Course Start: GCSE Higher Mathematics

Course Start is independent learning you need to complete as a fundamental part of your introduction to the course. It should take you approximately 2 hours to complete.

Course Name	**GCSE Higher Mathematics**
How this Course Start fits into the first term of the course	On this course you will use and build on mathematics you have learnt in the past. By completing and handing in the Course Start task your teacher will be able to assess your skills and knowledge in the key topics covered and therefore tailor the course to suit everyone's needs.
How will my Course Start learning be used in lessons?	Your teacher will review the work you have done on the task and give you feedback and support on any areas you need to improve on. In order for this to be effective it is important that you follow the instructions precisely.
Course Start learning objectives	Recall skills and knowledge that you already have and identify any gaps. Your teacher will be able to quickly get an idea of what level you are presently at.
Study Skills	• Reading and following instructions on independent study tasks. • Using additional resources to aid understanding if necessary. • Time management of completing a multistage task like this one.

Expectations for: Higher Tier GCSE Mathematics

Our specification is: Edexcel GCSE Mathematics

What this course involves
Building on your prior mathematical skills and knowledge in order to sit the Higher Tier GCSE Maths exams in May and June 2026.
Coming to classes equipped with: a scientific calculator, pen and drawing equipment, an exercise book or file paper.
Being an active learner in individual, paired, group and class activities.
Completing independent planned study tasks fully and by deadlines given.
Preparing for and completing progress tests and mock exam papers at key points on the course.
Preparing for and sitting three exams in May and June 2026. The first exam is a non calculator paper. The second and third require a calculator.

Higher GCSE Maths Course Start

Instructions

- *Answer all the questions below showing all necessary working out and setting your method out clearly. When you hand in this work your teacher will be looking at how you have set out your work rather than the final answer.*
- *After each section check your answers, marking them either correct or incorrect.*
- *Correct any wrong answers (do not cross out any work, just add any correct working at the end of the section)*
- *Bring your work to your first lesson and hand it in to your teacher.*

Solving equations

Solve each of the following equations showing all your working out.

1. $32 = 7x - 3$
2. $7x - 26 = 3x - 6$
3. $\frac{x}{3} - 2 = 3$
4. $4(8 - 3x) = -67 - 3x$

5. $6 = \frac{x-7}{6}$

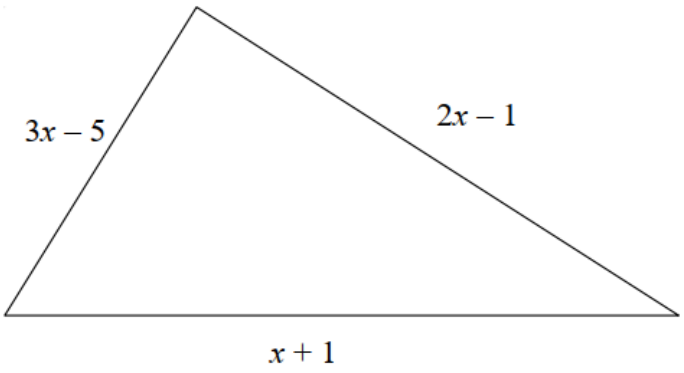
6. $5(x-5) = 30$

7. $4 - 3x = 6x + 85$

Setting up and solving equations

(if you need help getting started on this watch the video on mathsgenie)

1 The lengths, in cm, of the sides of a triangle are $3x - 5$, $2x - 1$ and $x + 1$



(a) Write down an expression, in terms of x, for the perimeter of the triangle.

(2)

The perimeter of the triangle is 31 cm.

(b) Work out the value of x.

(2)

(Total for question 1 is 4 marks)

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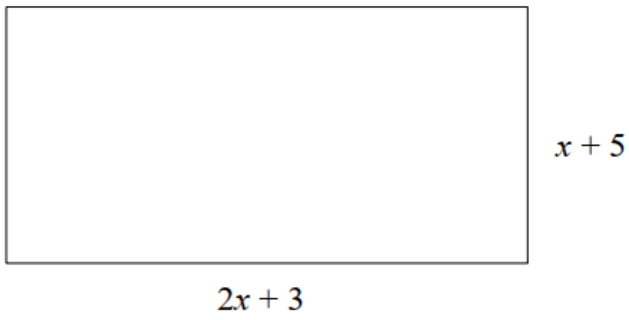
2 A rectangle has a length of $(2x + 3)$ cm and a width of $(x + 5)$ cm.



