

Maths

Simplify a surd of form $a\sqrt{b}$

Miss Parnham



Simplify a surd of form $a\sqrt{b}$

1. Simplify the surds.

a) $\sqrt{8}$

b) $\sqrt{27}$

2. Use your answers to question 1 to simplify the surds.

a) $2\sqrt{8}$

e) $2\sqrt{27}$

b) $3\sqrt{8}$

f) $3\sqrt{27}$

c) $4\sqrt{8}$

g) $4\sqrt{27}$

d) $5\sqrt{8}$

h) $5\sqrt{27}$

3. Simplify the surds.

Use your answers to question 2 to help you.

a) $6\sqrt{8}$

e) $6\sqrt{27}$

b) $10\sqrt{8}$

f) $10\sqrt{27}$

c) $12\sqrt{8}$

g) $12\sqrt{27}$

d) $20\sqrt{8}$

h) $20\sqrt{27}$



Simplify a surd of form $a\sqrt{b}$

4. Simplify the surds.

a) $2\sqrt{12}$

b) $3\sqrt{18}$

c) $5\sqrt{28}$

d) $4\sqrt{27}$

e) $3\sqrt{32}$

f) $5\sqrt{20}$

g) $3\sqrt{98}$

h) $7\sqrt{200}$

5. Simplify

a) $\frac{2\sqrt{12}}{3\sqrt{20}}$

b) $\frac{4\sqrt{50}}{10\sqrt{98}}$

c) $6\sqrt{28} : 5\sqrt{20}$

d) $6\sqrt{50} : 4\sqrt{32}$

6. Teddy has simplified $10\sqrt{48}$

Here is his answer.

$$10\sqrt{48} = 10 \times \sqrt{4} \times \sqrt{12} = 20\sqrt{12}$$



Answers



Simplify a surd of form $a\sqrt{b}$

1. Simplify the surds.

a) $\sqrt{8}$

$2\sqrt{2}$

b) $\sqrt{27}$

$3\sqrt{3}$

2. Use your answers to question 1 to simplify the surds.

a) $2\sqrt{8}$ $4\sqrt{2}$

e) $2\sqrt{27}$ $6\sqrt{3}$

b) $3\sqrt{8}$ $6\sqrt{2}$

f) $3\sqrt{27}$ $9\sqrt{3}$

c) $4\sqrt{8}$ $8\sqrt{2}$

g) $4\sqrt{27}$ $12\sqrt{3}$

d) $5\sqrt{8}$ $10\sqrt{2}$

h) $5\sqrt{27}$ $15\sqrt{3}$

3. Simplify the surds.

Use your answers to question 2 to help you.

a) $6\sqrt{8}$ $12\sqrt{2}$ e) $6\sqrt{27}$ $18\sqrt{3}$

b) $10\sqrt{8}$ $20\sqrt{2}$ f) $10\sqrt{27}$ $30\sqrt{3}$

c) $12\sqrt{8}$ $24\sqrt{2}$ g) $12\sqrt{27}$ $36\sqrt{3}$

d) $20\sqrt{8}$ $40\sqrt{2}$ h) $20\sqrt{27}$ $60\sqrt{3}$



Simplify a surd of form $a\sqrt{b}$

4. Simplify the surds.

a) $2\sqrt{12}$ $4\sqrt{3}$

b) $3\sqrt{18}$ $9\sqrt{2}$

c) $5\sqrt{28}$ $10\sqrt{7}$

d) $4\sqrt{27}$ $12\sqrt{3}$

e) $3\sqrt{32}$ $12\sqrt{2}$

f) $5\sqrt{20}$ $10\sqrt{5}$

g) $3\sqrt{98}$ $21\sqrt{2}$

h) $7\sqrt{200}$ $70\sqrt{2}$

5. Simplify

a) $\frac{2\sqrt{12}}{3\sqrt{20}}$ $\frac{2\sqrt{3}}{3\sqrt{5}}$

b) $\frac{4\sqrt{50}}{10\sqrt{98}}$ $\frac{2}{7}$

c) $6\sqrt{28} : 5\sqrt{20}$
 $6\sqrt{7} : 5\sqrt{5}$

d) $6\sqrt{50} : 4\sqrt{32}$
 $15 : 8$

6. Teddy has simplified $10\sqrt{48}$

Here is his answer.

$$10\sqrt{48} = 10 \times \sqrt{4} \times \sqrt{12} = 20\sqrt{12}$$

Do you agree? Explain why.

No $10\sqrt{48} = 10 \times \sqrt{16} \times \sqrt{3} = 40\sqrt{3}$

