

Non-calculator

Q1 Fully simplify each surd:

a) $\sqrt{12}$

b) $\sqrt{18}$

c) $\sqrt{50}$

d) $\sqrt{60}$

e) $\sqrt{48}$

f) $\sqrt{108}$

g) $\sqrt{32}$

h) $\sqrt{72}$

i) $\sqrt{96}$

Q2 Fully simplify each surd:

a) $3\sqrt{20}$

b) $2\sqrt{27}$

c) $4\sqrt{8}$

d) $-3\sqrt{24}$

e) $\frac{1}{2}\sqrt{80}$

f) $-\sqrt{90}$

Q3 Fully simplify each expression:

a) $2\sqrt{6} + \sqrt{24}$

b) $3\sqrt{48} - 2\sqrt{12}$

c) $-\sqrt{20} - 2\sqrt{45}$

d) $\sqrt{98} + 3\sqrt{50} - 2\sqrt{72}$

e) $4\sqrt{27} - 3\sqrt{3} + 2\sqrt{48}$

f) $2\sqrt{44} + \sqrt{11} - \sqrt{99}$

Q4 Fully simplify each expression:

a) $\sqrt{13} \sqrt{13}$

b) $\sqrt{8} \sqrt{4}$

c) $\sqrt{8} \sqrt{12}$

d) $\sqrt{20} \sqrt{48}$

e) $3\sqrt{6} \sqrt{12}$

f) $4\sqrt{27} \sqrt{5}$

Q5 Express each surd with a rational denominator. Give your answer in its simplest form.

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

b) $\frac{6}{\sqrt{50}}$

c) $\frac{5}{\sqrt{54}}$

d) $\frac{1}{\sqrt{19}}$

e) $\frac{8}{\sqrt{8}}$

f) $\frac{6}{\sqrt{72}}$

Q6 Express each surd with a rational denominator. Give your answer in its simplest form.

a) $\frac{\sqrt{3}}{\sqrt{6}}$

b) $\frac{\sqrt{5}}{\sqrt{75}}$

c) $\frac{\sqrt{8}}{\sqrt{27}}$

d) $\frac{2\sqrt{8}}{\sqrt{7}}$

e) $\frac{\sqrt{2}}{4\sqrt{40}}$

f) $\frac{3\sqrt{12}}{2\sqrt{60}}$