Solutions

Accept equivalent correct methods and supported interpretations. The marks check reasoning; they are not an official grade.

2.1 A – 1-0.8=0.2. B is the remaining fraction, not the decrease; C confuses initial quantity with a percentage rate.

Correct response linked to the given case.

2.2 A – x+3=x-(-3), so h=-3 and k=-7. B reverses the horizontal shift; C reverses the vertical coordinate.

Correct response linked to the given case.

2.3 121 – $100 \cdot 1.1^2$=121.

Correct response linked to the given case.

2.4 False – Constant differences indicate a linear relationship; equal ratios support exponential growth.

Correct response linked to the given case.

3.1 Ground means $H = 0$, so $(t-2)^2 = 4$ and $t = 0, 4$. Domain is $0 \leq t \leq 4\,\text{s}$. The negative square coefficient gives maximum $H(2) = 12\,\text{m}$. For $H \geq 9\,\text{m}$, $(t-2)^2 \leq 1$, so $1 \leq t \leq 3\,\text{s}$.

Sound conclusion or proposed method. Relevant supporting steps or textual evidence
. Accurate conditions, checks or qualification.

3.2 $N(t) = 120(1.5)^{t/2}$ cells. $N(4) = 120(1.5)^2 = 270$ cells. The growth is 50% per two hours, not 150%; the four-hour factor is 2.25. The hourly factor would be $\sqrt{1.5}$.

Sound conclusion or proposed method. Relevant supporting steps or textual evidence. Accurate conditions, checks or qualification.

3.3 Substitute the input before interpreting signs. $g(x) = -2(x-2)^2+5$ has vertex $(2, 5)$ and maximum 5. The old vertex at -1 moved three units right to 2.

Sound conclusion or proposed method. Relevant supporting steps or textual evidence. Accurate conditions, checks or qualification.