



Manipulating powers (2)

Getting ready for A-Level Maths...

What you need...

- Your brain and attention
- A device to watch connected to internet
- A pen and paper
- Can do attitude

Manipulating powers (2)

Important rules

$$a^1 = a$$

$$a^0 = 1$$

$$a^m \times a^n = a^{m+n}$$

$$a^m \div a^n = \frac{a^m}{a^n} = a^{m-n}$$

$$(a^m)^n = a^{mn}$$

$$(ka^m)^n = k^n a^{mn}$$

$$a^{-m} = \frac{1}{a^m}$$

$$a^{\frac{1}{m}} = \sqrt[m]{a}$$

$$a^{\frac{n}{m}} = \left(\sqrt[m]{a}\right)^n$$

Manipulating powers (2)

My turn

Write $\sqrt{128}$ as a power of 2.

Your turn

Write $\sqrt{125}$ as a power of 5.

Manipulating powers (2)

My turn

Write $\sqrt[3]{32}$ as a power of 2.

Your turn

Write $\sqrt[3]{81}$ as a power of 3.

Manipulating powers (2)

My turn

Write $\frac{1}{\sqrt[4]{27}}$ as a power of 3.

Your turn

Write $\frac{1}{\sqrt[4]{128}}$ as a power of 2.

Manipulating powers (2)

My turn

Write $64\sqrt{32}$ as a power of 2.

Your turn

Write $9\sqrt{27}$ as a power of 3.

Manipulating powers (2)

My turn

Write $\sqrt[3]{128} \div 8^2$ as a power of 2.

Your turn

Write $\sqrt[3]{81} \div 9^4$ as a power of 3.

Manipulating powers (2)

My turn

Express 243 as a power of 9.

Your turn

Write 32 as a power of 4.

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Review Exercise

1. Write $\sqrt{216}$ as a power of 6.
2. Write $\sqrt[3]{625}$ as a power of 5.
3. Write $\frac{1}{\sqrt[4]{32}}$ as a power of 2.
4. Write $3 \times \sqrt[4]{3}$ as a power of 3.
5. Write $32\sqrt{8}$ as a power of 2.
6. Write $\sqrt[3]{625} \div 25^2$ as a power of 5.
7. Write $\frac{27}{\sqrt[4]{3}}$ as a power of 3.
8. Express 128 as a power of 4.

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Review Exercise (Answers)

1. Write $\sqrt{216}$ as a power of 6.

$$6^{\frac{3}{2}}$$

2. Write $\sqrt[3]{625}$ as a power of 5.

$$5^{\frac{4}{3}}$$

3. Write $\frac{1}{\sqrt[4]{32}}$ as a power of 2.

$$2^{-\frac{5}{4}}$$

4. Write $3 \times \sqrt[4]{3}$ as a power of 3.

$$3^{\frac{5}{4}}$$

5. Write $32\sqrt{8}$ as a power of 2.

$$2^{\frac{13}{2}}$$

6. Write $\sqrt[3]{625} \div 25^2$ as a power of 5.

$$5^{-\frac{8}{3}}$$

7. Write $\frac{27}{\sqrt[4]{3}}$ as a power of 3.

$$3^{\frac{11}{4}}$$

8. Express 128 as a power of 4.

$$4^{\frac{7}{2}}$$