Class Test 3

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Answer all questions. Show your working clearly.

1. In a Science test, the students in class P scored an average of 67.5 marks. The students in class Q scored an average of 69.2 marks. There are a total of 68 students in both classes. The average score of both classes is 68.4. Find the number of students in class P and the number of students in class Q. [2]

2. (a) (i) Given the equation $2x + 5y = 1$, copy and complete the following table.

x	–4	–2	0	2
y				

[2]

(ii) Draw the graph of $2x + 5y = 1$ for $-4 \leqslant x \leqslant 2$. [1]

(iii) Draw the line $y = 1.2$. Find the x-coordinate of the point where both lines intersect. [1]

(b) The equation of another line is $y = \frac{2}{5}x + 1$. Draw this line on the same axes. [1]

(c) Using the graph, solve the following simultaneous equations.

$2x + 5y = 1$

$5y - 2x = 5$ [1]

(d) Find the area of the region bounded by all 3 lines. [1]

3. The table shows the values of x and y, given the equation of the line is $7x + 2y = 5$.

x	–2	n	3
y	$9\frac{1}{2}$	$-4\frac{1}{2}$	–8

(a) Find the value of n. [1]

(b) (i) On a piece of graph paper, draw the graph of $7x + 2y = 5$ for $-2 \leqslant x \leqslant 3$. [1]

(ii) Find the value of y when $x = \frac{2}{5}$. [1]

(c) On the same axes, draw the line $y = 6$. Find the coordinates of the point where both lines intersect. [1]

4. Using the substitution method, solve the following simultaneous equations.

(a) $-7x - \frac{5}{3}y = -23$

$4x + 3y = 7$ [2]

(b) $3x - 8y = \frac{1}{2}$

$\frac{7}{5}x + \frac{5}{2}y = -6$ [2]

5. The distance between points A and B is m km, and the distance between points B and C is n km. A car travels from point A to point B at the speed of 75 km/h then increases its speed by 7 km/h as it travels from point B to point C. The distance between points A and B is 21.5 km greater than the distance between points B and C.

(a) Given that the total time taken for the journey is 3 h 57 min, find an expression in terms of m and n, in its simplest terms. [1]

(b) Find the total distance the car travels from point A to point C. [2]

(c) Find the average speed of the car, leaving your answer correct to 1 decimal place. [1]

6. Using the elimination method, solve the following simultaneous equations.

(a) $\frac{2x+1}{3} = -\frac{6-y}{5}$

$\frac{5x+3}{15} = \frac{y-7}{14}$ [2]

(b) $\frac{x}{3} + \frac{y}{2} = -\frac{5}{2}$

$\frac{x}{2} + \frac{y}{5} = \frac{1}{10}$ [2]

7. By substituting $p = \frac{1}{x}$ and $q = \frac{1}{y}$, solve the following simultaneous equations.

$\frac{8}{5x} - \frac{6}{y} = 1$

$\frac{3}{x} + \frac{5}{y} = 10$ [3]

8. In a farm, there are a total of 63 goats and chickens. There are 162 animal legs altogether. How many goats and how many chickens are there in the farm? [2]