1 Two internet plans are offered. Plan A costs $B = 200g + 30000$ shillings a month and Plan B costs $B = 500g$ shillings a month, where g is the number of gigabytes used.

(a) Find the cost of each plan for 50 gigabytes (2)

(b) Find the cost of each plan for 200 gigabytes (2)

(c) Which plan is cheaper depends on how much is used. Find the number of gigabytes at which the two cost the same (2)

(d) Write down advice for somebody who uses about 30 gigabytes a month (2)

(8 marks)

2 A pendulum makes $n = 0.6t$ swings in t seconds.

(a) How many swings in 30 seconds? (1)

(b) How many swings in 55 seconds? (1)

(c) How long does the pendulum take to make 9 swings? (1)

(d) What does the number 0.6 tell you about the pendulum? (2)

(5 marks)

3 A rectangle has an area given by $A = lw$ and a perimeter given by $P = 2(l + w)$.

(a) Find A and P for a rectangle with $l = 6$ and $w = 3$ (2)

(b) Find A and P for a rectangle with $l = 6$ and $w = 4$ (2)

(c) In (a) the two answers were the same number. Does that mean area and perimeter are the same thing? Use (b) to explain. (2)

(6 marks)

4 A market trader buys mangoes at 800 shillings each and sells them at $1{,}200$ shillings each. Her profit for n mangoes is $P = 400n$.

(a) Find her profit on 25 mangoes (1)

(b) Explain where the 400 in the formula comes from (2)

(c) She wants a profit of $30{,}000$ shillings. How many mangoes must she sell? (1)

(d) Her stall costs $5{,}000$ shillings a day to rent. Write a new formula for her profit. (2)

(6 marks)

5 A pupil is using the formula $C = 1500n$ for the cost of n books. She is told the cost was $12{,}000$ shillings and writes $C = 1500 \times 12000$.

(a) Explain what the pupil has done wrong (2)

(b) Find the correct number of books (1)

(c) Check your answer in the formula (2)

(5 marks)

6 A carpenter is writing a formula for the cost of making shelves. He charges $12{,}000$ shillings for each shelf and $30{,}000$ for coming to the house. Two formulas are suggested for the cost C of s shelves.

$C = 12000s + 30000$ $\qquad$ $C = 42000s$

(a) Work out both formulas for $s = 1$ (2)

(b) Work out both formulas for $s = 3$ (2)

(c) Which formula is correct, and explain why the other one is wrong (2)

(6 marks)