8 Solve the simultaneous equations

$4x + 2y = 9$

$x - 4y = 9$

Show clear algebraic working.

$\times 2 \rightarrow 8x + 4y = 18$

$x - 4y = 9$ (+)

$9x = 27$

$\div 9 \quad \div 9$

$x = 3$

$4x + 2y = 9$

$4(3) + 2y = 9$

$12 + 2y = 9$

$-12 \quad -12$

$2y = -3$

$\div 2 \quad \div 2$

$y = \frac{-3}{2}$

$x =$ 3

$y =$ $\frac{-3}{2}$

(Total for Question 8 is 3 marks)

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12 Solve the simultaneous equations $2x + 7y = 17$
$5x + 3y = -1$

Show clear algebraic working.

$\xrightarrow{\times 3}$ $6x + 21y = 51$
$\xrightarrow{\times 7}$ $35x + 21y = -7$ (−)

$-29x = 58$
$\div -29 \quad \div -29$
$x = -2$

$2x + 7y = 17$
$2(-2) + 7y = 17$
$-4 + 7y = 17$
$+4 \quad +4$
$7y = 21$
$\div 7 \quad \div 7$
$y = 3$

$x =$ -2

$y =$ 3

(Total for Question 12 is 4 marks)

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6 Solve the simultaneous equations

$$x + 2y = 15$$
$$4x - 6y = 4$$

Show clear algebraic working.

$\times 3 \rightarrow 3x + 6y = 45$

$4x - 6y = 4$ (+)

$7x = 49$

$\div 7 \quad \div 7$

$x = 7$

$x + 2y = 15$

$(7) + 2y = 15$

$7 + 2y = 15$

$-7 \quad -7$

$2y = 8$

$\div 2 \quad \div 2$

$y = 4$

$x =$ 7

$y =$ 4

(Total for Question 6 is 3 marks)

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7 Solve the simultaneous equations

$5x + 4y = -2$
$2x - y = 4.4$

Show clear algebraic working.

$5x+4y=-2$
$8x-4y=17.6$ (+)

$13x = 15.6$
$\div 13 \quad \div 13$
$x = 1.2$

$5x + 4y = -2$
$5(1.2) + 4y = -2$
$6 + 4y = -2$
$-6 \quad -6$
$4y = -8$
$\div 4 \quad \div 4$
$y = -2$

$x =$ 1.2

$y =$ -2

(Total for Question 7 is 3 marks)

9 Solve the simultaneous equations

$$4x + 5y = 4$$
$$2x - y = 9$$

Show clear algebraic working.

$4x + 5y = 4$ → $4x + 5y = 4$

$2x - y = 9$ → (×5) $10x - 5y = 45$ (+)

$14x = 49$

$\div 14 \quad \div 14$

$x = 3.5$

$4x + 5y = 4$

$4(3.5) + 5y = 4$

$14 + 5y = 4$

$-14 \quad -14$

$5y = -10$

$\div 5 \quad \div 5$

$y = -2$

$x =$ 3.5

$y =$ -2

(Total for Question 9 is 3 marks)

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10 Solve the simultaneous equations

$3x + 5y = 3.1$

$6x + 3y = 3.75$

Show clear algebraic working.

$3x + 5y = 3.1 \xrightarrow{\times 3} 9x + 15y = 9.3$

$6x + 3y = 3.75 \xrightarrow{\times 5} 30x + 15y = 18.75$ (−)

$-21x = -9.45$

$\div -21 \quad \div -21$

$x = 0.45$

$3x + 5y = 3.1$

$3(0.45) + 5y = 3.1$

$1.35 + 5y = 3.1$

$-1.35 \quad -1.35$

$5y = 1.75$

$\div 5 \quad \div 5$

$y = 0.35$

$x =$ 0.45

$y =$ 0.35

(Total for Question 10 is 3 marks)

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10 Solve

$3x + 2y = 15$
$10x - 4y = 2$

Show clear algebraic working.

$\times 2 \rightarrow 6x + 4y = 30$
$\rightarrow 10x - 4y = 2$ (+)

$16x = 32$
$\div 16 \quad \div 16$
$x = 2$

$3x + 2y = 15$
$3(2) + 2y = 15$
$6 + 2y = 15$
$-6 \quad -6$
$2y = 9$
$\div 2 \quad \div 2$
$y = 4.5$

$x =$ 2

$y =$ 4·5

(Total for Question 10 is 3 marks)

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9 Solve the simultaneous equations

$$x + y = 15$$
$$7x - 5y = 3$$

Show clear algebraic working.

