1 Solve the simultaneous equations

$7x + 2y = 36$ — (1)

$3x + 2y = 16$ — (2)

[3 marks]

(1) − (2) : $7x - 3x + 2y - 2y = 36 - 16$ (1)

$4x = 20$ (1)

$x = 5$

$7(5) + 2y = 36$

$2y = 36 - 35$

$y = \frac{1}{2}$ (1)

$x =$ 5 $y =$ 0.5

2 (a) $f(x) = cx + d$

$f(4) = 7$

$f(10) = 22$

Work out the values of c and d.

[3 marks]

$f(4) = 7 = 4c + d \quad -①$ ①

$f(10) = 22 = 10c + d \quad -②$

② − ① :

$22 - 7 = 10c - 4c + d - d$ ①

$15 = 6c$

$c = \frac{15}{6} = 2.5$

$7 = 4(2.5) + d$

$d = 7 - 10$

$= -3$

①

$c =$ 2.5 $d =$ -3

3 $\frac{a}{b} = 3c$

$\frac{b}{c} = 2$

Work out the value of a when $c = 8$

[3 marks]

$b = 2c$ (1)

$\frac{a}{2c} = 3c$

$a = 6c^2$ (1)

$= 6(8)^2 = 6(64) = 384$ (1)

Answer 384

4 Here are two simultaneous equations.

$y = x^2 + 7x - c$

and

$y = 3x + d$

There is a solution when $x = 5$

Work out the value of $c + d$

[3 marks]

$x^2 + 7x - c = 3x + d$ (1)

$x^2 + 7x - 3x = c + d$ (1)

$x^2 + 4x = c + d$

$(5)^2 + 4(5) = c + d$

$25 + 20 = c + d$

$45 = c + d$ (1)

Answer 45

5 Solve the simultaneous equations

$2x - 5y = 13$ $x = \frac{13+5y}{2}$ - (1)

$3x + 4y = 8$ - (2)

[4 marks]

substitute (1) into (2) :

$3\left(\frac{13+5y}{2}\right) + 4y = 8$ (1)

$39 + 15y + 8y = 16$

$23y = -23$

$y = -1$

$x = \frac{13+5(-1)}{2}$ (1)

$= \frac{13-5}{2} = 4$

$x =$ 4 (1) $y =$ -1 (1)