



MATHEMATICS

Summer Work 2018

Starting in September

You will need to buy text books for your course.

Everyone will need Edexcel AS and A level Mathematics Pure Mathematics Year 1/AS Textbook

ISBN 978-1292183398

You will also need: Edexcel AS and A level Mathematics Statistics and Mechanics Year 1/AS Textbook

ISBN 978-1292183282

If you are going to study Further Maths you will need both of the books above and:

Edexcel AS and A level Mathematics Further Mathematics Core Pure Mathematics Book 1/AS Textbook ISBN 978-1292183336

Summer work

This work gives you the opportunity to practise the skills that will be required to start A level Mathematics successfully. We want to ensure you do not feel overwhelmed when you begin Year 12. You did well in your GCSE Mathematics course so we have high expectations of your algebra and number skills.

This work will also help you identify whether you need to do any extra work over the summer to ensure you are ready for maths in the sixth form. You will have a basic skills test in a lesson in the second week of term in September.

You should be able to answer the following questions. We suggest you work through them towards the end of August so the ideas are fresh in your mind for September. You should **not use a calculator** for any of these questions.

1. Expand and simplify

a) $(2x + 3)(2x - 1)$ b) $4x(3x - 2) - x(2x - 5)$ c) $(2x - 1)^2$

2. Factorise

a) $y^2 - 64$ b) $6x^2 - 3x$ c) $x^2 - 4x - 12$ d) $2x^2 + 5x - 3$

3. Simplify

a) $\frac{4x^3y}{8x^2y^3}$ b) $\frac{3x+2}{3} + \frac{4x-1}{6}$ c) $\frac{x}{x+1} + \frac{2}{x-1}$

4. Solve

a) $\frac{4x-1}{4} + \frac{3x}{5} = 4$ b) $p^2 + 4p = 12$ c) $\frac{6}{x+1} = \frac{2x+9}{x+2}$

5. Make x the subject of the formula

a) $v^2 = u^2 + 2ax$ b) $y = \frac{x+2}{x+1}$ c) $\sqrt{3-x} = y^2$

Turn over for more questions!



6. Work out the values of the following, giving your answers as fractions

a) 4^{-2} b) $\left(\frac{8}{27}\right)^{\frac{1}{3}}$ c) $\left(\frac{125}{8}\right)^{-\frac{2}{3}}$

7. Simplify:

a) $\sqrt{50}$ b) $(\sqrt{5} + \sqrt{3})(\sqrt{5} - 2\sqrt{3})$ c) $\sqrt{18} + 5\sqrt{8}$

8. Rationalise:

a) $\frac{6}{\sqrt{2}}$ b) $\frac{3}{\sqrt{5}-1}$

9. Using $s = ut + \frac{1}{2}at^2$, find s when:

a) $u = -3$, $a = -1$ and $t = 4$ b) $u = \frac{1}{2}$, $a = 2$ and $t = \frac{3}{2}$

10. Calculate (remember no calculators!):

a) $\frac{2}{3} + \frac{1}{4} \times \frac{2}{5}$ b) $\frac{3}{5} - 3 + \frac{1}{3}$ c) 2.49×3.2

Answers

1. a) $4x^2 + 4x - 3$ b) $10x^2 - 3x$ c) $4x^2 - 4x + 1$
2. a) $(y + 8)(y - 8)$ b) $3x(2x - 1)$ c) $(x - 6)(x + 2)$ d) $(2x - 1)(x + 3)$
3. a) $\frac{x}{2y^2}$ b) $\frac{10x+3}{6}$ c) $\frac{x^2+x+2}{(x+1)(x-1)}$
4. a) $h = 5$ b) $p = -6$ or $p = 2$ c) $x = \frac{1}{2}$ or $x = -3$
5. a) $x = \frac{v^2-u^2}{2a}$ b) $x = \frac{2-y}{y-1}$ or $\frac{y-2}{1-y}$ c) $x = 3 - y^4$
6. a) $\frac{1}{16}$ b) $\frac{2}{3}$ c) $\frac{4}{25}$
7. a) $5\sqrt{2}$ b) $-\sqrt{15} - 1$ c) $13\sqrt{2}$
8. a) $3\sqrt{2}$ b) $\frac{3+3\sqrt{5}}{4}$
9. a) -20 b) 3
10. a) $\frac{23}{30}$ b) $-\frac{31}{15}$ or $-2\frac{1}{15}$ c) 7.968

Support

These text books may help you,

1. Head Start to AS Maths by Richard Parsons
2. Collins Maths – Bridging GCSE and A level: Student Book by Mark Rowland

Also remember online resources such as,

3. My Maths (School login: beaumonts Password: reflex)
4. Maths Watch VLE