



# The Thomas Hardy School

## Summer Preparation Task

### Maths A Level

#### Purpose of task:

To recap the GCSE skills necessary for A Level Maths; for some students this may be new work and they should seek help as soon as term starts.

#### Task:

Complete all the questions on the sheet. Hand in the work in your first lesson of the week commencing September 12<sup>th</sup>.

#### Recommended resources:

Websites:

[drfrostmaths.com](http://drfrostmaths.com)

[examsolutions.net](http://examsolutions.net)

[corbettmaths.com](http://corbettmaths.com)

Textbooks: any higher GCSE Maths book

### Thomas Hardy School Maths Summer Task

- Due in at the end of your first maths lesson during the week commencing Monday September 12<sup>th</sup>.
- **Do without a calculator.**
- Do all workings on paper, put the answers in the boxes on the sheet, and staple it all together, do not just hand in the answers.
- Please put your name on it.
- Remember this work is the first impression that you are giving your new maths teacher.

1) Factorise, and solve the following:

a)  $x^2 + 8x + 7 = 0$

**Answer:**

b)  $x^2 - 16 = 0$

**Answer:**

**Deadline for Task:** First lesson in week commencing 9<sup>th</sup> September 2024

c)  $3x^2 + 17x = 6$

**Answer:**

2) Solve:

a)  $15x - 4 = x + 80$

**Answer:**

b)  $\frac{2x}{3} + 1 = 3$

**Answer:**

c)  $\frac{9(2x + 20)}{5} = 18$

**Answer:**

d)  $\frac{4x - 2}{5} = \frac{5x + 5}{7}$

**Answer:**

3) Complete the square for:  $x^2 + 4x - 2$

**Answer:**

4) Simplify the following:  $\sqrt{40}$

**Answer:**

5) Expand, and simplify:  $(5 + \sqrt{3})(5 - \sqrt{3})$

**Answer:**

6) Rationalise:  $\frac{6}{5\sqrt{3}}$

**Answer:**

7) Given the 2 coordinates P(2, 1) and Q(7, -11) find the following

- a) the length of the line PQ
- b) the gradient of the line PQ
- c) the midpoint of the line PQ

**Answers:**

- a)
- b)
- c)

8) Find the gradient and the  $y$  intercept for the following equations:

- a)  $y = 3x - 7$
- b)  $3x + 2y - 5 = 0$

**Answer:**

- a)
- b)

9) Evaluate:

- a)  $27^{2/3}$
- b)  $5^{-2}$
- c)  $16^{-3/4}$

**Answers:**

- a)
- b)
- c)

10) Simplify the following:

- a)  $12g^3 \times 2g^5$
- b)  $\frac{(2\sqrt{x})^4}{8x}$

**Answer:**

- a)
- b)

11. Solve:  $2x + 5y = 24$   
 $4x + 3y = 20$

**Answer:**

12. Make the variable in the square brackets the subject of each of the following:

a)  $v = u + at,$  [a]

b)  $Ax + B = Cx + D$  [x]

**Answers:**

a)

b)

13. Use the quadratic formula to find the **exact** solution to:

$$x^2 + 4x + 2 = 0,$$

**Answer:**

14. Solve the simultaneous equations:

$$x^2 + y^2 = 20$$

$$y = x - 2$$

**Answer:**

15. Solve:  $11a = 5 - 8d$

$$a + 6d = 11$$

**Answer:**

16. Simplify

a)  $\frac{x^2 + 5x + 6}{x^2 + 6x + 9}$

b)  $\frac{x^2 + 3x}{x^2 - 9}$

**Answer:**

a)

b)

**Additional information:** Don't forget to staple your answers to your workings.

**Recommended reading & activities list:**

<https://www.amazon.co.uk/Head-Start-Level-Maths-2017-2018/dp/1782947922/>

**Required Stationery and Equipment for Mathematics and Further Mathematics A Level**

Pens, HB pencils and a ruler.

A4 Lever Arch Ring binder folder with file dividers

Either A4 Square paper or exercise books (available from THS)

**Essential Resources**

Scientific calculator, £20.00 from maths office. This model is necessary for the A Level course.

Revision guides are available from THS for £5.50

**Things to Consider Throughout the Year**

Maths office provides the majority of resources at cost price.

**Deadline for Task:** First lesson in week commencing 9<sup>th</sup> September 2024