$\times 5 \rightarrow 5x + 5y = 75$

$\rightarrow 7x - 5y = 3$ (+)

$12x = 78$

$\div 12 \quad \div 12$

$x = 6.5$

$x + y = 15$

$6.5 + y = 15$

$-6.5 \quad -6.5$

$y = 8.5$

$x =$ 6.5

$y =$ 8.5

(Total for Question 9 is 3 marks)

9 Solve the simultaneous equations

$$x + 2y = -0.5$$
$$3x - y = 16$$

Show clear algebraic working.

$x + 2y = -0.5 \rightarrow x + 2y = -0.5$

$3x - y = 16 \xrightarrow{\times 2} 6x - 2y = 32$ (+)

$7x = 31.5$

$\div 7 \quad \div 7$

$x = 4.5$

$x + 2y = -0.5$

$4.5 + 2y = -0.5$

$-4.5 \quad -4.5$

$2y = -5$

$\div 2 \quad \div 2$

$y = -2.5$

$x =$ 4.5

$y =$ -2.5

(Total for Question 9 is 3 marks)

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7 Solve the simultaneous equations

$$3x + 5y = 6$$
$$7x - 5y = -11$$

Show clear algebraic working.

$10x = -5$

$\div 10 \quad \div 10$

$x = -0.5$

$3x + 5y = 6$

$3(-0.5) + 5y = 6$

$-1.5 + 5y = 6$

$+1.5 \quad +1.5$

$5y = 7.5$

$\div 5 \quad \div 5$

$y = 1.5$

$x =$ -0.5

$y =$ 1.5

(Total for Question 7 is 3 marks)

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8 Solve the simultaneous equations

$5a + 2c = 10$
$2a - 4c = 7$

Show clear algebraic working.

$\times 2 \rightarrow 10a + 4c = 20$
$2a - 4c = 7$

$12a = 27$

$a = 2 \cdot 25$

$5a + 2c = 10$

$5(2 \cdot 25) + 2c = 10$

$11 \cdot 25 + 2c = 10$
$-11 \cdot 25 \quad -11 \cdot 25$

$2c = -1 \cdot 25$
$\div 2 \quad \div 2$
$c = -0 \cdot 625$

$a =$ 2·25

$c =$ −0·625

(Total for Question 8 is 3 marks)

14 Solve the simultaneous equations

$3x - 5y = 25$

$4x + 3y = 14$

Show clear algebraic working.

$3x - 5y = 25 \xrightarrow{\times 3} 9x - 15y = 75$

$4x + 3y = 14 \xrightarrow{\times 5} 20x + 15y = 70$ (+)

$29x = 145$

$\div 29 \quad \div 29$

$x = 5$

$3x - 5y = 25$

$3(5) - 5y = 25$

$15 - 5y = 25$

$-15 \quad -15$

$-5y = 10$

$\div -5 \quad \div -5$

$y = -2$

$x =$ 5

$y =$ -2

(Total for Question 14 is 4 marks)

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10 Solve the simultaneous equations

$$7x + 3y = 3$$
$$3x - y = 7$$

Show clear algebraic working.

$7x + 3y = 3 \rightarrow 7x + 3y = 3$

$3x - y = 7 \rightarrow \times 3 \quad 9x - 3y = 21$ (+)

$16x = 24$

$\div 16 \quad \div 16$

$x = 1.5$

$7x + 3y = 3$

$7(1.5) + 3y = 3$

$10.5 + 3y = 3$

$-10.5 \quad -10.5$

$3y = -7.5$

$\div 3 \quad \div 3$

$y = -2.5$

$x =$ 1.5

$y =$ -2.5

(Total for Question 10 is 3 marks)

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9 Solve the simultaneous equations

$$2x + 9y = 14.5$$
$$7x + 3y = 8$$

Show clear algebraic working.

$2x + 9y = 14.5 \longrightarrow 2x + 9y = 14.5$

$7x + 3y = 8 \longrightarrow 21x + 9y = 24$ (−)

(×3)

$-19x = -9.5$

$\div -19 \quad \div -19$

$x = 0.5$

$2x + 9y = 14.5$

$2(0.5) + 9y = 14.5$

$1 + 9y = 14.5$

$-1 \quad -1$

$9y = 13.5$

$\div 9 \quad \div 9$

$y = 1.5$

$x =$ 0.5

$y =$ 1.5

(Total for Question 9 is 3 marks)

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12 . Given that $3x - y = 0.09$

and $x + y = 0.19$

(b) work out the value of x and the value of y
Show clear algebraic working.

