



# MATHS TEACHER HUB

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120 pages of GCSE Foundation

Exam style questions

With answers included

Question sheet

## MATHS TEACHER HUB Higher Homework 7 : Number

1. Write the following numbers in ascending order.

$$\frac{11}{20}, \frac{5}{15}, \frac{2}{3}, \frac{7}{10}$$

.....  
(2 marks)

2. Work out  $£1.54 \times 18$

.....  
(2 marks)

3. Work out  $£14.70 \div 6$

.....  
(1 mark)

4. Work out  $11^{-2}$

.....  
(1 mark)

5. Round 0.004712 to 1 significant figure.

.....  
(1 mark)

6. Write down the sixth cube number.

.....  
(1 mark)

7. Work out  $\left(\frac{2}{5}\right)^3$

.....  
(2 marks)

8. A number has been rounded to 1.25 to the nearest 2 decimal places.

Write down the error interval

.....  
(2 marks)

9. Work out  $9^{\frac{1}{2}}$

.....  
(1 mark)

10. Work out  $k^0$

.....  
(1 mark)

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## MATHS TEACHER HUB Higher Homework 7 : Number

11. Some money has been shared between Ben and Jade in the ratio 5:2.

Jade received £27 less than Ben.

How much did Ben get?

.....  
(2 marks)

12. Simplify  $\sqrt{32}$

.....  
(2 marks)

13. Work out  $1\frac{2}{3} + 1\frac{3}{4}$

.....  
(2 marks)

14. Work out  $1\frac{1}{5} \times 1\frac{1}{3}$

.....  
(2 marks)

15. Express 126 as a product of its prime factors.

.....  
(2 marks)

16. Work out the HCF and LCM of 12 and 50.

.....  
(2 marks)

17. Write  $5.015 \times 10^6$  as an ordinary number.

.....  
(2 marks)

18. Convert  $64 \times 10^{-4}$  into standard form.

.....  
(2 marks)

19. Work out  $(1.5 \times 10^5) \times (1.1 \times 10^3)$

.....  
(3 marks)

Score =

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Answer sheet

## MATHS TEACHER HUB Higher Homework 8 : Number

1. Write the following numbers in ascending order.

$$\frac{4}{7}, \frac{6}{9}, \frac{5}{8}, \frac{3}{11}$$

$$\frac{3}{11}, \frac{5}{8}, \frac{4}{7}, \frac{6}{9}$$

.....  
(2 marks)

2. Work out  $£1.16 \times 35$

.....  
£40.60  
(2 marks)

3. Work out  $£11.16 \div 3$

.....  
£3.72  
(1 mark)

4. Work out  $2^{-3}$

.....  
 $\frac{1}{8}$   
(1 mark)

5. Estimate  $7.82 \times 3.412$

.....  
24  
(1 mark)

6. Write down the tenth prime number.

.....  
29  
(1 mark)

7. Work out  $\left(\frac{1}{2}\right)^5$

.....  
 $\frac{1}{32}$   
(2 marks)

8. A number has been rounded to 80 to the nearest 1 significant figure.

Write down the error interval

.....  
 $75 \leq x < 85$   
(2 marks)

9. Work out  $27^{\frac{1}{2}}$

.....  
9  
(1 mark)

10. Work out  $m^0$

.....  
1  
(1 mark)

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## MATHS TEACHER HUB Higher Homework 8 : Number

11. Some money has been shared between Tom, Eva and Kim in the ratio 2:5:1.

Eva received £12 more than Kim.

How much did Tom get?

.....  
£6  
(2 marks)

12. Simplify  $\sqrt{72}$

.....  
 $6\sqrt{2}$   
(2 marks)

13. Work out  $1\frac{1}{5} - \frac{5}{6}$

.....  
 $\frac{11}{30}$   
(2 marks)

14. Work out  $1\frac{1}{4} \div 1\frac{1}{3}$

.....  
 $\frac{15}{16}$   
(2 marks)

15. Express 525 as a product of its prime factors.

.....  
 $3 \times 5^2 \times 7$   
(2 marks)

16. Work out the HCF and LCM of 40 and 24.

.....  
HCF = 8  
LCM = 120  
(2 marks)

17. Write  $2.9 \times 10^{-6}$  as an ordinary number.

.....  
0.0000029  
(2 marks)

18. Convert  $0.9 \times 10^5$  into standard form.

.....  
 $9 \times 10^4$   
(2 marks)

19. Work out  $(1.2 \times 10^6) \div (4 \times 10^8)$

.....  
 $3 \times 10^{-3}$   
(3 marks)

Score =

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# MATHS TEACHER HUB

6 different sets to work through

1-10 = Number  
 11-20 = Algebra  
 21-30 = Shape  
 31-40 = Probability  
 41-50 = Angles  
 51-60 = Data

**MATHS TEACHER HUB**  
 Higher Homework 17: Algebra

- Here is a quadratic sequence:  
 $-1, 2, 7, 14, 23, \dots$   
 (i) Write down the  $n$ th term. (3 marks)
- Coordinate  $A = (-6, 8)$  and coordinate  $B = (14, -2)$ .  
 Write down the midpoint of  $AB$ . (2 marks)
- Simplify  $5y^2 + 13 - 7y + y^2 + 5 - 3y$ . (2 marks)
- Simplify  $4y^3 + y^3 + 7A^3$ . (1 mark)
- $a = 5$   $b = 3$   $c = -2$   
 Work out the value of  $ab + 2c$ . (2 marks)
- Simplify  $5a^2b \times 4ab^4$ . (2 marks)
- Simplify  $\frac{15a^4b^6}{3a^2b^7}$ . (2 marks)
- Simplify  $(5c^{-6})^3$ . (2 marks)
- Simplify  $\frac{6a^4 \times 2a^4}{3a^2}$ . (2 marks)

