1. **(T2.4, R, CA)** Given the functions $f(x) = x^3 - 5x^2 + 3x + 2$ and $g(x) = \frac{1}{2}x - 4$ *(Oxford, 1.4 p.14)*
    a. Determine the points of intersection between $f(x)$ and $g(x)$.
    b. Let $h(x) = f \circ g(x)$. Solve $h(x) = 0$

2. **(T3.2, E, CA)** Two ships leave dock at the same time. The HMS Ghosh sails due north for 40 km before dropping anchor. The USS Shankar sails on a bearing of 050° for 75 km before dropping anchor. Find the distance between the ships at anchor. Round to the nearest kilometer. *(Oxford, 11.5 p.386)*

3. **(T3.4, N, CA)** An angle θ is subtended by an arc of length 12.5mm at the center of a circle. Find the value of θ if the circle has a radius of 2.5 mm. *(Oxford, 11.7 p.391)*

4. **(T1.2, E, CA)** An arithmetic sequence is defined as a set of numbers each separated by a common difference. For each of the following arithmetic sequences, *(Oxford, 6.2 p.164)*
    a. Find the 15th term
    b. Find an expression for the nth term

          i. 3, 6, 9, ...   ii. 36, 41, 46, ...   iii. 100, 87, 74, ...

5. **(T1.3, N, CA)** A geometric sequence is defined as a set of numbers each separated by a common ratio. For each of the following geometric sequences, *(Oxford, 6.3 p.167)*
    a. Find the common ratio
    b. Find the 8th term

          i. 16, 8, 4, ...   ii. 1, 10, 100, ...   iii. -4, 12, -36, ...

6. **(T4.3, E, CA)** A survey was conducted of the number of bedrooms in 200 randomly chosen houses. The results are shown in the table. *(Oxford, 8.4 p.267)*

Number of bedrooms	1	2	3	4	5	6
Number of houses	40	58	50	30	14	8

    a. State whether the data is discrete or continuous.
    b. Write down the mean number of bedrooms per house.
    c. Write down the standard deviation of the number of bedrooms per house
    d. Find out how many houses have a number of bedrooms greater than one standard deviation above the mean.

7. **(T4.8, E, CA)** Given the expression $(2x + 3)^6$ *(Oxford, 6.9 p.184)*
    a. What is the fourth term of the binomial expansion of $(2x + 3)^6$
    b. What is the coefficient of the x^4 term of the binomial expansion of $(2x + 3)^6$