$3x - y = 0.09$
$x + y = 0.19$ (+)

$4x = 0.28$

$x = 0.07$

$3x - y = 0.09$

$3(0.07) - y = 0.09$

$0.21 - y = 0.09$

$-0.21 \quad -0.21$

$-y = -0.12$

$\div -1 \quad \div -1$

$y = 0.12$

$x =$ 0.07

$y =$ 0.12

(3)

(Total for Question 12 is 5 marks)

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12 Solve the simultaneous equations

$$4x + 3y = 9.6$$
$$6x + 5y = 16.8$$

Show clear algebraic working.

$\times 5 \rightarrow$ $20x + 15y = 48$

$\times 3 \rightarrow$ $18x + 15y = 50.4$ $\ominus$

$2x = -2.4$

$\div 2 \quad \div 2$

$x = -1.2$

$4(-1.2) + 3y = 9.6$

$-4.8 + 3y = 9.6$

$+4.8 \quad +4.8$

$3y = 14.4$

$\div 3 \quad \div 3$

$y = 4.8$

$x =$ -1.2

$y =$ 4.8

(Total for Question 12 is 4 marks)

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10 Solve the simultaneous equations

$6x + 4y = 1$
$3x + 5y = 8$

Show clear algebraic working.

×5 → $30x + 20y = 5$

×4 → $12x + 20y = 32$ (−)

$18x = -27$

$\div 18 \quad \div 18$

$x = -1.5$

$6x + 4y = 1$

$6(-1.5) + 4y = 1$

$-9 + 4y = 1$

$+10 \quad +10$

$4y = 10$

$\div 4 \quad \div 4$

$y = 2.5$

$x =$ −1.5

$y =$ 2.5

(Total for Question 10 is 3 marks)

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12 Solve the simultaneous equations

$7x + 2y = 5.5$ ×5 → $35x + 10y = 27.5$

$3x - 5y = 17$ ×2 → $6x - 10y = 34$ (+)

Show clear algebraic working.

$41x = 61.5$

$\div 41 \quad \div 41$

$x = 1.5$

$7x + 2y = 5.5$

$7(1.5) + 2y = 5.5$

$10.5 + 2y = 5.5$

$-10.5 \quad -10.5$

$2y = -5$

$\div 2 \quad \div 2$

$y = -2.5$

$x =$ 1.5

$y =$ -2.5

(Total for Question 12 is 4 marks)

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12 Solve the simultaneous equations

$$7x - 2y = 34$$
$$3x + 5y = -3$$

Show clear algebraic working.

$7x - 2y = 34$ $\xrightarrow{\times 5}$ $35x - 10y = 170$

$3x + 5y = -3$ $\xrightarrow{\times 2}$ $6x + 10y = -6$ (+)

$41x = 164$

$\div 4 \quad \div 4$

$x = 4$

$7x - 2y = 34$

$7(4) - 2y = 34$

$28 - 2y = 34$

$-28 \quad -28$

$-2y = 6$

$\div -2 \quad \div -2$

$y = -3$

$x =$ 4

$y =$ -3

(Total for Question 12 is 4 marks)

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6 Alison buys 5 apples and 3 pears for a total cost of \$1.96
Greg buys 3 apples and 2 pears for a total cost of \$1.22

Michael buys 10 apples and 10 pears.

Work out how much Michael pays for his 10 apples and 10 pears.
Show your working clearly.

$5a + 3p = 1.96$ $\xrightarrow{\times 2}$ $10a + 6p = 3.92$

$3a + 2p = 1.22$ $\xrightarrow{\times 3}$ $9a + 6p = 3.66$ (−)

$a = 0.26$

$5a + 3p = 1.96$

$5(0.26) + 3p = 1.96$

$1.3 + 3p = 1.96$

$-1.3 \quad -1.3$

$3p = 0.66$

$\div 3 \quad \div 3$

$p = 0.22$

$10a + 10p$

$10(0.26) + 10(0.22)$

$= \$4.80$

\$.....

