1 $5c + d = c + 4d$

(a) Find the ratio $c : d$

$5c + d = c + 4d$

$4c = 3d$ (1) — Put like terms on one side

$\frac{c}{d} = \frac{3}{4}$ (1)

↘ can also be written as $c : d$ and $3 : 4$

$3 : 4$

(2)

$6x^2 = 7xy + 20y^2$ where $x > 0$ and $y > 0$

(b) Find the ratio $x : y$

$6x^2 - 7xy - 20y^2 = 0$ (1)

Let $x = 5$ (you can substitute x with any value > 0)

$6(5)^2 - 7(5)y - 20y^2 = 0$

$20y^2 + 35y - 150 = 0$ (1)

$y = 2$

$x = y$

$5 = 2$

$5 : 2$ (1)

(3)

(Total for Question 1 is 5 marks)

2 (b) Make p the subject of the formula $d = 3p + 4$

$d = 3p + 4$

$-4 \quad \downarrow \quad -4$

$d - 4 = 3p$ (1)

$\div 3 \quad \downarrow \quad \div 3$

$\frac{d-4}{3} = p$

(1)

$p = \frac{d-4}{3}$

.....

(2)

(Total for Question 2 is 2 marks)

3 Make a the subject of the formula $p = 3a - 9$

$p = 3a - 9$

$+9 \downarrow +9$

$p + 9 = 3a$ (1)

$\div 3 \downarrow \div 3$

$\frac{p+9}{3} = a$

$a = \frac{p+9}{3}$ (1)

(Total for Question 3 is 2 marks)

4 Make x the subject of the formula $y = \dfrac{4(2x - 7)}{5x + 3}$

multiply both sides by the denominator

$y(5x+3) = 4(2x-7)$ ✓(1)

expand : $5xy + 3y = 8x - 28$

$-8x \quad -8x$

$5xy - 8x + 3y = -28$

$-3y \quad -3y$

$5xy - 8x = -28 - 3y$ ✓(1)

get x's on one side

factor out the x

$x(5y - 8) = -28 - 3y$ ✓(1)

divide by $5y - 8$

$x = \dfrac{-28 - 3y}{5y - 8}$ ✓(1)

$x = \dfrac{-28 - 3y}{5y - 8}$

(Total for Question 4 is 4 marks)