

Surname	
Other Names	
Candidate's Signature	

GCSE 9 - 1 Questions

Quadratic Simultaneous Equations

Calculator Allowed

INSTRUCTIONS TO CANDIDATES

- Write your name in the space provided.
- Write your answers in the spaces provided in this question paper.
- Answer ALL questions.
- Any working should be clearly shown in the spaces provided since marks may be awarded for partially correct solutions.
- You should have a ruler, compass and protractor where required.

Total Marks :

1) Solve the following simultaneous equations using an algebraic method.

[6]

$$\begin{aligned}2x^2 + xy - 5 &= 0 \\ x + y &= 4\end{aligned}$$

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

2) Solve the simultaneous equations

$$4y^2 - x^2 = 7$$

$$x + y = 5$$

**A solution by trial and improvement will not be accepted.
Show your working.**

Answer _____ [7]

3) Solve the following simultaneous equations using an algebraic method.

[6]

$$\begin{aligned} 2x^2 + xy + 6 &= 0 \\ x + y &= 7 \end{aligned}$$

[illegible]

4) Solve the simultaneous equations

$$x = 2y - 5 \quad \text{and} \quad x^2 + 3y^2 = 57$$

A solution by trial and improvement will not be accepted.

Answer _____ [7]

5) Solve the simultaneous equations

$$y = 3x + 5$$

$$2xy - 3x^2 = -8$$

Show your working.

A solution by trial and improvement will not be accepted.

Answer _____ [7]

- 6) Solve the simultaneous equations $y = x^2 + 3x - 2$ and $3x + 2y = 22$.

Answer _____ [7]

7)(a) Solve the following simultaneous equations using an algebraic method.

$$\begin{aligned} 3x^2 + xy + 6 &= 0 \\ x + y &= 8 \end{aligned}$$

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

[6]

(b) Use the formula method to solve $2x^2 + 5x - 4 = 0$, giving your answer correct to 2 decimal places.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

[3]

- 8) (a) Solve the following simultaneous equations using an algebraic method. [6]

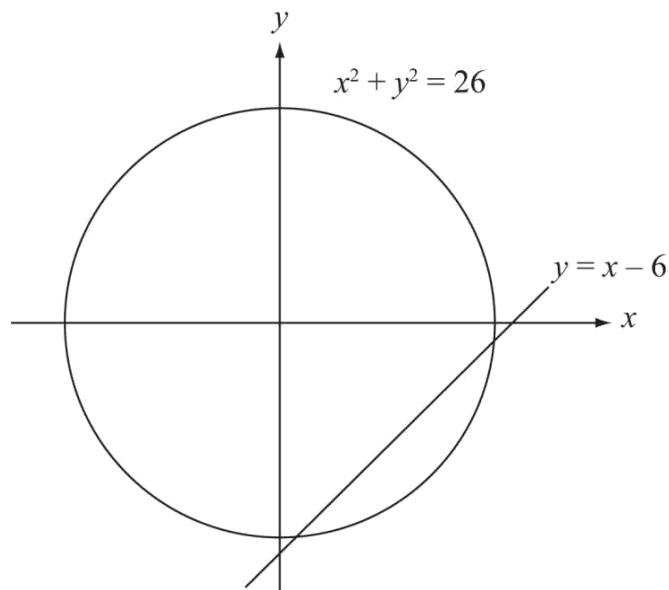
$$\begin{aligned} 4x^2 + xy - 8 &= 0 \\ x + y &= 2 \end{aligned}$$

This image shows a full page of primary-ruled notebook paper. It features multiple sets of horizontal lines designed for teaching handwriting. Each set consists of three lines: a solid top line, a dashed middle line, and a solid bottom line. These sets are repeated vertically down the entire page, providing ample space for practicing letter formation and alignment. The paper is otherwise blank, with no text or markings other than the ruling lines.

- (b) Use the formula method to solve $3x^2 + 5x - 4 = 0$, giving your answer correct to 2 decimal places. [3]

[illegible]

- 9) The diagram shows the intersection of the line $y = x - 6$ with the circle with equation $x^2 + y^2 = 26$



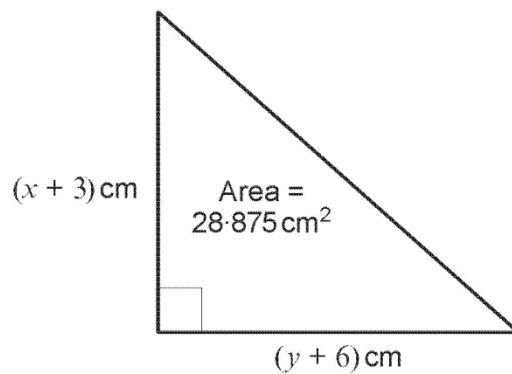
- (a) Show that the x co-ordinates of the points of intersection of the line with the circle can be found from the solutions to the equation $x^2 - 6x + 5 = 0$

[3]

- (b) Hence find the co-ordinates of the points of intersection of the line and the circle.

Answer (____,____) (____,____) [3]

10)

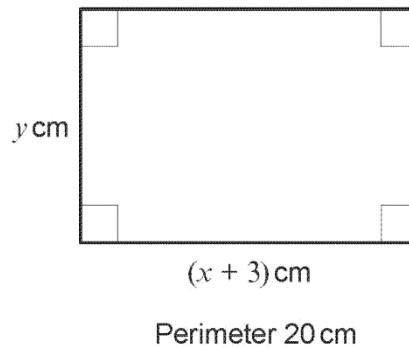
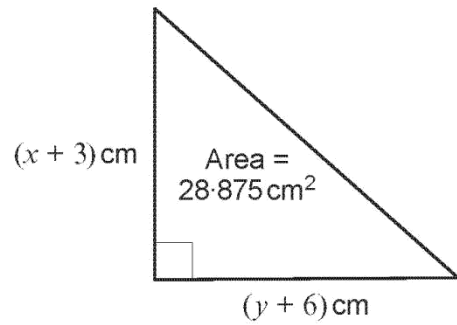


- (a) Prove that $xy + 3y + 6x = 39.75$.
You must show your working.

[3]

This image shows a full page of a document template designed for handwritten notes or essays. It features approximately 28 evenly spaced, thin grey horizontal lines across the entire width of the page. The margins are consistent on all sides, providing ample space for writing. There are no pre-printed questions, headings, or other markings on the page.

(b)



Use an algebraic method to calculate the dimensions of the rectangle.

[6]

[illegible]