

# 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)  $c^3 \equiv$

(c)  $d^2 \equiv$

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

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

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3 Fill in the blanks.

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

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

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

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

4 Fill in the blanks to simplify the expressions.

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

(b)  $10h^7 \times 4h^3 = \square \times \square \times h^7 \times h^3 = \square$

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

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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)  $f^9 \div f^3$

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

(c)  $h^4 \div h$

(d)  $j^2 \div j^7$

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

**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.

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**8** Simplify these.

(a)  $(d^5)^2 =$

(b)  $(h^3)^4 =$

(c)  $(h^3)^4 \times (h^2)^5 =$

(d)  $(h^2)^6 \div (h^5)^5 =$