# The Panda Math Tutor

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# Powers and Roots

## Student Worksheet

Questions & Working Space

IGCSE Mathematics

Name: _____

Date: _____

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# Contents

**1 Part I — Topic-by-Topic Exercises** **2**
1.1 Powers (Indices) . . . 2
1.2 Laws of Indices . . . 4
1.3 Roots . . . 7
1.4 Fractional Indices . . . 9
1.5 Combined Index Problems . . . 11
1.6 Index Equations . . . 13
1.7 Standard Form . . . 14
1.8 Surds . . . 16
1.9 Real-World Applications . . . 18

**2 Part II — Mixed Review** **20**

**3 Part III — Examination-Style Practice** **23**

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**Note**

**How to use this worksheet.** These questions are built *strictly* on the *Powers and Roots* notes: index notation, the seven laws of indices, zero and negative indices, square and cube roots, fractional indices, combined index problems, index equations, standard form, surds, and applications.
**Working space.** Ruled lines are provided after each question — show *all* of your working there, name the index law you are using, and simplify your final answer fully. Harder questions have a teal **Hint** box; try the question first and use the hint only if you are stuck.
**Checking your answers.** Full step-by-step solutions, a marking scheme for the exam paper, and a quick answer key are in the separate booklet *"Powers and Roots — Solutions & Answer Key."* Try each question honestly before you look.

# 1 Part I — Topic-by-Topic Exercises

## 1.1 Powers (Indices)

**Exercise P1** *[Basic]*

Evaluate: (a) $2^6$ (b) $5^3$ (c) $10^4$

**Exercise P2** *[Basic]*

Write $8 \times 8 \times 8 \times 8 \times 8$ in index notation, and state the base and the index.

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**Exercise P3** *[Standard]*

Write each of the following in index notation:

(a) $3 \times 3 \times 7 \times 7 \times 7$

(b) $2 \times 2 \times 2 \times 2 \times 5 \times 11 \times 11$

**Exercise P4** *[Standard]*

Evaluate: (a) $(-2)^5$ (b) $(-4)^4$

**Exercise P5** *[Intermediate]*

Evaluate $-2^6$ and $(-2)^6$, and explain clearly why the two answers are different.

**Hint**

Look carefully at where the brackets are. In one expression the index applies only to the 2; in the other it applies to the whole of $-2$.

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# Preview ends here

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