P12

[1] $11\overline{)8.0}$ $\quad .\overline{72}$

77

30

22

8

$\therefore \quad \frac{8}{11} = 0.\overline{72}$

[2a] $9\overline{)2.0}$ $\quad .\overline{2}$

18

2

$\therefore \quad \frac{2}{9} = 0.\overline{2}$

[2b] $1.86\overline{36}$

280
28

$\begin{array}{r} 1 \\ 22 \\ \hline 6 \\ \hline 132 \end{array}$ $\quad$ $\begin{array}{r} 1 \\ 22 \\ \hline 7 \\ \hline 154 \end{array}$

[3a] $\frac{1}{9} = .\overline{1}$

$\frac{1}{99} = .\overline{01}$

$\frac{1}{999} = .\overline{001}$

P13

[4.1] $.\overline{5} = (.\overline{1})(5) = \frac{5}{9}$

[4.2] $0.\overline{79} = (.\overline{01})(79) = \frac{79}{99}$

[4.3] $0.\overline{123} = (.\overline{001})(123) = \frac{123}{999}$

P 13 Exercises

[1] $.49 \longrightarrow \pm .7$

$25 \longrightarrow \pm 5$

$256 \longrightarrow \pm 16$

$\frac{121}{4} \longrightarrow \pm \frac{11}{2}$

[2.1] $\sqrt{61} < \sqrt{70}$

[2.2] $18 > 16 \Rightarrow \sqrt{18} > \sqrt{16}$, $\therefore \quad -4 > -\sqrt{18}$

[2.3] $\frac{1}{49} > \frac{1}{50} \Rightarrow \sqrt{\frac{1}{50}} < \frac{1}{7}$

[3] $\sqrt{60\ cm^2} = 7.746\ cm$

P15

P14

[1] $\frac{\sqrt{3}}{\sqrt{5}} = \sqrt{\frac{3}{5}} \equiv \sqrt{3} = \sqrt{\frac{3}{\sqrt{5}}}\sqrt{5} = \sqrt{3}$ ✓

[2.1] $\sqrt{30}$ [2.2] $\sqrt{80}$ [2.3] $\sqrt{63}$ [2.4] $\sqrt{3}$

[2.5] 2 [2.6] 4

P16

[3.1] $3\sqrt{3}$ [3.2] $2\sqrt{7}$ [3.3] $3\sqrt{5}$ [3.4] $6\sqrt{2}$

[3.5] $3\sqrt{11}$ [3.6] $9\sqrt{3}$

[4.1] 6 [4.2] 255 [4.3] 42

P 17

[5.1] $\frac{\sqrt{3}}{7}$ [5.2] $\frac{\sqrt{2}}{100}$ [5.3] $5\sqrt{2}$

[6.1] $\sqrt{108} = 6\sqrt{3} = 6(1.732) = 10.392$

[6.2] $\frac{\sqrt{3}}{2} = \frac{1.732}{2} = .866$

[6.3] $\frac{\sqrt{96}}{\sqrt{8}} = \sqrt{32} = 4\sqrt{2} = 4(1.414) = 5.656$

P18

[7.1] $\sqrt{237\,000} = \sqrt{23.7 \cdot 10\,000} = 4.868\,(100) = 486.8$

[7.2] $\sqrt{.237} = \sqrt{\frac{23.7}{100}} = \frac{1}{10}(4.868) = .4868$

[8] $\sqrt{40} \neq 10\sqrt{4}$ $\because$ $10\sqrt{4} = \sqrt{400}$

$\sqrt{400} = 10\sqrt{4}$ $\because$ 10 times greater than $\sqrt{4}$

[9] n has square root $\sqrt{n}$.

$10\sqrt{n} = N \Rightarrow 100n = N^2 \Rightarrow \frac{N^2}{n} = \frac{100}{1}$

$\therefore$ the number becomes 100 times greater.

[10]

$\sqrt{300} = 10\sqrt{3} = 10(1.732) = 17.32$

$\sqrt{3000} = 10\sqrt{30} = 10(5.477) = 54.77$

$\sqrt{30000} = 100\sqrt{3} = 100(1.732) = 173.2$

$\sqrt{.3} = \frac{1}{10}\sqrt{30} = \frac{1}{10}(5.477) = .5477$

$\sqrt{.03} = \frac{1}{10}\sqrt{3} = .1732$

AND...

$\sqrt{.003} = \frac{1}{100}\sqrt{30}$

$= .05477$

P19

[11] $\frac{1}{\sqrt{2}} = \frac{\sqrt{2}}{2} = \frac{1.414}{2} = .707$

[12.1] $\frac{2\sqrt{5}}{5}$ [12.2] $\frac{\sqrt{3}}{2}$ [12.3] $\frac{\sqrt{14}}{21}$

[12.4] $\frac{\sqrt{6}}{3}$

P20

[1.1] $8\sqrt{6}$ [1.2] $-5\sqrt{7}$ [1.3] $3\sqrt{5}$ [1.4] $3\sqrt{10}$

[1.5] $-3\sqrt{2} + 3\sqrt{3}$

[2] $\sqrt{4} + \sqrt{5} = 2 + \sqrt{5}$

$\sqrt{4+5} = \sqrt{9} = 3 = 2 + 1$

Since $1 \neq \sqrt{5}$, $\sqrt{4+5} \neq \sqrt{4} + \sqrt{5}$

[3.1] $4\sqrt{5}$ [3.2] $5\sqrt{3}$ [3.3] $2\sqrt{7}$

[3.4] $3\sqrt{2}$ [3.5]