

Square Roots of Fractions

We have seen previously how $3^2 = 9$ indicates that $\sqrt{9} = 3$.

In the same way, $(\frac{2}{5})^2 = \frac{4}{25}$ indicates that $\sqrt{\frac{4}{25}} = \frac{2}{5}$.

However, $\frac{\sqrt{4}}{\sqrt{25}} = \frac{2}{5}$ also.

So, we observe that $\sqrt{\frac{a}{b}} = \frac{\sqrt{a}}{\sqrt{b}}$ for positive numbers a and b .

Example

Find	a $\sqrt{\frac{4}{9}}$	b $\sqrt{2\frac{1}{4}}$
a	$\sqrt{\frac{4}{9}}$ $= \frac{\sqrt{4}}{\sqrt{9}}$ $= \frac{2}{3}$	b $\sqrt{2\frac{1}{4}}$ $= \sqrt{\frac{9}{4}}$ $= \frac{\sqrt{9}}{\sqrt{4}}$ $= \frac{3}{2}$ $= 1\frac{1}{2}$

1 Copy and complete:

a Since $(\frac{1}{2})^2 = \frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$, $\sqrt{\frac{1}{4}} = \frac{\boxed{}}{\boxed{}}$

b Since $(\frac{2}{3})^2 = \frac{\boxed{}}{\boxed{}} = \frac{\boxed{}}{\boxed{}}$, $\sqrt{\frac{\boxed{}}{\boxed{}}} = \frac{\boxed{}}{\boxed{}}$

c Since $(\frac{3}{7})^2 = \frac{\boxed{}}{\boxed{}} = \frac{\boxed{}}{\boxed{}}$, $\sqrt{\frac{\boxed{}}{\boxed{}}} = \frac{\boxed{}}{\boxed{}}$

2 Find:

a $\sqrt{\frac{1}{9}}$

$\frac{\boxed{}}{\boxed{}}$

b $\sqrt{\frac{1}{16}}$

$\frac{\boxed{}}{\boxed{}}$

c $\sqrt{\frac{1}{121}}$

$\frac{\boxed{}}{\boxed{}}$

d $\sqrt{\frac{4}{25}}$

$\frac{\boxed{}}{\boxed{}}$

e $\sqrt{\frac{9}{16}}$

$\frac{\boxed{}}{\boxed{}}$

f $\sqrt{\frac{16}{49}}$

$\frac{\boxed{}}{\boxed{}}$

g $\sqrt{\frac{25}{9}}$

$\frac{\boxed{}}{\boxed{}}$

h $\sqrt{\frac{25}{4}}$

$\frac{\boxed{}}{\boxed{}}$

i $\sqrt{\frac{81}{100}}$

$\frac{\boxed{}}{\boxed{}}$

j $\sqrt{\frac{100}{49}}$

$\frac{\boxed{}}{\boxed{}}$

k $\sqrt{\frac{9}{121}}$

$\frac{\boxed{}}{\boxed{}}$

l $\sqrt{\frac{36}{169}}$

$\frac{\boxed{}}{\boxed{}}$

3 Find:

a $\sqrt{6\frac{1}{4}}$

$\frac{\boxed{}}{\boxed{}}$

b $\sqrt{1\frac{7}{9}}$

$\frac{\boxed{}}{\boxed{}}$

c $\sqrt{1\frac{9}{16}}$

$\frac{\boxed{}}{\boxed{}}$

d $\sqrt{5\frac{4}{9}}$

$\frac{\boxed{}}{\boxed{}}$

e $\sqrt{3\frac{1}{16}}$

$\frac{\boxed{}}{\boxed{}}$

f $\sqrt{11\frac{1}{9}}$

$\frac{\boxed{}}{\boxed{}}$

