Simultaneous Equations

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1) Simultaneous Equations: Easier

1) Solve the simultaneous equations.

① $2x + 3y = 9$

② $5x + 3y = 18$

② − ①

$5x + 3y = 18$

$2x + 3y = 9$ −

$3x = 9$

$\frac{3x}{3} = \frac{9}{3}$

$x = 3$

Sub $x = 3$ into ①

$2x + 3y = 9$

$6 + 3y = 9$

$3y = 3$

$y = 1$

x = 3

y = 1

(3 Marks)

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2) Solve the simultaneous equations.

① $4x + 2y = 9$ ×2

② $8x + 8y = 20$

③ $8x + 4y = 18$

② − ③

$8x + 8y = 20$

$8x + 4y = 18$ −

$4y = 2$

$\frac{4y}{4} = \frac{2}{4}$

$y = 0.5$

Sub $y = 0.5$ into ①

$4x + 1 = 9$

$-1 \quad -1$

$\frac{4x}{4} = \frac{8}{4}$

$x = 2$

x = 2

y = 0.5

(4 Marks)

1) Simultaneous Equations: Medium

7) Solve the simultaneous equations.

① $6x + 3y = 15$ ×3

② $4x - 9y = -34$

③ $18x + 9y = 45$

②+③

$4x - 9y = -34$

$18x + 9y = 45$ +

$\frac{22x}{22} = \frac{11}{22}$

$x = 0.5$

Sub $x = 0.5$ into ①

$3 + 3y = 15$

$-3 \quad -3$

$\frac{3y}{3} = \frac{12}{3}$

$y = 4$

x = 0.5

y = 4

(4 Marks)

8) Solve the simultaneous equations.

① $5x + 2y = 29$ ×3

② $8x - 6y = 51$

③ $15x + 6y = 87$

②+③

$8x - 6y = 51$

$15x + 6y = 87$ +

$\frac{23x}{23} = \frac{138}{23}$

$x = 6$

Sub $x = 6$ into ①

$30 + 2y = 29$

$-30 \quad -30$

$\frac{2y}{2} = \frac{-1}{2}$

$y = -0.5$

x = 6

y = -0.5

(4 Marks)

1) Simultaneous Equations: Harder

9) Bill goes into a chip shop and buys **3 fish** and **2 portions of chips,** it cost him £5.20

Jenny also goes into the same chip shop. She buys **5 fish** and **6 portions of chips,** it cost her £10.80

What is the cost of a portion of fish and chips?

① $3f + 2p = 5.20$ ×3

② $5f + 6p = 10.80$

③ $9f + 6p = 15.60$

③ − ②

$9f + 6p = 15.60$

$5f + 6p = 10.80$

$4f = 4.8$

$\frac{4f}{4} = \frac{4.80}{4}$

$f = 1.20$

Sub into ①

$3.60 + 2p = 5.20$

$-3.60 \quad -3.60$

$2p = 1.60$

$p = 0.80$

$p + f = £2$

(5 Marks)

10) There are some ducks and some sheep on a farm. Altogether they have 35 heads and 94 feet.
How many ducks and sheep are there?

① $d + s = 35$ (heads) ×2

② $2d + 4s = 94$ (feet)

③ $2d + 2s = 70$

② − ③

$2d + 4s = 94$

$2d + 2s = 70$ −

$2s = 24$

$s = 12$

Sub $s = 12$ into ①

$d + 12 = 35$

$-12 \quad -12$

$d = 23$

Ducks = 23

Sheep = 12

(5 Marks)