Divide by -4 and reverse the inequality sign.

ANSWER: $x \geq 6$

Worked solutions

Q03 | 2 MARKS

Subtract 3 and divide by positive 5.

ANSWER: $x < 7$ **Q04 | 3 MARKS**

Divide by -6 and reverse the inequality sign.

ANSWER: $x \geq 8$

Worked solutions

Q05 | 2 MARKS

Subtract 7 and divide by positive 2.

ANSWER: $x < 9$ **Q06 | 3 MARKS**

Divide by -3 and reverse the inequality sign.

ANSWER: $x \geq 10$

Worked solutions

Q07 | 2 MARKS

Subtract 5 and divide by positive 4.

ANSWER: $x < 11$ **Q08 | 3 MARKS**

Divide by -5 and reverse the inequality sign.

ANSWER: $x \geq 12$

Worked solutions

Q09 | 2 MARKS

Subtract 3 and divide by positive 6.

ANSWER: $x < 13$ **Q10 | 3 MARKS**

Divide by -2 and reverse the inequality sign.

ANSWER: $x \geq 14$

Worked solutions

Q11 | 2 MARKS

Subtract 7 and divide by positive 3.

ANSWER: $x < 15$ **Q12 | 3 MARKS**

Divide by -4 and reverse the inequality sign.

ANSWER: $x \geq 16$

Chapter completion record

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FOUNDATION TIER

UNIT 2 | CHAPTER 19

FA19 - Generating sequences

12 curated questions | complete solutions

Chapter focus

Generate terms from term-to-term and position-to-term rules.

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 19: FA19 - Generating sequences

Q01 | 2 MARKS

Write the next three terms: 3, 6, 9, 12, 15, ...

Q02 | 2 MARKS

Write the next three terms: 4, 8, 12, 16, 20, ...

Chapter 19: FA19 - Generating sequences

Q03 | 2 MARKS

Write the next three terms: 5, 10, 15, 20, 25, ...

Q04 | 2 MARKS

Write the next three terms: 6, 12, 18, 24, 30, ...

Chapter 19: FA19 - Generating sequences

Q05 | 2 MARKS

Write the next three terms: 7, 9, 11, 13, 15, ...

Q06 | 2 MARKS

Write the next three terms: 8, 11, 14, 17, 20, ...

Chapter 19: FA19 - Generating sequences

Q07 | 2 MARKS

Write the next three terms: 9, 13, 17, 21, 25, ...

Q08 | 2 MARKS

Write the next three terms: 10, 15, 20, 25, 30, ...

Chapter 19: FA19 - Generating sequences

Q09 | 2 MARKS

Write the next three terms: 11, 17, 23, 29, 35, ...

Q10 | 2 MARKS

Write the next three terms: 12, 14, 16, 18, 20, ...

Chapter 19: FA19 - Generating sequences

Q11 | 2 MARKS

Write the next three terms: 13, 16, 19, 22, 25, ...

Q12 | 2 MARKS

Write the next three terms: 14, 18, 22, 26, 30, ...

Worked solutions

Q01 | 2 MARKS

Add 3 each time.

ANSWER: 18, 21, 24

Q02 | 2 MARKS

Add 4 each time.

ANSWER: 24, 28, 32

Worked solutions

Q03 | 2 MARKS

Add 5 each time.

ANSWER: 30, 35, 40**Q04 | 2 MARKS**

Add 6 each time.

ANSWER: 36, 42, 48

Worked solutions

Q05 | 2 MARKS

Add 2 each time.

ANSWER: 17, 19, 21

Q06 | 2 MARKS

Add 3 each time.

ANSWER: 23, 26, 29

Worked solutions

Q07 | 2 MARKS

Add 4 each time.

ANSWER: 29, 33, 37

Q08 | 2 MARKS

Add 5 each time.

ANSWER: 35, 40, 45

Worked solutions

Q09 | 2 MARKS

Add 6 each time.

ANSWER: 41, 47, 53

Q10 | 2 MARKS

Add 2 each time.

ANSWER: 22, 24, 26

Worked solutions

Q11 | 2 MARKS

Add 3 each time.

ANSWER: 28, 31, 34

Q12 | 2 MARKS

Add 4 each time.

ANSWER: 34, 38, 42

Chapter completion record

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FOUNDATION TIER

UNIT 2 | CHAPTER 20

FA20 - Recognising sequences

12 curated questions | complete solutions

Chapter focus

Recognise arithmetic, Fibonacci-type, quadratic and geometric sequences.

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 20: FA20 - Recognising sequences

Q01 | 2 MARKS

Name the underlying pattern in 2, 5, 10, 17, 26.

Q02 | 2 MARKS

Find the next term: 2, 4, 6, 10, 16, ...

Chapter 20: FA20 - Recognising sequences

Q03 | 2 MARKS

Find the next term: 4, 8, 16, 32, ...

Q04 | 3 MARKS

Show that 5, 8, 13, 20, 29 is quadratic and find the next term.

Chapter 20: FA20 - Recognising sequences

Q05 | 2 MARKS

Name the underlying pattern in 6, 9, 14, 21, 30.

Q06 | 2 MARKS

Find the next term: 6, 8, 14, 22, 36, ...

Chapter 20: FA20 - Recognising sequences

Q07 | 2 MARKS

Find the next term: 8, 24, 72, 216, ...

