

Solutions

Award method and answer marks as indicated; accept equivalent correct methods.

2.1

- Zero index gives **1**; $2^{-3} = 1/2^3 = \mathbf{1/8}$.

2.2

- Add indices: $Q = 3^{2+3} = 3^5 = \mathbf{243}$.

2.3

- Subtract indices: $Q = 2^{3-5} = 2^{-2} = \mathbf{1/4}$.

2.4

- Multiply indices: $Q = 5^{2 \times 2} = 5^4 = \mathbf{625}$.

3.1

(a)

- $Q = 10^{4+(-2)} = \mathbf{10^2}$.

(b)

- $R = 10^{2-5} = \mathbf{10^{-3}}$.

(c)

- $S = 100 + 0.001 = \mathbf{100.001}$.

3.2

(a)

- For A, use $a^m a^n = a^{m+n}$: $A = 2^{5-2} = \mathbf{8}$.
- For B, $B = 1 + 1/4 = \mathbf{5/4}$.

(b)

- The rule for multiplying powers does not apply to the plus sign between A and B.
- Use the evaluated values: $S = A + B = 8 + 5/4 = \mathbf{37/4}$.