

Unit 6

Q2)

$y = mx + c$
 $\uparrow \quad \uparrow$
 $\frac{\Delta y}{\Delta x} = \frac{4}{2} = 2 + 1$
 $y = 2x + 1$
 (A1)

Q3) $m_{L1} = \frac{\Delta y}{\Delta x} = \frac{1}{2}$ (M1)

$m_{L2} = \frac{1}{2}$

x, y_2
(0, -5)

$y = mx + c$
 $\uparrow \quad \uparrow$
 $\frac{1}{2} \quad -5$ (M1)

$y = \frac{1}{2}x - 5$ (A1)

Q4) A: $y = 2x + 4$

B: $2y = x + 4$
 $y = \frac{1}{2}x + 2$

C: $2x + 2y = 4$
 $2y = -2x + 4$
 $y = -x + 2$

D: $2x - y = 4$
 $-y = -2x + 4$
 $y = 2x + 4$

A & D

Q5)

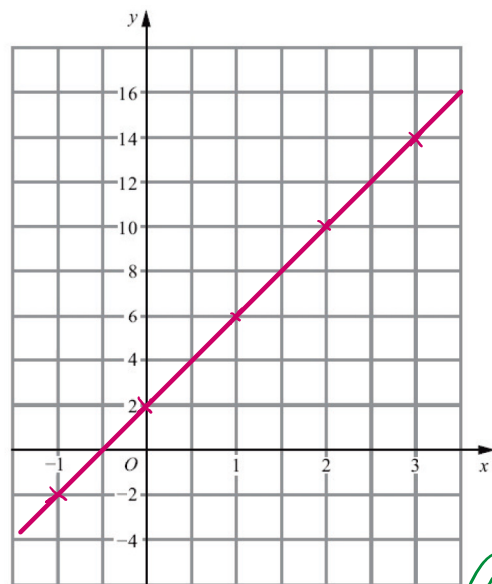
Q5.

(a) On the grid, draw the graph of $y = 4x + 2$ from $x = -1$ to $x = 3$

(M1)
2 correct attempts

(M1)
2 correct points plotted

(A1)
correct straight line



(b) (i) Write down the equation of a straight line that is parallel to $y = 4x + 2$

$y = 4x - 2$

(B1)

(B1)

(ii) Write down the gradient of a straight line that is perpendicular to $y = 4x + 2$

$-\frac{1}{4}$

Q6)

Gradient of AB = $\frac{\Delta y}{\Delta x} = \frac{4-0}{7-9} = \frac{4}{-2} = -2$

Gradient of BC = $\frac{4-q}{7-1} = -2$

(M1) for correct step to find q.

$\frac{4-q}{6} = -2$

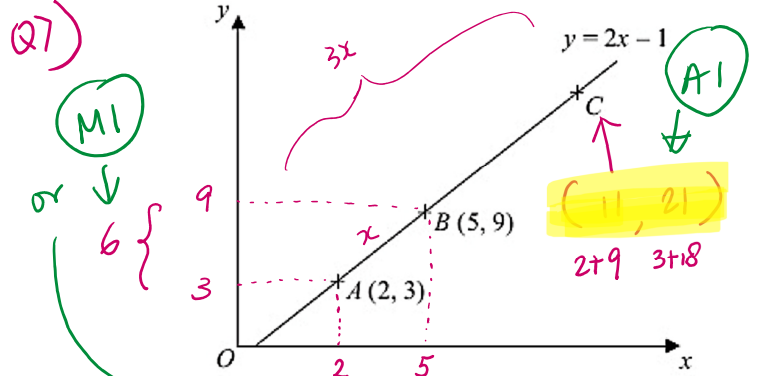
(M1) complete method to find q

$4-q = -12$

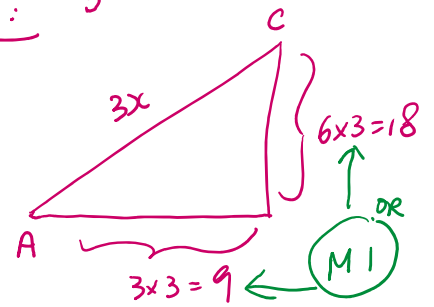
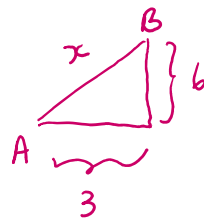
$4+12 = q$

(A1) $q = 16$

Q7.



Similar shapes:



Q8)

Gradient of L: $\frac{\Delta y}{\Delta x} = \frac{3-1}{1-4}$ (M1)

$= \frac{4}{-3}$ (M1)

$2y = 3x - 4$ (M1)

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

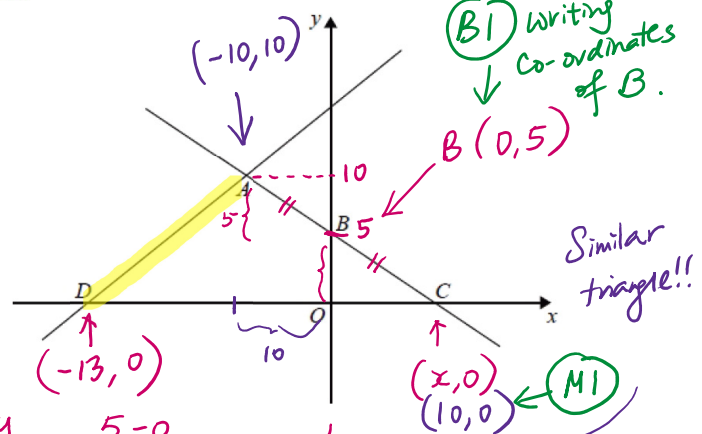
$\frac{3}{2} \times \frac{4}{-3} = \frac{12}{-6} = -2$ (C1)

which does not = -1

\therefore Not perpendicular

Q9)

Q9.



