1 (c) Solve $\frac{5x - 3}{4} = 2x + 3$

Show clear algebraic working.

$\frac{5x-3}{4} = 2x+3$ ×4

$5x-3 = 4(2x+3)$ (1)

$5x-3 = 8x+12$ −5x

$-3 = 3x+12$

$-15 = 3x$ −12 (1)

$-5 = x$ ÷3

(1)

$x =$ −5

(3)

(Total for Question 1 is 3 marks)

2 (a) Solve $5(4 - x) = 7 - 3x$
Show clear algebraic working.

$5(4-x) = 7 - 3x$

$20 - 5x = 7 - 3x$ (1)

$20 - 7 = -3x + 5x$ (1)

$13 = 2x$

$x = \frac{13}{2} = 6.5$ (1)

$x =$ 6.5

(3)

(Total for Question 2 is 3 marks)

3 (c) Solve $\frac{4x-2}{3} - \frac{5-3x}{4} = 6$

Show clear algebraic working.

$(4)(3)\frac{4x-2}{3} - \frac{5-3x}{4}(3)(4) = 6(3)(4)$

$(4x-2)\times 4 - (5-3x)\times 3 = 6\times 4\times 3$ (1)

$16x - 8 - 15 + 9x = 72$ (1)

$25x = 95$ (1)

$x = \frac{95}{25} = 3.8$ (1)

$x =$ 3.8

(4)

(Total for Question 3 is 4 marks)

4 (a) Solve $\frac{4-3x}{5} - \frac{3x-5}{2} = -3$

Show clear algebraic working.

$2(4-3x) - 5(3x-5) = -3(5)(2)$ (1)

$8 - 6x - 15x + 25 = -30$ (1)

$33 - 21x = -30$

$21x = 63$

$x = \frac{63}{21}$

$= 3$ (1)

$x =$ 3

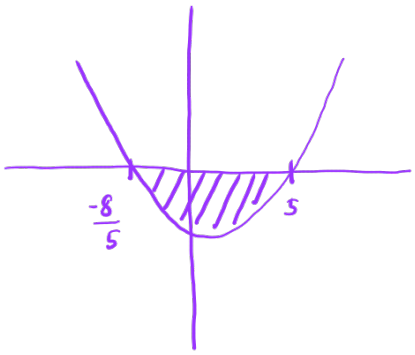
(3)

(b) Solve the inequality $5y^2 - 17y \leqslant 40$

$5y^2 - 17y - 40 \leq 0$

$(5y+8)(y-5) \leq 0$ (1)

$y = -\frac{8}{5}$ or $y = 5$ (1)



$-\frac{8}{5} \leq y \leq 5$ (1)

$-\frac{8}{5} \leq y \leq 5$

(3)

(Total for Question 4 is 6 marks)

5 (b) Solve $(2x + 5)^2 = (2x + 3)(2x - 1)$

$4x^2 + 20x + 25 = 4x^2 - 2x + 6x - 3$

$4x^2 + 20x + 25 = 4x^2 + 4x - 3$ (1)

$4x^2 - 4x^2 + 20x - 4x + 25 + 3 = 0$

$16x + 28 = 0$

$16x = -28$ (1)

$x = \frac{-28}{16}$

$= -1.75$ (1)

$x =$ -1.75

(3)

(Total for Question 5 is 3 marks)

6 (b) Solve $4 - 3x = \dfrac{5 - 8x}{4}$

Show clear algebraic working.

$$4 - 3x = \frac{5 - 8x}{4}$$

$$4(4 - 3x) = 5 - 8x \quad (1)$$

$$16 - 12x = 5 - 8x$$

$$16 - 5 = 12x - 8x$$

$$11 = 4x \quad (1)$$

$$x = \frac{11}{4}$$

$$= 2.75 \quad (1)$$

$x =$ 2.75

(3)

(Total for Question 6 is 3 marks)

7 (a) Solve $\frac{9a-7}{5} - \frac{3a-7}{4} = 4.55$

Show clear algebraic working.

$$\frac{4(9a-7) - 5(3a-7)}{5 \times 4} = 4.55$$

$$\frac{36a - 28 - 15a + 35}{20} = 4.55$$

$$21a + 7 = 4.55 \times 20$$

$$21a + 7 = 91 \quad (1)$$

$$21a = 91 - 7$$

$$21a = 84 \quad (1)$$

$$a = 4 \quad (1)$$

$a =$ 4

(3)

(Total for Question 7 is 3 marks)

8 (a) Solve $p = \dfrac{3p - 5}{10}$

Show clear algebraic working.

$(10)p = 3p - 5$ (1)

$10p - 3p = -5$ (1)

$7p = -5$

$p = \dfrac{-5}{7}$ (1)

$p =$ $-\dfrac{5}{7}$

(3)

(Total for Question 8 is 3 marks)

9 (b) Solve $2x - 3 = \frac{3x - 5}{4}$

Show clear algebraic working.

$8x - 12 = 3x - 5$ (1)

$5x = 7$ (1)

$x = \frac{7}{5}$ (1)

$x =$ $\frac{7}{5}$

(3)

(Total for Question 9 is 3 marks)

10 Larry is a delivery man.

He has 7 parcels to deliver.
The mean weight of the 7 parcels is 2.7 kg

Larry delivers 3 of the parcels.
Each of these 3 parcels has a weight of W kg

The mean weight of the other 4 parcels is 3.3 kg

Work out the value of W

$7 \times 2.7 = 18.9$ (1)

$4 \times 3.3 = 13.2$

$3W = 18.9 - 13.2$

$3W = 5.7$ (1)

$W = \frac{5.7}{3}$

$= 1.9$ (1)

$W =$ 1.9

(Total for Question 10 is 3 marks)

11 (a) Solve $\frac{4x+5}{3} - \frac{3-2x}{2} = 13$

Show clear algebraic working.