Score =

**MATHS TEACHER HUB**  
 Higher Homework 17: Algebra

- Expand  $7(3 + 9)$ . (1 mark)
- Factorise  $6m^2 + 21m$ . (2 marks)
- Expand and simplify:  $(2x - 1)(x + 4)$ . (2 marks)
- Factorise  $x^2 - 8x + 12$ . (2 marks)
- Solve  $8x - 9 = 7x - 1$ . (2 marks)
- Show the inequality  $2x + 1 < 7$  on the number line below. (2 marks)
- Below is a linear graph. (4 marks)
  - Write down the gradient.
  - Write down the  $y$  intercept.
  - Write down the equation of the line.

Score =

**MATHS TEACHER HUB**  
 Higher Homework 20: Shape

- Calculate  $x$ .  
 Area =  $14 \text{ cm}^2$ . (2 marks)
- Calculate  $x$ .  
 Area =  $78 \text{ cm}^2$ . (2 marks)
- Calculate the surface area of the cube below.  
 Volume =  $1000 \text{ cm}^3$ . (3 marks)
- Calculate the area of this quarter-circle.  
 Leave your answer in terms of  $\pi$ . (2 marks)
- Two sides of a right angle triangle are  $8 \text{ cm}$  and  $15 \text{ cm}$ .  
 There are two possible answers for the third side.  
 Round your answers to 1 decimal place. (2 marks)

Score =

**MATHS TEACHER HUB**  
 Higher Homework 20: Shape

- Reflect shape  $A$  in the line  $y = -2$ . (2 marks)
- Rotate shape  $B$  by  $90^\circ$  ACW about the center  $(0, -2)$ . (2 marks)
- Describe the single transformation from shape  $A$  to  $B$ . (2 marks)
- Enlarge shape  $A$  by scale factor  $-3$  from the center  $(0, 1)$ . (2 marks)

Score =

**MATHS TEACHER HUB**  
 Higher Homework 30: Probability

- The table below shows information about counters in a bag. A counter is chosen at random. The probability of selecting a red counter is  $\frac{1}{12}$ .  
 Work out the how many green counters there are. (3 marks)

Colours	Red	Blue	Green
Frequency	2	$3x$	$x + 2$

- Henry teaches people how to drive. His pass rate on the first time is  $0.65$ . If someone doesn't pass first time, the probability they will fail second time is  $0.22$ . (3 marks)
  - Draw a tree diagram to show this. (3 marks)
  - Work out the probability she will be accepted at only 1. (2 marks)

Score =

**MATHS TEACHER HUB**  
 Higher Homework 30: Probability

- 60 students attend a small sixth form college. 28 students study 3 sciences. 34 students study chemistry and physics. 32 study biology and physics. 5 students study biology and chemistry, but not physics. 3 study only physics. 38 students in total study biology. 6 students don't study any science at all. How many students only study chemistry? (4 marks)
- A box only contains 4 counters. The counters are either red or blue. A counter is selected, replaced then another is selected. If the probability of selecting red and red is  $\frac{1}{12}$ . (3 marks)
  - Display this information in the diagram. (3 marks)
  - Calculate how many red counters there are in the bag. (2 marks)

Score =

**MATHS TEACHER HUB**  
 Higher Homework 51: Data

- The table shows the time it took 40 employees to get to work. (2 marks)
- An office was asked their favourite ice cream flavor. (5 marks)
- Draw pie chart to show this data. (3 marks)

Time (Minutes)	Frequency
$0 < t \leq 10$	5
$10 < t \leq 20$	12
$20 < t \leq 30$	20
$30 < t \leq 40$	3

Flavour	Vanilla	Mint	Chocolate	Strawberry	Other
Frequency	8	15	18	11	7

Score =

**MATHS TEACHER HUB**  
 Higher Homework 51: Data

- The table shows the time it took 40 employees to get to work. (5 marks)
- LOUISE is travelling to her grandparents who live 30 miles away. If she is travelling at an average speed of 60 mph, how long will it take her to get there? (2 marks)

Time (Minutes)	Frequency
$0 < t \leq 10$	5
$10 < t \leq 20$	12
$20 < t \leq 30$	20
$30 < t \leq 40$	3

Score =

**MATHS TEACHER HUB**  
 Higher Homework 48: Angles

- Calculate  $x$ . (2 marks)
- Calculate  $y$ . (3 marks)
- The bearing of ship A to ship B is  $124^\circ$ . Calculate the bearing of A from B. (2 marks)

Score =

**MATHS TEACHER HUB**  
 Higher Homework 48: Angles

- Here is are two regular polygons. Calculate  $x$ . (2 marks)
- Calculate  $x$ . (2 marks)
- Points  $A, B, C$  and  $D$  are points on the edge of a circle center  $O$ . (3 marks)
  - Calculate the size of angle  $AOD$ .
  - Calculate the size of angle  $ODB$ .

Score =

## How to use:

I recommend giving GCSE students 3 sheets at a time to complete as homework.

E.g. Homework number 4, 14 and 24.

You select one to take in and mark, then display the answers for the other two sheets on the board so students can peer mark each others work.