MARKING GUIDELINE

MARKS	DURATION	QUESTIONS
34	55 minutes	3

Name: _____ Class: _____

Date: _____

MARK ____ / 34

INSTRUCTIONS AND INFORMATION

1. Answer **ALL** the questions in this question paper.
2. Answer QUESTION 1 by **circling** the letter (A–D) in the answer grid at the end of that section.
3. Show **ALL** calculations clearly.
4. Show all units where applicable.
5. Number the answers correctly according to the numbering system used in this question paper.
6. A non-programmable calculator may be used, unless stated otherwise.
7. Write neatly and legibly.

QUESTION 1 [10 MARKS]

Four options are given as possible answers to the following questions. Choose the correct answer and circle the letter (A–D) in the grid at the end of this section. If you want to change your choice, put a cross through the wrong letter and circle your new choice.

1.1 Solve for x: $x + 9 = 15$ (1)

A) 24
B) 6 ✓
C) -6
D) 135

Answer: B — $x = 15 - 9$.

- **A** — ADDED 9 instead of subtracting it
- **C** — subtracted the wrong way round
- **D** — multiplied instead

1.2 Solve for x: $6x = 42$ (1)

A) 36
B) 48
C) 252
D) 7 ✓

Answer: D — $x = 42 \div 6$.

- **A** — SUBTRACTED 6 instead of dividing
- **B** — added 6
- **C** — multiplied instead of dividing

1.3 Solve for x: $x \div 3 = 5$ (1)

A) 8
B) 2
C) 15 ✓
D) 1,67

Answer: C — Multiply both sides by 3.

- **A** — added 3
- **B** — subtracted 3
- **D** — divided by 3 instead of multiplying

1.4 Solve for x: $2x + 5 = 17$ (1)

A) 12 **B)** 3,5

C) 6 ✓ **D)** 11

> **Answer: C** — $2x = 12$, so $x = 6$.
> - **A** — subtracted 5 but forgot to divide by 2
> - **B** — divided 17 by 2 before subtracting the 5
> - **D** — moved the 5 without changing its sign: $2x = 22$

1.5 Solve for x: $x^2 = 49$ (1)

A) -7 only **B) 7 or −7 ✓**

C) 7 only **D)** 24,5

> **Answer: B** — Both 7^2 and $(-7)^2$ equal 49.
> - **A** — missed the positive solution
> - **C** — missed the negative solution
> - **D** — halved 49 instead of rooting it

1.6 Solve for x: $3(x - 2) = 12$ (1)

A) 4 **B)** 14

C) 6 ✓ **D)** 2

> **Answer: C** — $x - 2 = 4$, so $x = 6$.
> - **A** — forgot to add the 2 back
> - **B** — did not divide by 3
> - **D** — divided by 3 but then subtracted 2

1.7 Double a number and add 5 gives 17. The number is ... (1)

A) 6 ✓ **B)** 11

C) 22 **D)** 12

> **Answer: A** — $2x + 5 = 17$, so $2x = 12$ and $x = 6$.
> - **B** — ADDED 5 instead of subtracting it, then halved: $(17 + 5) \div 2$
> - **C** — ADDED 5 and forgot to halve: $17 + 5$
> - **D** — forgot to halve

1.8 Which operation UNDOES "multiply by 4"? (1)

A) add 4 **B)** multiply by -4

C) subtract 4 **D) divide by 4 ✓**

> **Answer: D** — Division is the inverse of multiplication.
> - **A** — addition undoes subtraction
> - **B** — that multiplies again and changes the sign
> - **C** — subtraction undoes addition

1.9 Solve for x: $5x - 3 = 2x + 9$ (1)

A) 4 ✓ **B)** 1,7

C) 2 **D)** 12

> **Answer: A** — $5x - 2x = 9 + 3$, so $3x = 12$ and $x = 4$.
> - **B** — ADDED $2x$ instead of subtracting it: $7x = 12$
> - **C** — moved the -3 across without changing its sign: $3x = 6$
> - **D** — forgot to divide by 3

1.10 A learner writes: $3x = 12$, so $x = 36$. Their mistake is that they ... (1)

A) divided instead of multiplying **B) MULTIPLIED instead of dividing** ✓

C) added instead of dividing **D)** made no mistake

> **Answer: B** — To undo "multiply by 3" you divide, giving $x = 4$.
> - **A** — dividing is what they should have done
> - **C** — 36 is 3×12, not $3 + 12$
> - **D** — 36 does not satisfy the equation

ANSWER GRID — MARKING GUIDELINE

1.1	A	**(B)**	C	D
1.2	A	B	C	**(D)**
1.3	A	B	**(C)**	D
1.4	A	B	**(C)**	D
1.5	A	**(B)**	C	D
1.6	A	B	**(C)**	D
1.7	**(A)**	B	C	D
1.8	A	B	C	**(D)**
1.9	**(A)**	B	C	D
1.10	A	**(B)**	C	D

QUESTION 2 [12 MARKS]

Solve for x. Show ALL your steps.

2.1 $x + 9 = 15$, and check your answer by substituting it back into the equation. (3)

> $x = 15 - 9$ *(1)*
> $x = \mathbf{6}$ *(1)*
> Check: $6 + 9 = 15$, which is correct *(1)*

2.2 $6x = 42$, and hence write down the solution of $6x = 84$ without solving it again. (3)

> $x = 42 \div 6$ *(1)*
> $x = \mathbf{7}$ *(1)*
> 84 is double 42, so x doubles too: $x = \mathbf{14}$ *(1)*

2.3 $2x + 7 = 19$ (3)

> $2x = 19 - 7$ *(1)*
> $2x = 12$ *(1)*
> $\boldsymbol{x = 6}$ *(1)*

2.4 $3(x - 2) = 12$ **(3)**

> $3x - 6 = 12$ *(1)*
> $3x = 18$ *(1)*
> $\boldsymbol{x = 6}$ *(1)*

QUESTION 3 [12 MARKS]

Answer the questions below.

3.1 Solve for x: $x^2 = 121$, and explain why this equation has TWO solutions. **(3)**

> $x = \pm\sqrt{121}$ *(1)*
> $x = \mathbf{11}$ or $x = \mathbf{-11}$ *(1)*
> Squaring removes the sign, so 11^2 and $(-11)^2$ both give 121 *(1)*

3.2 A number is doubled and 5 is added to the result, giving 17. Set up an equation and determine the number. **(4)**

> Let the number be x *(1)*
> $2x + 5 = 17$ *(1)*
> $2x = 12$ *(1)*
> $\boldsymbol{x = 6}$ *(1)*

3.3 Check your answer to the previous question by substituting it back into the words of the problem. **(2)**

> Double 6 is 12 *(1)*, and $12 + 5 = 17$, which is correct *(1)*

3.4 Solve for x: $x \div 4 = 6$, and hence solve $x \div 4 + 7 = 13$. **(3)**

> $x = 6 \times 4$, so $\boldsymbol{x = 24}$ *(1)*
> Subtracting 7 from both sides of $x \div 4 + 7 = 13$ gives $x \div 4 = 6$ *(1)*
> This is the SAME equation, so $\boldsymbol{x = 24}$ *(1)*

TOTAL: 34 marks

This question paper consists of 3 questions.

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