

1.4B Working with Radicals Handout

1. a) $\sqrt{12} + \sqrt{27}$

b) $\sqrt{20} + \sqrt{45}$

c) $\sqrt{18} - \sqrt{8}$

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

e) $\sqrt{75} + \sqrt{48} + \sqrt{27}$

f) $\sqrt{54} + \sqrt{24} + \sqrt{72} - \sqrt{32}$

g) $\sqrt{28} - \sqrt{27} + \sqrt{63} + \sqrt{300}$

2. a) $\sqrt{2}(\sqrt{10} + 4)$

b) $\sqrt{3}(\sqrt{6} - 1)$

c) $\sqrt{6}(\sqrt{2} + \sqrt{6})$

d) $2\sqrt{2}(3\sqrt{6} - \sqrt{3})$

e) $\sqrt{2}(\sqrt{3} + 4)$

f) $3\sqrt{2}(2\sqrt{6} + \sqrt{10})$

g) $(\sqrt{5} + \sqrt{6})(\sqrt{5} + 3\sqrt{6})$

h) $(2\sqrt{3} - 1)(3\sqrt{3} + 2)$

i) $(4\sqrt{7} - 3\sqrt{2})(2\sqrt{7} + 5\sqrt{2})$

j) $(3\sqrt{3} + 1)^2$

k) $(2\sqrt{2} - \sqrt{5})^2$

l) $(2 + \sqrt{3})(2 - \sqrt{3})$

m) $(\sqrt{6} - \sqrt{2})(\sqrt{6} + \sqrt{2})$

n) $(2\sqrt{7} + 3\sqrt{5})(2\sqrt{7} - 3\sqrt{5})$

3. a) $\frac{1}{\sqrt{3}}$

b) $\frac{\sqrt{1}}{\sqrt{2}}$

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

d) $\frac{3\sqrt{6}}{4\sqrt{10}}$

e) $\frac{5\sqrt{5}}{2\sqrt{3}}$

f) $\frac{2\sqrt{2}}{\sqrt{18}}$

g) $\frac{3\sqrt{5}}{\sqrt{3}}$

h) $\frac{7\sqrt{11}}{2\sqrt{3}}$

i) $\frac{4\sqrt{7}}{2\sqrt{14}}$

j) $\frac{2\sqrt{5}}{5\sqrt{2}}$

b) $\frac{1}{\sqrt{2} + 2}$

c) $\frac{\sqrt{2}}{\sqrt{6} - 3}$

d) $\frac{3}{\sqrt{5} - \sqrt{2}}$

e) $\frac{2\sqrt{6}}{2\sqrt{6} + 1}$

f) $\frac{\sqrt{2} + \sqrt{5}}{\sqrt{6} - \sqrt{10}}$

g) $\frac{3}{\sqrt{5} - 1}$

h) $\frac{2}{\sqrt{6} + \sqrt{3}}$

i) $\frac{\sqrt{3}}{\sqrt{3} + \sqrt{2}}$

j) $\frac{\sqrt{2} - 1}{\sqrt{2} + 1}$

k) $\frac{2\sqrt{7} + \sqrt{5}}{3\sqrt{7} - 2\sqrt{5}}$

5. a) $\sqrt[3]{16} + \sqrt[3]{54}$

b) $\sqrt[3]{24} + \sqrt[3]{81}$

c) $2(\sqrt[3]{32}) + 5(\sqrt[3]{108})$

d) $\sqrt[3]{54} + 5(\sqrt[3]{16})$

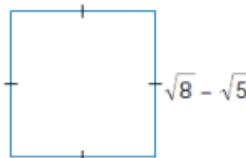
e) $\sqrt[3]{16} - \sqrt[3]{54}$

f) $\sqrt[3]{108} - \sqrt[3]{32}$

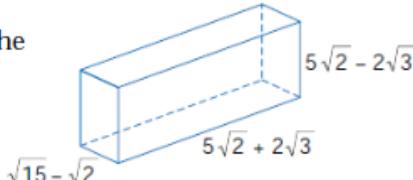
g) $2(\sqrt[3]{40}) - \sqrt[3]{5}$

h) $5(\sqrt[3]{48}) - 2(\sqrt[3]{162})$

13. **Measurement** Write and simplify an expression for the area of the square.



14. **Measurement** Express the volume of the rectangular prism in simplest radical form.



Answers

1. a) $5\sqrt{3}$

b) $5\sqrt{5}$

c) $\sqrt{2}$

d) $11\sqrt{3}$

e) $12\sqrt{3}$

f) $5\sqrt{6} + 2\sqrt{2}$

g) $5\sqrt{7} + 7\sqrt{3}$

h) $2\sqrt{5} + 4\sqrt{2}$

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

j) $2\sqrt{3} + 6\sqrt{5}$

k) $12\sqrt{3} - 2\sqrt{6}$

l) $\sqrt{6} + 4\sqrt{2}$

m) $5\sqrt{2}$

n) $5\sqrt{3}$

o) $19\sqrt{4}$

p) $13\sqrt{2}$

q) $23 + 4\sqrt{30}$

r) $16 + \sqrt{3}$

s) $26 + 14\sqrt{14}$

t) $28 + 6\sqrt{3}$

u) $13 - 4\sqrt{10}$

v) $13 - 4\sqrt{10}$

w) $13 - 4\sqrt{10}$

x) $4\sqrt{6}$

y) $38\sqrt{15} - 38\sqrt{2}$

z) $13 - 4\sqrt{10}$

a) $13 - 4\sqrt{10}$

b) $38\sqrt{15} - 38\sqrt{2}$

c) $52 + 7\sqrt{35}$