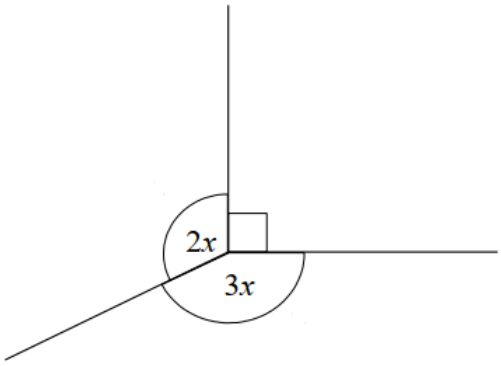
(a) Find an expression for the perimeter of the rectangle. (2)

(b) Given the rectangle has a perimeter of 43 cm find the value of x.

(2)

(Total for question 2 is 4 marks)

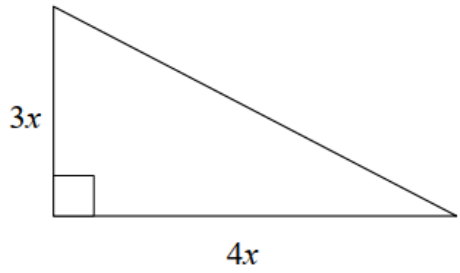
3



Find the value of x.

(Total for question 3 is 3 marks)

4 The diagram shows a right angled triangle.

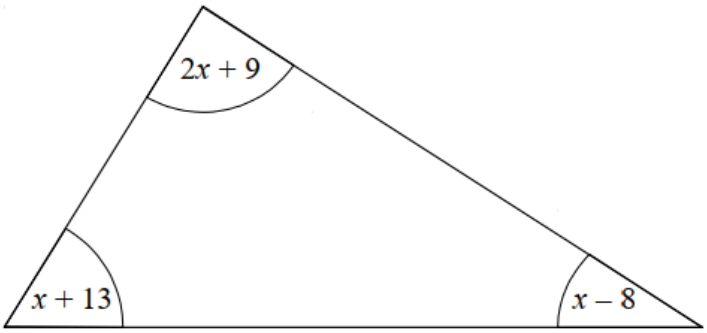


The area of the triangle is 294 cm^2

Work out the value of x.

(Total for question 4 is 3 marks)

5 The sizes of the angles, in degrees, of a triangle are $2x + 9$, $x + 13$ and $x - 8$



Work out the value of x.

(Total for question 5 is 3 marks)

Simplifying Algebraic fractions

Question 1: Simplify the following algebraic fractions

(a) $\frac{42xyz}{56}$ (b) $\frac{45ab}{60abc}$ (c) $\frac{16mn}{18n}$ (d) $\frac{40x^2y}{32xy}$

(e) $\frac{17cf}{34c^3}$ (f) $\frac{8x^4}{2x^2}$ (g) $\frac{33a^2b^2}{44a^3b}$ (h) $\frac{12x^3}{20x^7}$

Question 2: Simplify the following algebraic fractions

(a) $\frac{6x+8}{2}$ (b) $\frac{9x-12}{3}$ (c) $\frac{35x^2+20}{5}$

(d) $\frac{7m-70n^3}{7}$ (e) $\frac{10c+25}{15}$ (f) $\frac{8w+2-4x}{12}$

(g) $\frac{9x^2+12x+33}{6}$ (h) $\frac{3x^2+5x}{x}$ (i) $\frac{3x^3-7x^2}{x}$

(j) $\frac{8x^6+x^4+3x}{x}$ (k) $\frac{10x^7+15x^5-30x^4}{5x}$ (l) $\frac{3c^6-15c^4}{6c}$

(m) $\frac{-8x^5-12x^4+2x^3}{-4x}$ (n) $\frac{6c^9-12c^3}{3c^2}$ (o) $\frac{6c^6+2c^2}{4c^4}$

Answers

Solving equations

1. x=5
2. x=5
3. x=15
4. x=11
5. x=43
6. x=11
7. x=-9

Setting up and solving equations

1. (a) 6x-5 (b) x=6
2. (a) 6x+16 (b) x=4.5
3. x=54
4. x=7
5. x=41.5

Simplifying Algebraic fractions

1 (a) $\frac{3xyz}{4}$ (b) $\frac{3}{4c}$ (c) $\frac{8m}{9}$ (d) $\frac{5x}{4}$ (e) $\frac{f}{2c^2}$ (f) $4x^2$ (g) $\frac{3b}{4a}$ (h) $\frac{3}{5x^4}$

2 (a) $3x+4$ (b) $3x-4$ (c) $7x^2+4$ (d) $m-3n^3$

The answer for questions 2(e) to (o) can be written in a number of ways. Your teacher will mark these when you hand in your work.