Exercise 4(A)

1 (i) $7^3 = 7 \times 7 \times 7 = 343$

(ii) $11^3 = 11 \times 11 \times 11 = 1331$

(iii) $16^3 = 16 \times 16 \times 16 = 4096$

(iv) $23^3 = 23 \times 23 \times 23 = 12167$

(v) $31^3 = 31 \times 31 \times 31 = 29791$

(vi) $42^3 = 42 \times 42 \times 42 = 74088$

(vii) $54^3 = 54 \times 54 \times 54 = 157464$

2 (i) $\sqrt{243} = (3 \times 3) \times (3 \times 3) \times 3$

Since 3 is not paired.

∴ 243 is not a perfect cube.

(ii) $588 = 2 \times 2 \times 3 \times 7 \times 7$

∴ 588 is not a perfect cube.

(iii) $1331 = (11 \times 11 \times 11) = 11^3$

∴ 1331 is a perfect cube

(iv) $24000 = (2 \times 2 \times 2) \times (2 \times 2 \times 2) \times 2 \times (5 \times 5 \times 5)$

Since 2 is not paired

∴ 24000 is not a perfect square.

iv) $24000 = (2\times2\times2)\times(2\times2\times2)\times2\times(5\times5\times5)$

Since 2 is not paired

$\therefore$ 24000 is not a perfect square.

v) $1728 = (2\times2\times2)\times(2\times2\times2)\times(3\times3\times3)$

$\therefore$ 1728 is a perfect square.

vi) $1938 = 2\times3\times17\times3\times3$

$\therefore$ It is not a perfect square.

3) i) $2.1 = (2.1)^3 = \left(\frac{21}{10}\right)^3 = \frac{21\times21\times21}{10\times10\times10} = \frac{9261}{1000} = 9.261$

ii) $0.4 = (0.4)^3 = \left(\frac{4}{10}\right)^3 = \frac{4\times4\times4}{10\times10\times10} = \frac{64}{1000} = 0.064$

iii) $1.6 = (1.6)^3 = \left(\frac{16}{10}\right)^3 = \frac{16\times16\times16}{10\times10\times10} = \frac{4096}{1000} = 4.096$

iv) $2.5 = (2.5)^3 = \left(\frac{25}{10}\right)^3 = \frac{25\times25\times25}{10\times10\times10} = \frac{15625}{1000} = 15.625$

vi) $0.12 = (0.12)^3 = \left(\frac{12}{100}\right)^3 = \frac{12 \times 12 \times 12}{100 \times 100 \times 100} = \frac{1728}{1000000}$

$= 0.001728$

vii) $0.02 = (0.02)^3 = \left(\frac{2}{100}\right)^3 = \frac{2 \times 2 \times 2}{100 \times 100 \times 100} = \frac{8}{1000000}$

0.000008

viii) $0.8 = (0.8)^3 = \left(\frac{8}{10}\right)^3 = \frac{8 \times 8 \times 8}{10 \times 10 \times 10} = \frac{512}{1000} = 0.512$

4 i) $\frac{3}{7} = \left(\frac{3}{7}\right)^3 = \frac{3 \times 3 \times 3}{7 \times 7 \times 7} = \frac{27}{343}$

ii) $\frac{8}{9} = \left(\frac{8}{9}\right)^3 = \frac{8 \times 8 \times 8}{9 \times 9 \times 9} = \frac{512}{729}$

iii) $\frac{10}{13} = \left(\frac{10}{13}\right)^3 = \frac{10 \times 10 \times 10}{13 \times 13 \times 13} = \frac{1000}{2197}$

iv) $2 = (2)^3 = (2)^3 = 2 \times 2 \times 2 = 729 = 343$

iii) $\frac{8}{9} = \left(\frac{8}{9}\right)^3 = \frac{8\times8\times8}{9\times9\times9} = \frac{512}{729}$

iii) $\frac{10}{13} = \left(\frac{10}{13}\right)^3 = \frac{10\times10\times10}{13\times13\times13} = \frac{1000}{2197}$

iv) $1\frac{2}{7} = \left(1\frac{2}{7}\right)^3 = \left(\frac{9}{7}\right)^3 = \frac{9\times9\times9}{7\times7\times7} = \frac{729}{343} = 2\frac{43}{343}$

v) $2\frac{1}{2} = \left(2\frac{1}{2}\right)^3 = \left(\frac{5}{2}\right)^3 = \frac{5\times5\times5}{2\times2\times2} = \frac{125}{8} = 15\frac{5}{8}$

5) i) $-3 = (-3)^3 = -(3\times3\times3) = -27$

ii) $-7 = (-7)^3 = -(7\times7\times7) = -343$

iii) $-12 = (-12)^3 = -(12\times12\times12) = -1728$

iv) $-18 = (-18)^3 = -(18\times18\times18) = -5832$

v) $-25 = (-25)^3 = -(25\times25\times25) = -15625$

vi) $-30 = (-30)^3 = -(30\times30\times30) = -27000$

vii) $-50 = (-50)^3 = -(50\times50\times50) = -125000$