Class Test 4

30

Answer all questions. Show your working clearly.

1. During a holiday trip, April bought souvenirs for her family and friends. One mug cost \$5.60 and one T-shirt cost \$15.40. She spent \$266 on the souvenirs and she bought 5 more T-shirts than mugs.
   (a) How many souvenirs did she buy in total? [2]
   (b) If she bought only mugs as souvenirs for her family and friends, how much money would she save? [1]

2. Using the substitution method, solve the following simultaneous equations.
   (a) $14x - 3y = 7$
   $5x + 2y = 17\frac{6}{7}$ [2]
   (b) $-\frac{x+3}{3} = \frac{3y-2}{4}$
   $\frac{x+6}{5} = \frac{y-2}{2}$ [2]

3. By substituting $p = \frac{3}{x}$ and $q = \frac{1}{y}$, solve the following simultaneous equations.
   $-\frac{12}{x} - \frac{1}{2y} = 2$
   $\frac{4}{x} - \frac{2}{y} = -5$ [3]

4. (a) (i) Given the equation of a line is $y - x = -\frac{1}{2}$, copy and complete the following table.

x	-1	2	5
y			

   [$1\frac{1}{2}$]
   (ii) Draw the graph of $y - x = -\frac{1}{2}$ for $-1 \leqslant x \leqslant 5$. [1]
   (b) (i) On the same axes, draw the graph of $\frac{x}{5} + y = \frac{5}{2}$. [$1\frac{1}{2}$]
   (ii) Given that the point $(2n, 1.9)$ lies on this line, find the value of n. [1]
   (c) Using the graph, solve the following simultaneous equations.
   $2y - 2x = -1$
   $x + 5y = 12\frac{1}{2}$
   [1]

5. When 1 is subtracted from the numerator of a fraction and 2 is added to its denominator, the value of the resulting fraction is $\frac{2}{3}$. When 5 is added to the numerator, and 9 is subtracted from the denominator, the value of the resulting fraction is $1\frac{1}{5}$. Find the fraction. [3]

6. Raj and Ben started cycling from the same starting point at 9.20 a.m., going in opposite directions in a straight line. Raj cycled at the speed of 17.5 km/h. Ben cycled at the speed of 12 km/h and reached his destination 34 minutes later than Raj. Raj's destination was 2 km further from their starting point than Ben's destination. Find the distance between their destinations. [3]

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

(a) $-8x - 3y = 6$

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

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

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

8. The equation of a line is given by $ay - 6x = -7$.

(a) The line passes through $\left(\frac{6}{5}, \frac{1}{20}\right)$. Find the value of a. [1]

(b) On a piece of graph paper, draw the graph of $ay - 6x = -7$ for $-3 \leqslant x \leqslant 4$. [1]

(c) Find the value of y when $x = -2$, [1]

(d) On the same axes, draw the line $y = 2$. Hence, find the coordinates of the point where both lines intersect. [1]