Equations and simultaneous equations from q 17

Q1

1 a Solve $3y + 2 = 17$ b Solve $\dfrac{x}{3} = 5$

Q2

2 Solve

a $2x - 9 = 4x + 6$ b $5(x - 2) = 20$ c $21 = 3(2x + 11)$

Q3

3 a Solve $7p + 2 = 5p + 8$ b Solve $7r + 2 = 5(r - 4)$

Q4

4 a Solve $7x + 18 = 74$ b Solve $4(2y - 5) = 32$ c Solve $5p + 7 = 3(4 - p)$

Q5

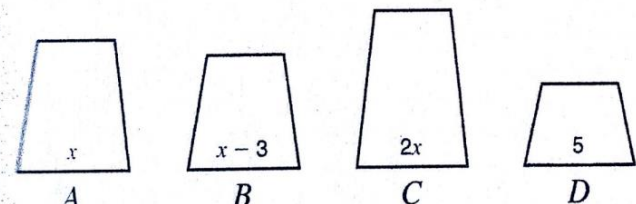5 a Solve $4(2x + 1) = 2(3 - x)$ b Factorise fully $2p^2 - 4pq$ c Factorise $x^2 + 7x + 6$

Q6

6 Solve $5(x - 2) = 8 - 7x$

Q7

Fred is x years old.
His sister, Mary, is 4 years older than Fred.

  i Write down an expression, in terms of x, for Mary's age.

Sarfraz is twice as old as Fred.

  ii Write down an expression, in terms of x, for the total of Fred's age, Mary's age a
     Sarfraz's age.

The total of Fred's age, Mary's age and Sarfraz's age is 64 years.

  Form an equation and solve it to find Fred's age.

Q8

These four blocks A, B, C and D have a total mass of 62 grams.
The mass, in grams, of each block is shown on the diagram.

Diagram **NOT**
accurately drawn

  | x | $x-3$ | $2x$ | 5 |
  | A | B | C | D |

  a Express this infomation as an equation in terms of x.
 **b** Solve your equation and write down the masses of blocks A, B and C.　　　(1385 November 2001)

Q9

$ABCD$ is a quadrilateral.
Work out the size of the largest angle in the quadrilateral.
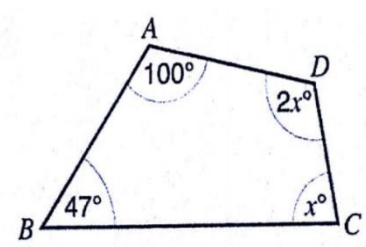
Q10

The lengths, in cm, of the sides of the triangle are $3(x - 3)$, $4x - 1$ and $2x + 5$

a Write down, in terms of x, an expression for the perimeter of the triangle.

The perimeter of the triangle is 49 cm.

b Work out the value of x.
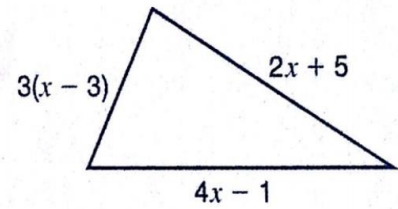
(1388 June 2004)

Q11

11 a Solve $6(2x + 3) = 2(4x + 7)$ **b** Solve $\dfrac{x}{4} + 2 = 7$ **c** Solve $\dfrac{3x}{5} = x - 3$

Q12

12 Solve $2x + 1 = \dfrac{5x}{3}$

Q13

13 a Solve $20y - 16 = 18y - 9$ **b** Solve $\dfrac{40 - x}{3} = 4 + x$

Q14

14 Solve $7(x + 2) = \dfrac{5x + 1}{2}$

15 Solve $5(x + 8) = \dfrac{7x - 4}{2}$

16 Solve $\dfrac{x}{3} - 5 = 3(x - 2)$
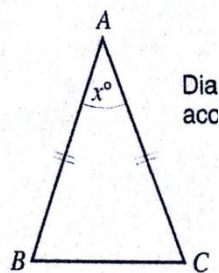
17 ABC is an isosceles triangle.

$AB = AC$

Angle $A = x°$

a Find an expression, in terms of x, for the size of angle B.

b Solve the simultaneous equations

$$3p + q = 11$$
$$p + q = 3$$

Dia
acc

18 Solve the simultaneous equations

$$2x + y = 4$$
$$5x - y = 17$$

19 Solve $\quad x + 2y = 4$

$$3x - 4y = 7$$

20 Solve the simultaneous equations
$$6x - 2y = 33$$
$$4x + 3y = 9$$

21 Solve the simultaneous equations
$$3x - 4y = 11$$
$$5x + 6y = 12$$

22 Solve the simultaneous equations
$$5p + 4q = -4$$
$$2p + 3q = 0.5$$

23 A company makes compact discs (CDs).
The total cost, P pounds, of making n compact discs is given by the formula

$$P = a + bn$$

where a and b are constants.
The cost of making 1000 compact discs is £58 000
The cost of making 2000 compact discs is £64 000

a Calculate the values of a and b.

The company sells the compact discs at £10 each.
The company does not want to make a loss.

b Work out the minimum number of compact discs the company must sell.