Review

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| 1 | 2 | 3 | 15 | 37 | 63 | 101 | 105 |

List the numbers in the panel that are

a   prime

b   factors of 105

c   multiples of 21.

2   Write each number as the product of its prime factors. Use index notation where appropriate.

a   105   b   37

c   300   d   126

3   For each pairs of numbers find the

i   lowest common multiple

ii   highest common factor.

a   5 and 7   b   13 and 39

c   60 and 36   d   30 and 108

4   Estimate the value of these roots to 2 decimal places.

a $\sqrt{30}$ b $\sqrt[3]{45}$

5   Calculate the value of these expressions.

a $\sqrt[3]{64}$ b $\sqrt[3]{125}$

c 4^3 d 3^4

6   Simplify these expressions giving your answer in index form.

a $7^2 \times 7^5 \div 7^3$

b $(3^5 \div 3^2)^3$

c $\dfrac{3^{11} \div 3^2}{3^6}$

d $(7^{12} \div 7^3) \times 7^4 \times 7^8$

e $3^4 \times 5^3 \times 3^{-6} \div 5^2 \times 3^2$

7   Simplify these expressions involving surds.

a $\sqrt{108}$ b $5\sqrt{3} - \sqrt{27} + \sqrt{8}$

c $2\sqrt{5} \times \sqrt{5}$ d $\sqrt{6} \times \sqrt{2}$

e $3\sqrt{8} \div \sqrt{2}$ f $5\sqrt{10} \div 10\sqrt{5}$

g $(\sqrt{3} - 2)(\sqrt{3} - 5)$

h $\dfrac{\sqrt{8} + \sqrt{2}}{\sqrt{8} - \sqrt{2}}$

8   Rationalise these fractions.

a $\dfrac{1}{\sqrt{7}}$ b $\dfrac{3}{\sqrt{6}}$

c $\dfrac{5}{2\sqrt{5}}$ d $\dfrac{4 + \sqrt{6}}{\sqrt{6}}$

e $\dfrac{3\sqrt{2} - 5}{\sqrt{128} - 4\sqrt{2}}$ f $\dfrac{4\sqrt{3} + 5\sqrt{2}}{6\sqrt{3} + \sqrt{27}}$