

TASK 1**Explore indices using a calculator**

1 Use a calculator to answer these questions.

a Does $4^2 + 4^3$ equal 4^5 ?	b Does $3^6 - 3^4$ equal 3^2 ?	c Does $8^5 + 8^2$ equal 16^7 ?
d Which of these is equal to $7^3 \times 7^2$? 7^6 49^6 7^5 49^5	e Which of these is equal to $10^6 \div 10^2$? 1^4 10^4 10^3 1^3	f Does $4^5 \times 4^6$ equal 4^{11} ?
g Does $3^2 \times 5^3$ equal 15^5 ?	h Does $2^2 \times 2^3 \times 2^5$ equal 2^{10} ?	i Does $5^9 \div 5^3 \div 5^2$ equal 5^4 ?

2 Use your findings above to cross out a word or phrase in each box so that these statements are true. You may wish to first experiment further using your own calculations with bases and indices.

- a** When **adding** or **subtracting** numbers with the same base, you can/cannot add or subtract their powers.
- b** When **multiplying** numbers with the same base, you can/cannot **add** their powers.
- c** When multiplying numbers with **different** bases, you can/cannot **add** their powers.
- d** When **dividing** numbers with the same base, you can/cannot **subtract** their powers.
- e** When dividing numbers with **different** bases, you can/cannot **add** their powers.
- f** When multiplying or dividing numbers with **the same** base, the base stays the same/changes in the answer.