GRADE 11 · EQUATIONS AND INEQUALITIES

Simultaneous Equations: One Linear, One Quadratic (Grade 11)

EXAM-STYLE CLASS TEST

MARKS	DURATION	QUESTIONS
32	50 minutes	3

Name: _____ Class: _____

Date: _____

MARK ____ / 32

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 simultaneously: $y = x + 1$ and $y = x^2 - 1$ (1)

A) $(2\ ;\ 3)$ and $(-1\ ;\ 0)$
B) $(-1\ ;\ 0)$ only
C) $(2\ ;\ 3)$ and $(1\ ;\ 2)$
D) $(2\ ;\ 3)$ only

1.2 For one LINEAR and one QUADRATIC equation, the standard method is to ... (1)

A) subtract the two equations
B) add the two equations
C) make a variable the subject of the QUADRATIC equation, then substitute
D) make a variable the subject of the LINEAR equation, then substitute

1.3 Solve simultaneously: $y = 2x$ and $x^2 + y^2 = 20$ (1)

A) $(4\ ;\ 2)$ and $(-4\ ;\ -2)$
B) $(2\ ;\ 4)$ and $(-2\ ;\ 4)$
C) $(2\ ;\ 4)$ and $(-2\ ;\ -4)$
D) $(2\ ;\ 4)$ only

1.4 How many solutions can a straight line and a parabola have? (1)

A) always 1
B) 0, 1 or 2
C) 0 or 1 only
D) always 2

1.5 Solve simultaneously: $x + y = 5$ and $xy = 6$ (1)

A) $(2\ ;\ 3)$ only
B) $(-2\ ;\ -3)$ and $(-3\ ;\ -2)$
C) $(2\ ;\ 3)$ and $(3\ ;\ 2)$
D) $(1\ ;\ 6)$ and $(6\ ;\ 1)$

1.6 If substituting produces a quadratic with a NEGATIVE discriminant, then ... (1)

A) the line and the curve do not meet
B) there are infinitely many solutions
C) there are two points of intersection
D) the line is a tangent

1.7 If substituting produces a quadratic with $\Delta = 0$, the line is ... (1)

A) parallel to the curve
B) a tangent to the curve
C) a secant cutting it twice
D) missing the curve entirely

1.8 Solve simultaneously: $y = x - 1$ and $x^2 + y^2 = 25$ (1)

A) $(4\ ;\ 3)$ and $(3\ ;\ 4)$
B) $(4\ ;\ 3)$ and $(-3\ ;\ -4)$
C) $(3\ ;\ 4)$ and $(-4\ ;\ -3)$
D) $(4\ ;\ 3)$ only

1.9 Two numbers have a product of 24 and a sum of 11. The numbers are ... (1)

A) 3 and 8
B) 2 and 12
C) 1 and 24
D) 4 and 6

1.10 A rectangle has perimeter 26 cm and area 40 cm^2. Its dimensions are ... (1)

A) 6 cm by 7 cm
B) 4 cm by 10 cm
C) 2 cm by 20 cm
D) 5 cm by 8 cm

ANSWER GRID — CIRCLE YOUR ANSWERS FOR QUESTION 1

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 [10 MARKS]

Solve the following simultaneously. Show ALL your working.

2.1 $y = x + 1$ and $y = x^2 - 3x + 4$ (5)

2.2 $x + y = 5$ and $x^2 + y^2 = 17$ **(5)**

QUESTION 3 [12 MARKS]

Answer the questions below.

3.1 Solve simultaneously: $y - x = 2$ and $xy = 8$ **(5)**

3.2 Explain which of the two equations should always be rearranged first, and why. **(2)**

3.3 The line $y = x + c$ cuts the parabola $y = x^2$ at two points. Determine the values of c for which this happens. **(5)**

TOTAL: 32 marks

This question paper consists of 3 questions.

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