Solutions

Marking: **K** knowledge, **App** use of the case or data, **An** analysis (a chain of reasons: cause, then effect), **Ev** evaluation (a judgement with a reason). In calculations, **M1** is for the method and **A1** for the answer; **B1** is an independent mark.

Each answer shows the steps, then the **result**.

2.1

$0.25(25) + 0.5(10) + 0.25(-5)$

$= \mathbf{10}\%$

2.2

$\sigma^2 = 0.25(0.15)^2 + 0.5(0)^2 + 0.25(-0.15)^2$

$= 0.01125$

$\sigma = \mathbf{10.6}\%$

2.3

systematic: (b), (c)

specific: (a), (d)

2.4

$4 + 1.2(10 - 4)$

$= \mathbf{11.2}\%$

3.1

(a) $\mathbf{14}\%$

(b) $0.25(0.04) + 0.25(0.0064) + 2(0.5)(0.5)(0.3)(0.2)(0.08) = 0.014$; $\sigma_p = \mathbf{11.8}\%$

(c) the funds do not move together, so some ups and downs cancel

(d) **14**%: the funds move exactly together, so nothing cancels and there is no benefit

3.2

(a) P $\dfrac{13.9}{13} = \mathbf{1.07}$; Q $\dfrac{6}{11} = \mathbf{0.55}$

(b) P 9 points; Q 7 points

(c) the founder cannot diversify, so she bears all of P's risk, including the specific part; Q gives a lower return but half the risk per unit of return

3.3

7–8: with $\rho \approx 0.9$ a third bakery barely lowers risk: a bad year for bread hits all three (An); the bond fund's low correlation cuts the portfolio's risk much more (App); but the bakery may earn a higher return, and the founder knows the trade, so its expected NPV may be the deciding factor (An); spreading across locations does reduce specific risks such as a fire or a lost lease (K); recommendation with a condition, e.g. judge the third site on its NPV, not as diversification; if the aim is lower risk, hold some cash in bonds (Ev). **4–6**: sound analysis with limited use of the data or a weak judgement. **1–3**: relevant points, mostly descriptive.

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