Indices and surds – 2021/20 GCSE Mathematics Higher

1. Nov/2021/Paper_J560/04/No.3

   Simplify.

   $x^{12} \div x^4$

   .... [1]

2. Nov/2021/Paper_J560/05/No.2

   (a) Azmi is given this question.

   > Write 40 as a product of prime factors.
   > Give your answer in index form.

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

   Is Azmi correct?
   Explain your answer.

   ....

   .... [1]

   (b) Find the value of x.

   $$\frac{1}{16} = 2^x$$

   (b) $x =$ .... [1]

3. Nov/2021/Paper_J560/05/No.15

Write $\sqrt{20} + \sqrt{45}$ in the form $k\sqrt{5}$.

.... **[3]**

3. Nov/2021/Paper_J560/05/No.15

Write $\sqrt{20} + \sqrt{45}$ in the form $k\sqrt{5}$.

4. Nov/2021/Paper_J560/06/No.1

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

5. Nov/2020/Paper_J560/04/No.1

   (a) Write these numbers in standard form.

      (i) 6500

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

      (ii) 0.0584

                                         (ii) .... **[1]**

   (b) Work out $(4.2 \times 10^5) \times (1.8 \times 10^{-2})$, giving your answer in standard form.

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

6. Nov/2020/Paper_J560/05/No.11

   (a) Work out.

      $16^{-\frac{1}{2}}$

                                         (a) .... **[2]**

   (b) Simplify.

      $\sqrt{6} \times \sqrt{3}$

                                         (b) .... **[2]**

7. Nov/2020/Paper_J560/05/No.14

Simplify.

(a) $4a^{\frac{1}{2}} \times 3a^2$

(a) .... [2]

(b) $\left(\dfrac{2a^2}{a^{-3}}\right)^3$

(b) .... [3]