

Simplify.

a  $\sqrt{18}$

b  $3\sqrt{8}$

c  $\sqrt{45}$

d  $\sqrt{27}$

e  $\sqrt{60}$

f  $\sqrt{48}$

g  $3\sqrt{18}$

h  $\sqrt{72}$

i  $\sqrt{56}$

j  $\sqrt{54}$

k  $3\sqrt{12}$

l  $3\sqrt{68}$

m  $2\sqrt{75}$

n  $\sqrt{20}$

o  $\sqrt{44}$

p  $\sqrt{125}$

q  $\sqrt{200}$

r  $8\sqrt{160}$

s  $5\sqrt{32}$

t  $\frac{1}{2}\sqrt{40}$

Write each surd below in its simplest form.

a  $2\sqrt{12}$

b  $3\sqrt{8}$

c  $2\sqrt{50}$

d  $4\sqrt{18}$

e  $5\sqrt{20}$

f  $2\sqrt{75}$

g  $10\sqrt{27}$

h  $3\sqrt{56}$

i  $2\sqrt{125}$

j  $4\sqrt{45}$

k  $3\sqrt{24}$

l  $2\sqrt{54}$

m  $7\sqrt{56}$

n  $3\sqrt{72}$

o  $3\sqrt{44}$

p  $5\sqrt{90}$

q  $6\sqrt{200}$

r  $5\sqrt{98}$

s  $9\sqrt{108}$

t  $5\sqrt{68}$

Simplify, then collect like surds.

a  $\sqrt{2} + \sqrt{18}$

b  $\sqrt{6} + \sqrt{24}$

c  $\sqrt{12} - \sqrt{3}$

d  $\sqrt{20} + 5\sqrt{5}$

e  $\sqrt{8} + 5\sqrt{2}$

f  $\sqrt{27} + 4\sqrt{3}$

g  $\sqrt{32} - 3\sqrt{2}$

h  $\sqrt{90} - \sqrt{10}$

i  $10\sqrt{3} - \sqrt{48}$

j  $\sqrt{45} + \sqrt{5}$

k  $\sqrt{75} - 2\sqrt{3}$

l  $\sqrt{72} - 3\sqrt{2}$

Simplify completely:

a  $\sqrt{8} + \sqrt{2}$

b  $\sqrt{12} + 2\sqrt{3}$

c  $2\sqrt{2} + \sqrt{18}$

d  $2\sqrt{5} + \sqrt{20}$

e  $\sqrt{27} + 2\sqrt{3}$

f  $3\sqrt{6} + \sqrt{24}$

g  $2\sqrt{8} - \sqrt{2}$

h  $3\sqrt{5} - \sqrt{20}$

i  $\sqrt{32} - 3\sqrt{2}$

j  $\sqrt{18} + \sqrt{32}$

k  $\sqrt{20} + \sqrt{45}$

l  $2\sqrt{27} - \sqrt{48}$

m  $\sqrt{75} - 2\sqrt{12}$

n  $\sqrt{98} + 3\sqrt{50}$

o  $3\sqrt{50} + 2\sqrt{32}$

p  $5\sqrt{28} + 2\sqrt{63}$

q  $4\sqrt{45} - 2\sqrt{20}$

r  $2\sqrt{75} - 3\sqrt{48}$

Simplify:

a  $2\sqrt{8} - \sqrt{18} + 3\sqrt{2}$

b  $2\sqrt{5} + \sqrt{45} - \sqrt{20}$

c  $\sqrt{27} + 2\sqrt{48} - 5\sqrt{3}$

d  $5\sqrt{7} - \sqrt{63} + 2\sqrt{28}$

e  $5\sqrt{3} + \sqrt{50} - \sqrt{12}$

f  $2\sqrt{45} + \sqrt{20} + \sqrt{32}$

g  $9\sqrt{8} + 3\sqrt{12} - \sqrt{27}$

h  $5\sqrt{18} + \sqrt{72} - \sqrt{75}$