Q08 | 3 MARKS

Show that 9, 12, 17, 24, 33 is quadratic and find the next term.

Chapter 20: FA20 - Recognising sequences

Q09 | 2 MARKS

Name the underlying pattern in 10, 13, 18, 25, 34.

Q10 | 2 MARKS

Find the next term: 10, 12, 22, 34, 56, ...

Chapter 20: FA20 - Recognising sequences

Q11 | 2 MARKS

Find the next term: 12, 48, 192, 768, ...

Q12 | 3 MARKS

Show that 13, 16, 21, 28, 37 is quadratic and find the next term.

Worked solutions

Q01 | 2 MARKS

Subtract 1 to obtain 1,4,9,16,25.

ANSWER: Square numbers shifted by 1

Q02 | 2 MARKS

Each term is the sum of the previous two.

ANSWER: 26

Worked solutions

Q03 | 2 MARKS

Multiply by 2 each time.

ANSWER: 64

Q04 | 3 MARKS

First differences are 3,5,7,9; second differences are constant at 2. The next difference is 11, giving 40.

ANSWER: 40

Worked solutions

Q05 | 2 MARKS

Subtract 5 to obtain 1,4,9,16,25.

ANSWER: Square numbers shifted by 5

Q06 | 2 MARKS

Each term is the sum of the previous two.

ANSWER: 58

Worked solutions

Q07 | 2 MARKS

Multiply by 3 each time.

ANSWER: 648

Q08 | 3 MARKS

First differences are 3,5,7,9; second differences are constant at 2. The next difference is 11, giving 44.

ANSWER: 44

Worked solutions

Q09 | 2 MARKS

Subtract 9 to obtain 1,4,9,16,25.

ANSWER: Square numbers shifted by 9

Q10 | 2 MARKS

Each term is the sum of the previous two.

ANSWER: 90

Worked solutions

Q11 | 2 MARKS

Multiply by 4 each time.

ANSWER: 3072

Q12 | 3 MARKS

First differences are 3,5,7,9; second differences are constant at 2. The next difference is 11, giving 48.

ANSWER: 48

Chapter completion record

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FOUNDATION TIER

UNIT 2 | CHAPTER 21

FA21 - Linear nth terms

12 curated questions | complete solutions

Chapter focus

Deduce and use the n th term of linear sequences.

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 21: FA21 - Linear nth terms

Q01 | 3 MARKS

Find the nth term of 4, 7, 10, 13, ...

Q02 | 2 MARKS

The nth term is $4n + 1$. Find term 10.

Chapter 21: FA21 - Linear nth terms

Q03 | 3 MARKS

Find the nth term of 6, 11, 16, 21, ...

Q04 | 2 MARKS

The nth term is $6n + 1$. Find term 12.

Chapter 21: FA21 - Linear nth terms

Q05 | 3 MARKS

Find the nth term of 8, 15, 22, 29, ...

Q06 | 2 MARKS

The nth term is $2n + 7$. Find term 9.

Chapter 21: FA21 - Linear nth terms

Q07 | 3 MARKS

Find the nth term of 10, 13, 16, 19, ...

Q08 | 2 MARKS

The nth term is $4n + 7$. Find term 11.

Chapter 21: FA21 - Linear nth terms

Q09 | 3 MARKS

Find the nth term of 12, 17, 22, 27, ...

Q10 | 2 MARKS

The nth term is $6n + 7$. Find term 8.

Chapter 21: FA21 - Linear nth terms

Q11 | 3 MARKS

Find the nth term of 14, 21, 28, 35, ...

Q12 | 2 MARKS

The nth term is $2n + 13$. Find term 10.

Worked solutions

Q01 | 3 MARKS

Difference=3, so start with $3n$; adjust by 1.

ANSWER: $3n + 1$

Q02 | 2 MARKS

Substitute $n=10$: $4 \times 10 + 1 = 41$.

ANSWER: 41

Worked solutions

Q03 | 3 MARKS

Difference=5, so start with $5n$; adjust by 1.

ANSWER: $5n + 1$ **Q04 | 2 MARKS**

Substitute $n=12$: $6 \times 12 + 1 = 73$.

ANSWER: 73

Worked solutions

Q05 | 3 MARKS

Difference=7, so start with $7n$; adjust by 1.

ANSWER: $7n + 1$ **Q06 | 2 MARKS**

Substitute $n=9$: $2 \times 9 + 7 = 25$.

ANSWER: 25

Worked solutions

Q07 | 3 MARKS

Difference=3, so start with $3n$; adjust by 7.

ANSWER: $3n + 7$ **Q08 | 2 MARKS**

Substitute $n=11$: $4 \times 11 + 7 = 51$.

ANSWER: 51

Worked solutions

Q09 | 3 MARKS

Difference=5, so start with $5n$; adjust by 7.

ANSWER: $5n + 7$ **Q10 | 2 MARKS**

Substitute $n=8$: $6 \times 8 + 7 = 55$.

ANSWER: 55

Worked solutions

Q11 | 3 MARKS

Difference=7, so start with $7n$; adjust by 7.

ANSWER: $7n + 7$

Q12 | 2 MARKS

Substitute $n=10$: $2 \times 10 + 13 = 33$.

ANSWER: 33

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