National 5 Rigour Practice

Working with Surds

1. Simplify each of these surds:

$a)\ \sqrt{12}\ \ b)\ \sqrt{20}\ \ c)\ \sqrt{50}\ \ d)\ \sqrt{54}\ \ e)\ \sqrt{32}\ \ f)\ \sqrt{27}\ \ g)\ \sqrt{28}\ \ h)\ \sqrt{8}\ \ i)\ \sqrt{50}\ \ j)\ \sqrt{24}$

$k)\ \sqrt{98}\ \ l)\ \sqrt{48}\ \ m)\ \sqrt{18}\ \ n)\ \sqrt{75}\ \ o)\ \sqrt{40}\ \ p)\ \sqrt{18}\ \ q)\ \sqrt{45}\ \ r)\ \sqrt{63}\ \ s)\ \sqrt{72}\ \ t)\ \sqrt{300}$

2. Work out each of the following calculations, leaving your answer as a surd in its simplest form:

$a)\ \sqrt{5}\times\sqrt{8}\ \ b)\ \sqrt{2}\times\sqrt{12}\ \ c)\ \sqrt{6}\times\sqrt{3}\ \ d)\ \sqrt{10}\times\sqrt{5}\ \ e)\ \sqrt{2}\times\sqrt{10}\ \ f)\ \sqrt{3}\times\sqrt{8}$

$g)\ \sqrt{2}\times\sqrt{14}\ h)\ \sqrt{6}\times\sqrt{8}\ \ i)\ \sqrt{2}\times\sqrt{6}\ \ j)\ \sqrt{20}\times\sqrt{3}\ \ k)\ \sqrt{8}\times\sqrt{10}\ \ l)\ \sqrt{5}\times\sqrt{40}$

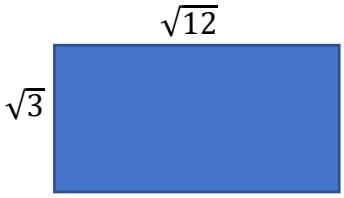
3. Work out each of the following, leaving your answers in their simplest form:

$a)\ \sqrt{3}\times\sqrt{3}\ \ b)\ \sqrt{6}\times\sqrt{6}\ \ c)\ \sqrt{2}\times\sqrt{2}\ \ d)\ \sqrt{7}\times\sqrt{7}\ \ e)\ \sqrt{10}\times\sqrt{10}\ \ f)\ \sqrt{5}\times\sqrt{5}$

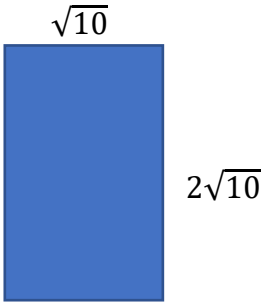
$g)\ 3\sqrt{2}\times\sqrt{2}\ \ h)\ 5\sqrt{6}\times\sqrt{6}\ \ i)\ 2\sqrt{3}\times\sqrt{3}\ \ j)\ 4\sqrt{5}\times2\sqrt{5}\ \ k)\ 3\sqrt{7}\times2\sqrt{7}$

4. Work out the area of each rectangle shown below. Leave your answer in its simplest form. All measurements are in centimetres.

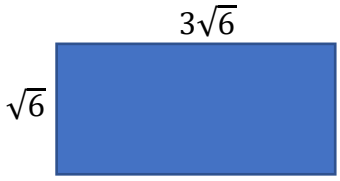
a)



b)

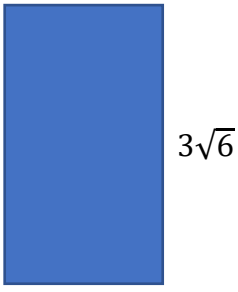


c)

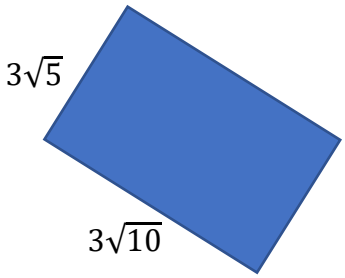


d)

e)



f)



5. Simplify each expression fully.

a) $\sqrt{32}+\sqrt{18}-2\sqrt{2}$ b) $\sqrt{20}-\sqrt{5}+\sqrt{45}$ c) $2\sqrt{6}-\sqrt{54}+\sqrt{96}$

d) $2\sqrt{18}-\sqrt{8}+3\sqrt{2}$ e) $\sqrt{48}-2\sqrt{3}+2\sqrt{27}$ f) $5\sqrt{7}-\sqrt{28}+\sqrt{63}$