Our Lady and St Chad Catholic Academy

Summer Task - AS Mathematics

Indices & Surds

Summer 2017

37 marks

Using www.mymaths.co.uk (username ourlady, password decagon) complete all of the Number section on GCSE Booster A2A for indices & surds, including the revision & online worksheet. Once you have successfully completed the online worksheet - attempt all questions attached*

1. Solve the equations

(i) $10^p = 0.1,$

[1]

(ii) $\left(25k^2\right)^{\frac{1}{2}} = 15,$

[3]

(iii) $t^{-\frac{1}{3}} = \frac{1}{2}.$

[2]

2. Express each of the following in the form 4^n:

(i) $\frac{1}{16},$

[1]

(ii) 64,

[1]

(iii) 8.

[2]

3. (a) Simplify $2x^{\frac{2}{3}} \times 3x^{-1}$

[2]

(b) Express $2^{40} \times 4^{30}$ in the form 2^n.

[2]

(c) Express $\frac{26}{4-\sqrt{3}}$ in the form $a + b\sqrt{3}$.

[3]

4. Express $\frac{4}{3-\sqrt{7}}$ in the form $a + b\sqrt{7},$ where a and b are integers.

[3]

5. Express each of the following in the form $k\sqrt{2}$, where k is an integer:

(i) $\sqrt{200}$,

[1]

(ii) $\dfrac{12}{\sqrt{2}}$,

[1]

(iii) $5\sqrt{8} - 3\sqrt{2}$.

[2]

6. Solve the equations

(i) $x^{\frac{1}{3}} = 2$,

[1]

(ii) $10^t = 1$,

[1]

(iii) $(y^{-2})^2 = \dfrac{1}{81}$.

[2]

7. (i) Evaluate $27^{-\frac{2}{3}}$.

[2]

(ii) Express $5\sqrt{5}$ in the form 5^n.

[1]

(iii) Express $\frac{1-\sqrt{5}}{3+\sqrt{5}}$ in the form $a + b\sqrt{5}$.

[3]

8. Simplify $(2x + 5)^2 - (x - 3)^2$, giving your answer in the form $ax^2 + bx + c$.

[3]