Indices and surds – 2021/20 GCSE Mathematics Foundation

1. Nov/2021/Paper_J560/02/No.13

(a) Reece is given this question.

> Write 20 as a product of prime factors.
> Give your answer in index form.

Reece's answer is $2 \times 2 \times 5$.

Is Reece correct?
Explain your answer.

.....

..... **[1]**

(b) Complete the power of 2.

$$\frac{1}{8} = 2^{\square}$$

[1]

(c) Work out.

$\sqrt{81} \times 2^3$

(c) ..... **[3]**

2. Nov/2021/Paper_J560/03/No.14

This table shows the names and areas of five lakes.

Name of Lake	Area in km^2
Ladoga	1.81×10^4
Mweru	5.12×10^3
Tana	3.20×10^3
Topozero	9.86×10^2
Victoria	6.89×10^4

(a) Write the area of Lake Mweru as an ordinary number.

(a) ..... km^2 **[1]**

(b) Write the lakes in the order of their area, starting with the **smallest**.

.... **[2]**

smallest *largest*

(c) Calculate the difference between the areas of Lake Ladoga and Lake Tana.
Give your answer in standard form, correct to **2** significant figures.

(c) ..... km^2 **[4]**

3. Nov/2020/Paper_J560/01/No.17

The table below shows the number of barrels of oil produced per day by some countries.

Country	Barrels of oil produced per day
USA	1.17×10^7
China	3.98×10^6
UK	9.39×10^5
Cameroon	9.32×10^4
Japan	3.92×10^3

(a) Write the number of barrels of oil produced per day by Cameroon as an ordinary number.

(a) ..... **[1]**

(b) How many more barrels of oil per day did China produce than the UK?
Give your answer in standard form, correct to 3 significant figures.

(b) ..... **[4]**

(c) Jamal says the USA produced approximately three times more barrels of oil than Japan.

Is he correct?
Show how you decide.

Jamal is ..... because .....

..... **[2]**

4. Nov/2020/Paper_J560/02/No.8

(a) Write $3 \times 3 \times 3 \times 3$ as a power of 3.

(a) ..... **[1]**

(b) Show that the answer to $2^6 \times 4^{-1}$ is a square number.

..... **[3]**

5. Nov/2020/Paper_J560/02/No.10

Simplify.

(a) $\dfrac{5b^6}{b^2}$

(a) ..... **[1]**

(b) $(x^4)^3$

(b) ..... **[1]**

6. Nov/2020/Paper_J560/03/No.12

(a) Complete the power of 2 for each statement by writing the missing value in the box.

(i) $2^3 \times 2^3 = 2^{\square}$ **[1]**

(ii) $\frac{1}{32} = 2^{\square}$ **[1]**

(b) $2 \times 2^y = 1$.

Find the value of y.

(b) $y =$ ..... **[2]**