

The Panda Math Tutor

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Powers and Roots

Student Worksheet
Questions & Working Space
IGCSE Mathematics

Name: _____

Date: _____

Prepared by
Nikolas Agisilaou

Teach → Practice → Reason → Apply → Challenge → Master

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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.

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 .

Preview ends here

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