3 MySummary

Check out

You should now be able to ...

Test it ➡ **Questions**

✓ Know and use the index laws.	7	1 – 4
✓ Multiply brackets in two linear expressions.	8	5
✓ Factorise expressions by taking common factors.	8	6 – 8
✓ Derive simple identities, including expansion of two linear brackets.	8	9
✓ Derive formulae and substitute values in formulae to find unknown variables.	8	10
✓ Change the subject of a formula.	8	11, 12

Language	Meaning	Example
Index/indices power	A number written as a power has a base and an index (plural indices) or power.	6^3 The base is 6 and the index is 3 $6^3 = 6 \times 6 \times 6$
Difference of two squares	An expression of the form $x^2 - b^2$ that factorises to $(x + a)(x - b)$.	$x^2 - 25 = (x + 5)(x - 5)$
Variable	An unknown quantity that can take different values.	In the formula for the area of a circle $A = \pi r^2$ the variable is r
Formula	Shows the connection between several variables.	Area of a circle, $A = \pi r^2$
Equation	An algebraic statement which has particular solutions.	$4x - 7 = 5$ has only one solution $x = 3$
Identity	An algebraic statement which is true for all solutions.	$2(x + 4) \equiv 2x + 8$ for every possible value of x
Change the subject	Rearrange an equation so that a different variable is "on its own".	$v = \frac{b^2}{k}$ rearranged to make b the subject gives $b = \pm\sqrt{vk}$

3 MyReview

1 Evaluate without using a calculator

a 10^3 **b** $(-2)^3$

2 Simplify these expressions.

a $5a^3 \times 4a^5$ **b** $21b^7 \div 7b^2$

c $(3c^6)^3$ **d** $\frac{5d^8 \times 6d}{15d^3}$

3 Evaluate without using a calculator

a 25^0 **b** $16^{\frac{1}{2}}$

c 12^{-1} **d** $100^{-\frac{1}{2}}$

4 Simplify these expressions.

a $e^{\frac{1}{2}} \times e^{\frac{1}{2}}$ **b** $(f^{\frac{1}{2}})^3$

c $g^3 \div g^{-2}$ **d** $\frac{h^2 \times h^{-\frac{1}{4}}}{h^{\frac{3}{4}}}$

5 Expand the brackets and simplify your answers.

a $(a + 2)(a + 1)$

b $(b + 7)(b - 4)$

c $(c - 8)(c - 3)$

d $(d - 5)^2$

e $(2e + 3)(e - 4)$

f $(f + 5)(f - 4) - (f - 4)^2$

6 Factorise these expressions.

a $4g - 20$

b $32 - 24h$

c $15mn + 20m$

d $12xy + 4y$

7 Factorise these expressions.

a $x^2 + 7x$ **b** $5x^2 + 10xy$

c $4y^3 + 6y^2 - 2y$ **d** $12y^3 - 15y^2z$

8 Factorise these expressions.

a $p^2 - 9$ **b** $4q^2 - 1$

c $r^2 - 81s^2$ **d** $100t^2 - u^2$

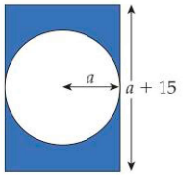
9 Are each of these identities correct?

a $3(5a + 2) \equiv 15a + 6$

b $(b - 4)^2 \equiv b^2 - 16$

c $3(4c - 6) + 2(7 - c) \equiv 2(5c - 2)$

10 Give a formula for the shaded area in terms of π and a.



11 Make x the subject of these formulae.

a $x + 2a = b$ **b** $ax - b = c$

c $\frac{x}{d + e} = 3f$ **d** $a + bx = c - a$

12 Make y the subject of these formulae.

a $\frac{a}{y} = 2b$ **b** $c = \frac{3}{y + d}$

c $\frac{2}{y} + e = f$ **d** $a - by^2 = 3c$

What next?

Score	
0 – 4	Your knowledge of this topic is still developing. To improve look at Formative test: 3C-3; MyMaths: 1033, 1045, 1150, 1155, 1157, 1170, 1171, 1178, 1186, 1187, 1942 and 1951
5 – 10	You are gaining a secure knowledge of this topic. To improve look at InvisiPen: 185, 221, 222, 251, 252, 254, 255 and 256
11 – 12	You have mastered this topic. Well done, you are ready to progress!