(Total for Question 6 is 5 marks)

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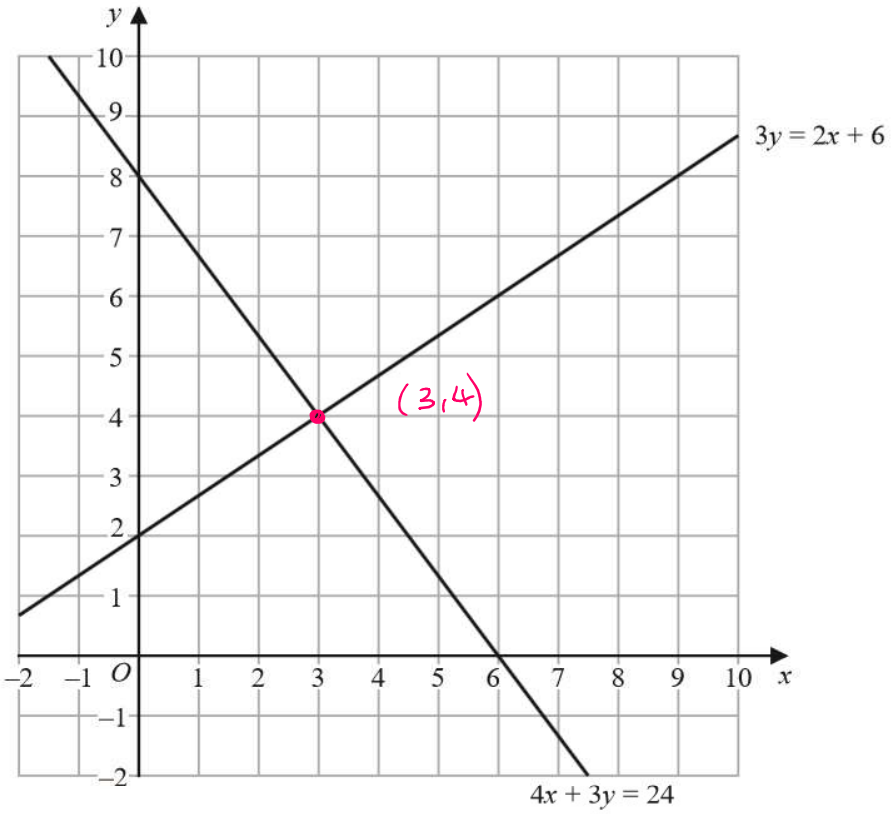
12 The diagram shows two straight lines drawn on a grid.



(a) Write down the solution of the simultaneous equations

$$3y = 2x + 6$$
$$4x + 3y = 24$$

$x =$ 3

$y =$ 4

(1)

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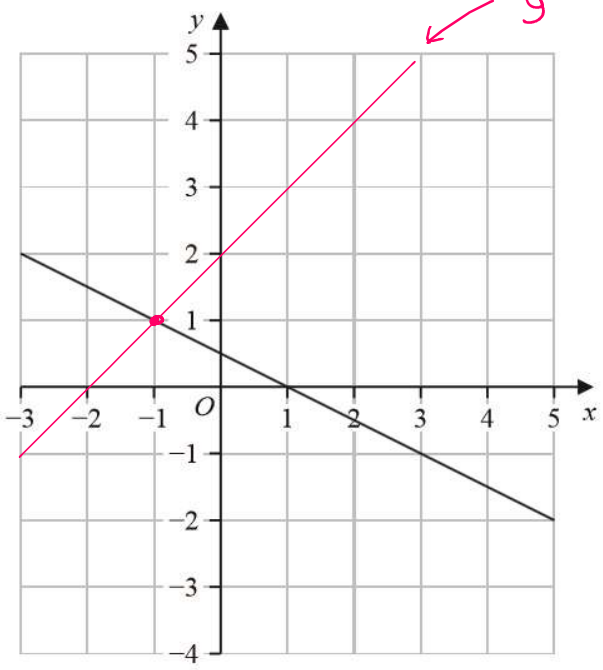
14 Here is the graph of the equation $2y + x = 1$ drawn on a grid.



By drawing another straight line on the grid, solve the simultaneous equations

$$y - x - 2 = 0$$
$$2y + x = 1$$

$y - x - 2 = 0$
$+x \quad +x$
$y - 2 = x$
$+2 \quad +2$
$y = x + 2$

$x =$ −1

$y =$ 1

(Total for Question 14 is 3 marks)