



Indices and Standard Form

Question 1

$$\frac{8^{-2} \times 8^9}{8^{10}} = 8^n$$

Work out the value of n

$$n = \dots\dots\dots$$

(2)

Question 2

Simplify fully $\frac{36a^5c^7}{12a^2c^3}$

$$\dots\dots\dots$$

(2)

Question 3

- (a) Write 5.76×10^4 as an ordinary number.

.....
(1)

- (b) Work out $\frac{3 \times 10^5 + 8 \times 10^3}{4 \times 10^{-2}}$

Give your answer in standard form.

.....
(2)

Question 4

- (a) Simplify fully $\left(\frac{125x^6}{y^{15}}\right)^{\frac{2}{3}}$

.....
(2)

Given that $4^n = \frac{4^m}{64^p}$

- (b) Express n in terms of m and p

.....**(2)**

Question 5

Simplify fully $\left(\frac{2a^3}{10a^7c^2}\right)^{-3}$

.....**(3)**

Question 6

Given that $\frac{3^{2n+3}}{3^4} = 3^3 \times 3^{1-2n}$

find the value of n

Show your working clearly.

.....**(3)**

Question 7

Simplify $\frac{30 \times 25^{2x+7}}{\sqrt{180} \times (\sqrt{5})^{4x+9}}$

Give your answer in the form 5^w where w is an expression in terms of x
Show each stage of your working clearly.

(3)

Question 8

Simplify fully $(2g^3k^5)^4$

.....
(2)

Given that $\frac{y^5 \times y^n}{y^7} = y^{12}$

work out the value of n

$n =$
(2)

Question 9

$$2^7 \times 4^5 = 4^x$$

(a) Calculate the value of x

$x =$
(2)

(b) Simplify fully $(125p^6y^{24})^{\frac{2}{3}}$

.....
(2)

.....
(2)

Question 10

(a) $\sqrt{2} \div \frac{8^3}{16^2} = 2^n$

Work out the value of n
Show your working clearly.

$n = \dots\dots\dots$
(3)

Question 11

(a) Simplify fully $(32a^{15})^{\frac{3}{5}}$

$\dots\dots\dots$
(2)

(b) Express $\left(\frac{1}{10x}\right)^{-3}$ in the form px^n where p and n are integers.

$\dots\dots\dots$
(2)

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Question 12

$$3^{\frac{1}{2}} \times 3^{\frac{2}{5}} = 3^m$$

(a) Work out the value of m

$$m = \dots\dots\dots (1)$$

$$5^{-10} \div 5^{-4} = 5^n$$

(b) Work out the value of n

$$n = \dots\dots\dots (1)$$

Question 13

Find the values of n such that

$$\frac{10^{4n} \times 2^{3(n^2-5n)} \times 5^{2(1-2n)}}{20^2} = 1$$

Show clear algebraic working.

.....**(5)**

Question 14

(a) Simplify $8 \times (4t)^0$

.....
(1)

$$x^6 \div x^{-5} = x^p$$

(b) Find the value of p

$p =$
(1)

(c) Simplify fully $(2k^2m^4)^3$

.....
(2)

Question 15

$$\frac{18 \times (\sqrt{27})^{4n+6}}{6 \times 9^{2n+8}} = 3^x$$

Express x in terms of n

Show your working clearly and simplify your expression.

.....**(3)**

Question 16

Simplify $(64p^9q^{12})^{\frac{2}{3}}$

.....
(2)

Question 17

Given that $\frac{3^x}{9^{3x}} = 81$

find the value of x .

Show clear algebraic working.

.....**(3)**