BECA / IB Math 01-Linear functions Name:
21 January 2022

Exam: Linear functions and arithmetic sequences

Simple interest: $I = Crt$

1. The rate on a credit card is 15% per annum. Find the interest due on a \$900 purchase after one month.

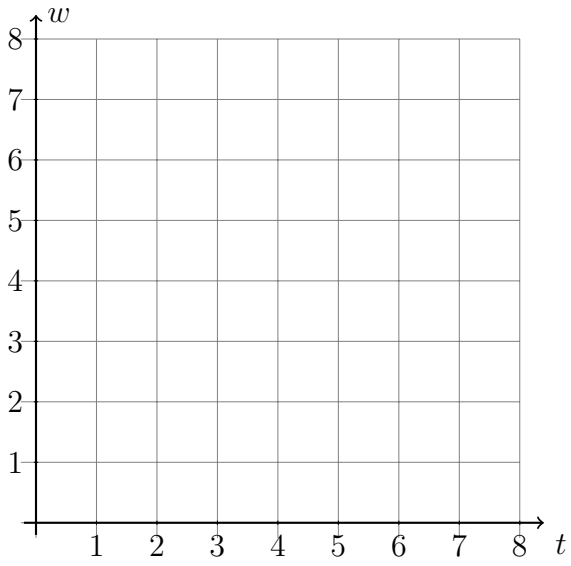
2. Elizabeth takes out a 6 month loan to purchase and repair a used car for resale. The principal amount is 11,000 British pounds and interest rate is 6.45% per annum. Find the interest Elizabeth pays.

3. The weight of a turkey w in kilograms over a period of time t measured in months is shown in the table.

   (a) Plot the data as points on the grid.

   (b) Draw a line of best fit on the graph. Use a straight edge for full credit.

t	w
1	4
3	5
4	5
6	6
7	7



Arithmetic sequences

Terms: $u_n = u_1 + d(n-1)$

Sum: $S_n = \frac{n}{2}(u_1 + u_n)$

4. Given the arithmetic sequence $3, 7, 11, 15, 19, \ldots$ [6]

   (a) Find the common difference d.

   (b) Write down the next term, u_6.

   (c) Find the twelfth term.

   (d) Find the sum of the first twelve terms.

5. In an arithmetic sequence the first term is 7 and the fourth term is 25. [6]

   (a) Find the common difference d.

   (b) Find the tenth term, u_{10}.

   (c) Find the sum of the first ten terms.

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6. The second term of an arithmetic sequence is 19 and the sixth term is 7. [6]

   (a) Find the common difference d.

   (b) Find the first term, u_1.

   (c) Find the sum of the first six terms.

7. Given $f(x) = \frac{3}{5}x - 3$. [3]

   (a) Find $f(10)$.

   (b) Find$f^{-1}(0)$.

8. A linear function is defined over the domain $0 \leq x \leq 700$. Its intercepts are $(700, 0)$ and $(0, 80)$. Draw the function on the axes. Label and number the x- and y-axes with an appropriate scale. [3]