

IGCSE Mathematics Revision

Session 3

<p>2.2 Algebraic Manipulation</p>	<p>expand the product of two linear expressions</p> <p>understand the concept of a quadratic expression and be able to factorise such expressions</p> <p>manipulate algebraic fractions where the numerator and/or the denominator can be numeric, linear or quadratic</p>	<p>$(2x + 3)(3x - 1)$, $(2x - y)(3x + y)$</p> <p>Factorise: $x^2 + 12x - 45$, $6x^2 - 5x - 4$</p> <p>Express as a single fraction: $\frac{x+1}{3} + \frac{x-3}{4}$, $\frac{3(4x-1)}{2} - \frac{2(5x+3)}{3}$, $\frac{3}{2x} - \frac{4}{3x}$, $\frac{3}{1-x} + \frac{2}{1+x}$, $\frac{x+1}{x+2} - \frac{x-2}{x-1}$</p> <p>Factorise and simplify: $\frac{x^2 - 4x}{x^2 - x - 12}$</p>
<p>2.7 Quadratic Equations</p>	<p>solve quadratic equations by factorisation</p> <p>solve quadratic equations by using the quadratic formula</p> <p>form and solve quadratic equations from data given in a context</p> <p>solve simultaneous equations in two unknowns, one equation being linear and the other equation being quadratic</p>	<p>$2x^2 - 3x + 1 = 0$, $x(3x - 2) = 5$</p> <p>$y = 2x - 11$ and $x^2 + y^2 = 25$ $y = 11x - 2$ and $y = 5x^2$</p>
<p>2.8 Inequalities</p>	<p>solve quadratic inequalities in one unknown and represent the solution set on a number line</p> <p>harder examples of regions defined by linear inequalities</p>	<p>$x^2 \leq 25$, $4x^2 > 25$, $(2x - 1)(x - 1) < 0$</p> <p>Shade the region defined by the inequalities $x \leq 4$, $y < 2x + 1$, $5x + 2y < 20$</p>

Factorise

$x^2 - 5x$

.....
(1)

Multiply out

$x(2x + 3y)$

.....
(2)

Expand and simplify

$(x - 4)(x + 2)$

.....
(2)

Factorise $x^2 - 3x - 10$

(a) Factorise completely $10x^2 - 2x$

.....
(2)

(b) Factorise $x^2 - 9$

.....
(1)

(c) Factorise $3x^2 - 13x + 4$

Express the algebraic fraction $\frac{2x^2 - 3x - 20}{x^2 - 16}$ as simply as possible.

Simplify fully $\frac{2}{x-1} + \frac{x-11}{x^2+3x-4}$

Solve $\frac{5x-7}{x-1} = x+1$

Solve the equations

$$y = 2x + 1$$

$$x^2 + y^2 = 13$$

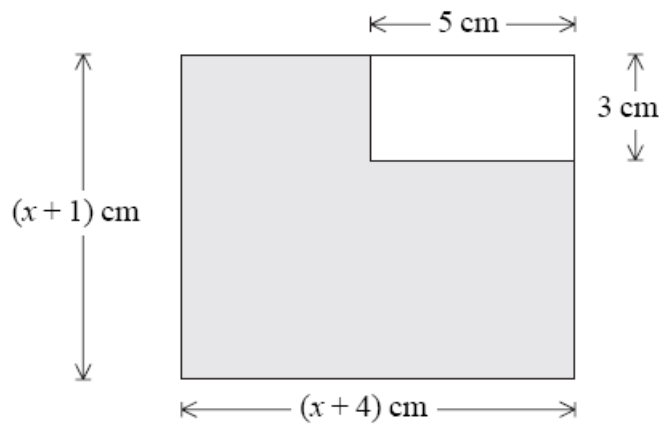


Diagram **NOT** accurately drawn

A rectangular piece of card has length $(x+4)$ cm and width $(x+1)$ cm.
 A rectangle 5 cm by 3 cm is cut from the corner of the piece of card.
 The remaining piece of card, shown shaded in the diagram, has an area of 35 cm^2 .

(a) Show that $x^2 + 5x - 46 = 0$

(3)

(b) Solve $x^2 + 5x - 46 = 0$ to find the value of x .
 Give your answer correct to 3 significant figures.

$x = \dots\dots\dots$
 (3)

(Total 6 marks)

Solve:

a) $2x^2 \leq 72$

b) $(3x+12)(x-4) > 0$

$$\frac{3}{x+4}$$

$$y = -10,12$$

$$x = 3,2$$

$$x = 1\frac{1}{5}, -2$$

$$x = -9 \cdot 73, 4 \cdot 73$$

$$-6 \leq x \leq 6$$

$$x \leq -4, x \geq 4$$