RULES FOR INDICES

POWERS OF POWERS

NO CALCULATOR

Ref: G222. 1F1

A1 Simplify: $(2a)^2$	**A2** Simplify: $(ab)^2$	**A3** Simplify: $(2a)^3$	**A4** Simplify: $(ab)^3$
B1 Simplify: $(a^2)^3$	**B2** Simplify: $(a^2)^4$	**B3** Simplify: $(a^4)^2$	**B4** Simplify: $(a^4)^3$
C1 Simplify: $(a^2b)^3$	**C2** Simplify: $(ab^2)^3$	**C3** Simplify: $(a^3b^4)^2$	**C4** Simplify: $(a^4b^3)^2$
D1 Simplify: $(abc)^4$	**D1** Simplify: $(a^3bc)^2$	**D1** Simplify: $(a^3bc^2)^5$	**D1** Simplify: $(a^2b^5c^3)^4$
E1 Simplify: $(2a^3)^2$	**E2** Simplify: $(2a^3)^3$	**E3** Simplify: $(3a^5b)^2$	**E4** Simplify: $(3ab^4)^3$

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FIRST STEPS

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RULES FOR INDICES
POWERS OF POWERS

Written working is not required for these questions, but it could be useful if you get stuck...

Ref: G222. 1F1

A1 Simplify: $(2a)^2$ $= 2a \times 2a$ $= 4a^2$	**A2** Simplify: $(ab)^2$ $= ab \times ab$ $= a^2b^2$	**A3** Simplify: $(2a)^3$ $= 2a \times 2a \times 2a$ $= 8a^3$	**A4** Simplify: $(ab)^3$ $= ab \times ab \times ab$ $= a^3b^3$
B1 Simplify: $(a^2)^3$ $= a^2 \times a^2 \times a^2$ $= a^6$	**B2** Simplify: $(a^2)^4$ $= a^2 \times a^2 \times a^2 \times a^2$ $= a^8$	**B3** Simplify: $(a^4)^2$ $= a^4 \times a^4$ $= a^8$	**B4** Simplify: $(a^4)^3$ $= a^4 \times a^4 \times a^4$ $= a^{12}$
C1 Simplify: $(a^2b)^3$ $= a^2b \times a^2b \times a^2b$ $= a^6b^3$	**C2** Simplify: $(ab^2)^3$ $= ab^2 \times ab^2 \times ab^2$ $= a^3b^6$	**C3** Simplify: $(a^3b^4)^2$ $= a^3b^4 \times a^3b^4$ $= a^6b^8$	**C4** Simplify: $(a^4b^3)^2$ $= a^4b^3 \times a^4b^3$ $= a^8b^6$
D1 Simplify: $(abc)^4$ $= abc \times abc \times abc \times abc$ $= a^4b^4c^4$	**D1** Simplify: $(a^3bc)^2$ $= a^3bc \times a^3bc$ $= a^6b^2c^2$	**D1** Simplify: $(a^3bc^2)^5$ $= a^3bc^2 \times \ldots$ $= a^{15}b^5c^{10}$	**D1** Simplify: $(a^2b^5c^3)^4$ $= a^2b^5c^3 \times \ldots$ $= a^8b^{20}c^{12}$
E1 Simplify: $(2a^3)^2$ $= 2a^3 \times 2a^3$ $= 4a^6$	**E2** Simplify: $(2a^3)^3$ $= 2a^3 \times 2a^3 \times 2a^3$ $= 8a^9$	**E3** Simplify: $(3a^5b)^2$ $= 3a^5b \times 3a^5b$ $= 9a^{10}b^2$	**E4** Simplify: $(3ab^4)^3$ $= 3ab^4 \times \ldots$ $= 27a^3b^{12}$

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