$m_{BC} = \frac{\Delta y}{\Delta x} = \frac{5-0}{0-x} = -\frac{1}{2}$

$\frac{5}{-x} = -\frac{1}{2}$

$\frac{5}{x} = \frac{1}{2}$

$x = 10$

AD: (M1)
Gradient = $\frac{10-0}{-10-13} = \frac{10}{3}$

$0 = \frac{10}{3}(-13) + c$ (M1)

$0 = \frac{-130}{3} + c$

$c = \frac{130}{3}$

Answer: $y = \frac{10}{3}x + \frac{130}{3}$ (A1)

10)
 $A: (-2, 0)$
 $B: (0, 4)$
 $m_{AB} = \frac{0-4}{-2-0}$
 $= \frac{-4}{-2}$
 $= 2$

$y = mx + c$
 $-1 = -\frac{1}{2}(5) + c$
 $-1 = -\frac{5}{2} + c$

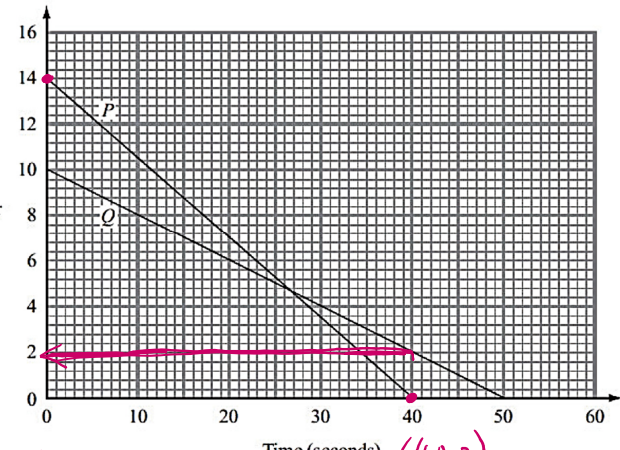
Substitute $C = -1 + \frac{5}{2}$
 $C = -1 + 2.5$
 $C = 1.5$

$y = -\frac{1}{2}x + \frac{3}{2}$

Q12)

(a)

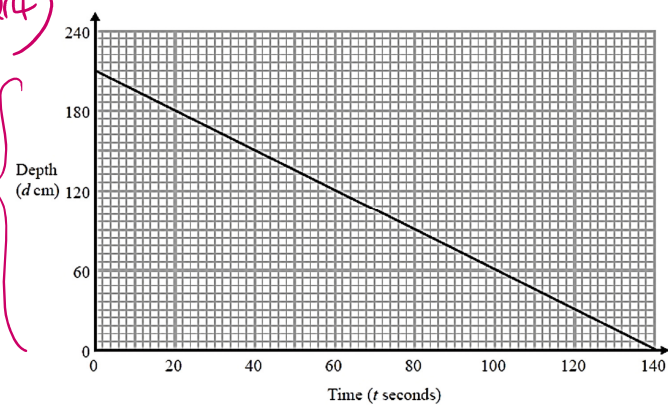
Gradient of P:
 $\frac{\Delta y}{\Delta x} = \frac{14-0}{0-40}$
 $= \frac{14}{-40}$
 $= -0.35$



b) (i) Contains P. It only take 40sec for the amount of water in P become 0 Litres.

(ii) 2 L

Q14)



(a) Gradient: $-\frac{210}{140}$
 $= -1.5$

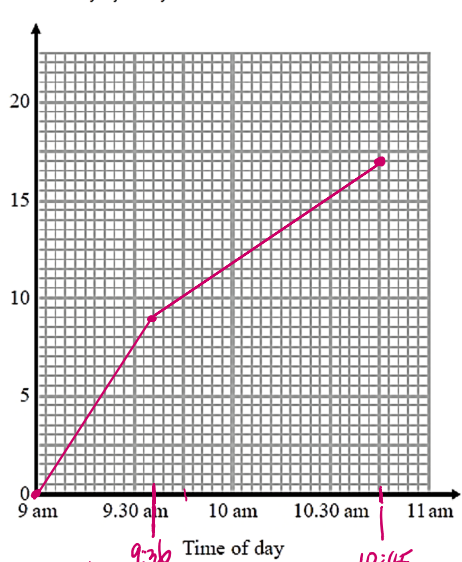
b) rate of change of depth of water in tank ($\frac{cm}{s}$)

Q15)

(a) Draw a travel graph to show Bradley's journey.

(M1) Find distance for 36 mins
 (C1) Convert graph (9:36, 9)
 (C1) Convert graph (10:45, 17)

further 8 km
 $8+9=17$ km
 each hour travel = 15 km
 $15 \frac{km}{h}$ for 36 mins
 $15 \div 60 \times 36 = 9$ km



(b) each hour 18 km
 $10:45 - 11:00 \frac{1}{4}$ hour
 $18 \div 4 = 4.5$