$\frac{2(4x+5) - 3(3-2x)}{6} = 13$ (1)

$8x + 10 - 9 + 6x = 78$ (1)

$14x + 1 = 78$

$14x = 77$ (1)

$x = \frac{77}{14}$

$= 5.5$ (1)

$x =$ 5.5

(4)

(Total for Question 11 is 4 marks)

12 (b) Solve $6x - 5 = \frac{4x - 7}{2}$

Show clear algebraic working.

$2(6x - 5) = 4x - 7$ (1)

$12x - 10 = 4x - 7$

$12x - 4x = -7 + 10$ (1)

$8x = 3$

$x = \frac{3}{8}$ (1)

$x =$ $\frac{3}{8}$

(3)

(Total for Question 12 is 3 marks)

13 A particle P moves along a straight line that passes through the fixed point O

The displacement, x metres, of P from O at time t seconds, where $t \geqslant 0$, is given by

$$x = 4t^3 - 27t + 8$$

The direction of motion of P reverses when P is at the point A on the line.

The acceleration of P at the instant when P is at A is $a\ \text{m/s}^2$

Find the value of a

$v = \frac{dx}{dt} = 12t^2 - 27 = 0$ (1)

$12t^2 = 27$

$t^2 = \frac{27 \div 3}{12 \div 3} = \frac{9}{4}$ (1)

$t = \pm\sqrt{\frac{9}{4}}$

$t = \pm\frac{3}{2}$ (1)

since $t \geqslant 0$, $t = \frac{3}{2}$

$a = \frac{dv}{dt} = 24t$ (1)

$a = 24\left(\frac{3}{2}\right)$

$= 36$ (1)

$a =$ 36

(Total for Question 13 is 5 marks)

14 Solve $3(2 - 4x) = 5 - 8x$

Show clear algebraic working.

$6 - 12x = 5 - 8x$ (1)

$6 - 5 = -8x + 12x$ (1)

$1 = 4x$

$x = \frac{1}{4}$ (1)

$x =$ $\frac{1}{4}$

(Total for Question 14 is 3 marks)

15 The diagram shows rectangle *ABCD*

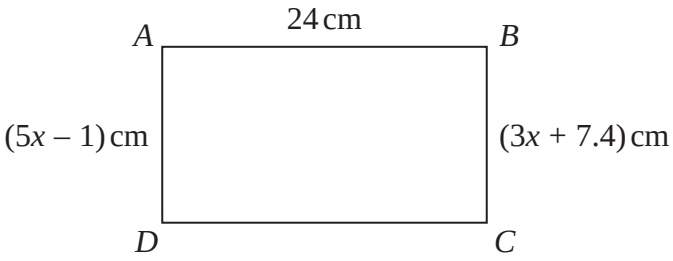


Diagram **NOT** accurately drawn

Work out the perimeter of the rectangle.
Show your working clearly.

$5x - 1 = 3x + 7.4$ (1)

$2x = 8.4$

$x = 4.2$ (1)

Perimeter $= 24 + 24 + 5(4.2) - 1 + 3(4.2) + 7.4$ (1)

$= 24 + 24 + 20 + 20$

$= 88$ (1)

88 cm

(Total for Question 15 is 4 marks)

16 Solve $\frac{x+3}{4} - \frac{7-x}{5} = 4.3$

Show clear algebraic working.

$5(x+3) - 4(7-x) = 4.3 \times 5 \times 4$ (1)

$5x + 15 - 28 + 4x = 4.3 \times 20$ (1)

$5x + 4x = 86 - 15 + 28$

$9x = 99$

$x = 11$ (1)

$x =$ 11

(Total for Question 16 is 3 marks)

17 *ABCD* is a trapezium.

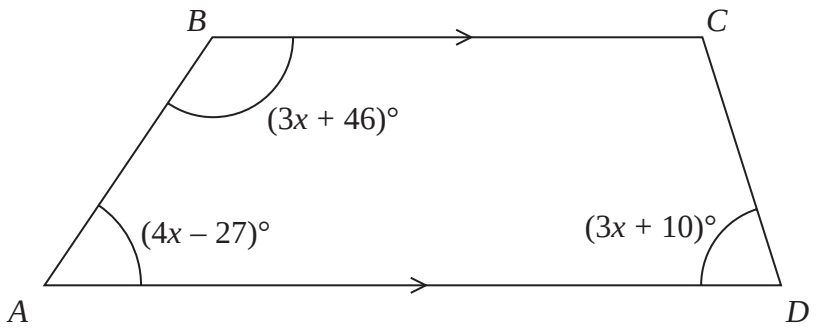


Diagram **NOT** accurately drawn

BC is parallel to *AD*

Find the size of the largest angle inside the trapezium.

$(4x - 27) + (3x + 46) = 180$ (1)

$7x = 180 - 19$

$7x = 161$

$x = 23$ (1)

$ABC = 3(23) + 46 = 115$

$BAD = 4(23) - 27 = 65$ (1)

$ADC = 3(23) + 10 = 79$

$BCD = 180 - 79 = 101$

(1) 115 °

(Total for Question 17 is 4 marks)

18 (c) Solve $\frac{1-2y}{3} = \frac{4}{5} - \frac{2y-1}{2}$

Show clear algebraic working.

$(5)(2)(1-2y) = 4(3)(2) - (3)(5)(2y-1)$ (1)

$10 - 20y = 24 - 30y + 15$ (1)

$10y = 29$

$y = 2.9$ (1)

$y =$ 2.9

(3)

(Total for Question 18 is 3 marks)