




# Countdown to your final Maths exam ...

## Part 1 (2019)

### "WORKING ABOVE"

	Marks	Actual	  
Q1. Sample-Space diagrams	7		
Q2. Product of prime factors (Clip 4)	2		
Q3. Profit	4		
Q4. Multiples in context (Clip 6)	3		
Q5. Best Value (Clip 7)	4		
Q6. Frequency trees (Clip 2)	3		
Q7. Two-way tables (Clip 1)	4		
Q8. Rates of pay	5		
Q9. Estimation (Clip 70)	4		
Q10. Product of prime factors (Clip 4)	2		
Q11. Money Problem	3		
Q12. Two-way tables (Clip 1)	4		

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## Questions

Q1. There are 95 girls and 87 boys in Year 13 at a school.

One girl is going to be chosen for the role of Head Girl.

A different girl is going to be chosen for the role of Deputy Head Girl.

One boy is going to be chosen for the role of Head Boy.

A different boy is going to be chosen for the role of Deputy Head Boy.

Work out how many different ways this can be done.

(3)

Q2. Dionne has 60 golf balls. Each of these golf balls weighs 42 grams to the nearest gram.

Work out the greatest possible total weight of all 60 golf balls.

Give your answer in kilograms.

(3)

Q3.(a) Write down the value of  $10^{-1}$

(1)

(b) Find the value of  $27^{\frac{2}{3}}$

(2)

(c) Write  $\sqrt{75}$  in the form  $k\sqrt{3}$ , where  $k$  is an integer.

(2)

Q4. A piece of wood has a length of 65 centimetres to the nearest centimetre.

(a) What is the least possible length of the piece of wood?

(1)

(b) What is the greatest possible length of the piece of wood?

(1)

Q5. Write these numbers in order of size. Start with the smallest number.

$5^{-1}$

$5^0$

$-5$

$0.5$

(2)

Q6. Prove algebraically that the recurring decimal  $0.1\dot{7}\dot{8}$  can be written as the fraction  $\frac{59}{330}$

(3)

Q7. (a) Find the value of  $\sqrt[4]{27 \times 3 \times 10^8}$

(2)

(b) Find the value of  $\left(\frac{216}{1000}\right)^{-\frac{2}{3}}$

(2)

Q8.(i) Find the value of  $\sqrt[5]{3.2 \times 10^{11}}$

(ii) Find the value of  $10^{\frac{3}{4}}$

Give your answer correct to 1 decimal place.

(2)

Q9. Sasha drops a ball from a height of  $d$  metres onto the ground.

The time,  $t$  seconds, that the ball takes to reach the ground is given by  $t = \sqrt{\frac{2d}{g}}$

where  $g \text{ m/s}^2$  is the acceleration due to gravity.

$d = 35.6$  correct to 3 significant figures.

$g = 9.8$  correct to 2 significant figures.

(a) Write down the lower bound of  $d$ .

(1)

(b) Calculate the lower bound of  $t$ . You must show all your working.

(3)

Q10. (a) Write down the value of  $6^0$

(1)

(b) Work out  $64^{-\frac{2}{3}}$

(2)

Q11. Express the recurring decimal  $0.2\bar{8}1$  as a fraction in its simplest form.

(3)

Q12. (a) Write down the value of  $7^0$

(1)

(b) Write down the value of  $2^{-4}$  (1)

(c) Rationalise the denominator of  $\frac{14}{\sqrt{7}}$   
Give your answer in its simplest form.

Q13. The value of  $p$  is 4.3  
The value of  $q$  is 0.4  
Both  $p$  and  $q$  are given correct to the nearest 0.1 (2)

(a) Write down the lower bound for  $p$ . (1)

$$r = p + \frac{1}{q}$$

(b) Work out the upper bound for  $r$ . You must show all your working.

Q14. (a) Write down the value of  $27^{\frac{1}{3}}$  (3)

(b) Find the value of  $25^{-\frac{1}{2}}$  (1)

Q15. Richard's car uses 1 litre of petrol every 8 miles.  
Petrol costs £1.30 per litre.  
Richard drives 240 miles.  
Work out the total cost of the petrol the car uses. (2)

(3)