Summer Term Maths Year 10

Rules of indices

Day 3

Week 5

1 $a^5 \equiv a \times a \times a \times a \times a$

In the same way explore the expressions in full.

(a) $b^7 \equiv b \times b \times b \times b \times b \times b \times b$

(b) $c^3 \equiv c \times c \times c$

(c) $d^2 \equiv d \times d$

2 Andy says that $f^2 \times f^4 = f^8$

Explain the mistake he has made and find the correct answer.

He has multiplied the indices instead of adding

3 Fill in the blanks.

(a) $y^4 \times y^6 = y^{4+6} = y^{10}$

(b) $y^3 \times y^{-1} = y^{3+-1} = y^{2}$

(c) $y^{8} \times y^{-2} = y^{8+-2} = y^6$

(d) $y \times y^6 = y^{1+6} = y^{7}$

4 Fill in the blanks to simplify the expressions.

(a) $2g^5 \times 4g^3 = 2 \times 4 \times g^5 \times g^3 = 8g^8$

(b) $10h^7 \times 4h^3 = 10 \times 4 \times h^7 \times h^3 = 40h^{10}$

(c) $3k^{14} \times 5k^{-2} = 3 \times 5 \times k^{14} \times k^{-2} = 15k^{12}$

White Rose Maths

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5 $a^8 \div a^3 \equiv a^{8-3} \equiv a^5$

Use the example above to simplify the following.

(a) $f^9 \div f^3 \equiv f^6$

(b) $g^{12} \div g^5 \equiv g^7$

(c) $h^4 \div h \equiv h^3$

(d) $j^2 \div j^7 \equiv j^{-5}$

(e) $a^{100} \div a^0 \equiv a^{100}$

6 Circle the expressions that have the solution x^6

(a) $x^9 \div x^3$ (b) $x^{12} \div x^2$

(c) $x^3 \times x^3$ (d) $x^2 \times x^3$

(e) $x^6 \times x$ (f) $x^6 \div x^0$

(g) $x^2 \div x^{-4}$ (h) $x^0 \times x^6$

7 Rosie and Jack are working out $(r^3)^5$

Rosie says the answer is r^8

Jack says the answer is r^{15}

Explain why Jack is correct and what mistake Rosie has made.

Jack has multiplied the indices where as Rosie has added the indices

8 Simplify these.

(a) $(d^5)^2 = d^{10}$ (b) $(h^3)^4 = h^{12}$

(c) $(h^3)^4 \times (h^2)^5 = h^{22}$ (d) $(h^2)^6 \div (h^5)^5 = h^{-13}$

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