



Show all working – <u>NO</u> calculator allowed.



- **1.** Determine the equation of these straight lines:
  - **a**) gradient of -3 passing through the point (-2, 5)
  - **b**) gradient of 4 passing through the point (2, -4)
  - c) gradient  $\frac{1}{2}$  passes through the point (1, 5)
  - **d**) passing through the points (-4, 5) and (6, 0)
  - e) parallel to the line y + 3x = 5 passing through the point (6, -2).
- 2. Solve these inequations:
  - a) 4p 12 (b) <math>7m + 5 < 2m + 30(c) 5k 3 < 2k + 9d) 3x 15 < 6x + 9(e) w + 11 < 3w + 19(f) 4 5d < 8 2d
- 3. Solve the following system of equations algebraically:

a)	3a + 5b = 39 $a - b = -3$	( <b>b</b> )	7x + 2y = 32 $2x - y = 6$	(c)	5c - 2d = 36 $c + d = 17$
d)	5x + 3y = 19 $4x + 2y = 14$	(e)	6x - 4y = 26 $5x - 3y = 28$	( <b>f</b> )	3w - 2z = -6 $2w + 3z = -17$

- **4. a)** For each of the following calculate the cost of an Adult and a Child ticket:
  - The McArthur family visited Edinburgh Castle and paid £29.75 for 2 adult and 3 child tickets. The Mackie family also visited Edinburgh Castle and paid £34 for 3 adult and 2 child tickets.
  - ii) The Shiels family visited the Highland Wildlife Park in Kingussie. They paid £30.60 for 2 adult tickets and 5 child tickets. The Speir family also visited the Park and paid £13.60 for 1 adult ticket and 2 child tickets.

- b) A group of friends met in a coffee bar. They paid £14.50 for 4 cappuccinos and 2 lattes. At the next table another group paid £14.70 for 3 cappuccinos and 3 lattes. Find the total cost of orderring 2 cappuccinos and a latte.
- 5. Change the subject of these formulae to *m*.

a) 
$$S = \frac{2m}{3} + 6$$
 (b)  $A = \frac{4m}{5} - 2$  (c)  $k = 7 + \frac{5m}{4}$   
d)  $P = \sqrt{\frac{5m}{3}}$  (e)  $R = \frac{5m - 6}{4}$  (f)  $Q = \frac{3m^2}{7} + 4$ 

6. a) A primary teacher took a note of the results in a spelling test and the number of hours of TV that some of her pupils watched in a week.

She then drew the following graph.

- i) Determine the gradient and the *y*-intercept of the line of best fit.
- ii) Using these values for the gradient and the *y*-intercept, write down the equation of the line.
- iii) Estimate the mark in the spelling test if the pupil spent 25 hours watching television.
- **b**) The diagram below shows the connection between the thickness of insulation in a roof and the heat lost through the roof.

The line of best fit has been drawn.

- i) Determine the gradient and the *y*-intercept of the line of best fit.
- ii) Using these values for the gradient and the *y*-intercept, write down the equation of the line.
- **iii)** Estimate the thickness of insulation for a heat loss of 2.5 kilowatts



5

0

1

2

3

Heat loss from roof in kilowatts (H)

4

- c) A selection of the number of games won and the total points gained by teams in the Scottish Premier League were plotted on this scattergraph and the line of best fit was drawn.
  - i) Determine the gradient and the *y*-intercept of the line of best fit.
  - ii) Using these values for the gradient and the *y*-intercept, write down the equation of the line.
  - iii) Use your equation to estimate the number of points gained by a team who win 27 games.



## **End of Non-Calculator Section**



## Show all working – Calculator allowed.



7. a) A set of Maths test marks for a group of students are shown below.

35 27 43 18 36 39

- i) Find the mean and standard deviation.
- ii) Another group had a mean of 37 and a standard deviation of 8.6.Compare the test marks of the two classes.
- **b)** A quality control examiner on a production line measures the weight, in grams, of cakes coming off the line. In a sample of eight cakes the weights were

150 147 148 153 149 143 145 149

- i) Find the mean and standard deviation of the above weights.
- **ii)** Using these statistics, compare the performances of the two production lines and make two valid comparisons.
- c) The cost of a set menu meal in 7 different café style restaurants were as follows:

£14 £17 £13 £14 £11 £19 £17

- **ii**) Calculate the mean and standard deviation of these costs.
- ii) In 7 up market restaurants the mean cost of a meal was £22 with a standard deviation of  $2 \cdot 2$ .

Using these statistics, compare the cost of a meal in the two different types of restaurants and make two valid comparisons.

**End of Calculator Section**