Question 3

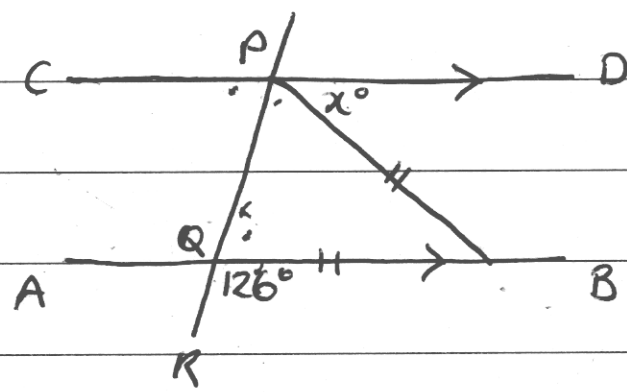
a) $A = p(1 + r\%)^n$

$A = 1000(1 + 0.035)^{20}$

$= \$1989.79$

$\approx \$1990$

b)




CD ∥ AB, PB = QB, ∠BQR = 126° and ∠BPD = x° (given)

∠PQB = 54° (180 − 126) straight line complementary ∠'s

∠QPB = 54° (base angles in equilateral triangle)

∠PQA = 126° (∠'s on straight line and vertically opp. ∠'s)

∠CPQ = 54° (interior ∠'s add to 180° + alternat ∠'s equal)

∴ x = 72°

∠CPQ + ∠PQB = 108.

line CP = 180° so 180° − 108°

= 72° ∴ x = 72°.

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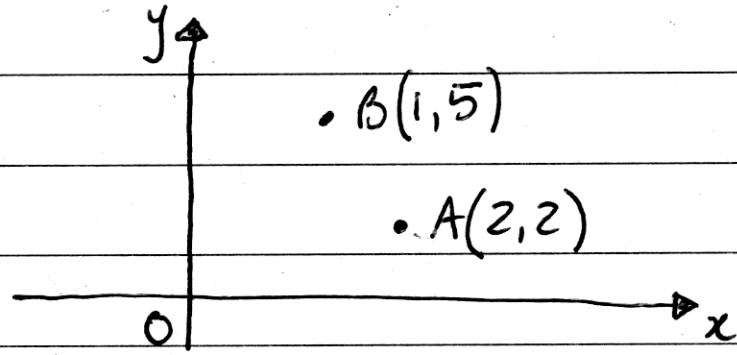
c)




(i) A (2,2) and B (1,5)

$$mP = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$$

$$= \left(\frac{2+1}{2}, \frac{2+5}{2}\right)$$

$$= (3/2, 7/2)$$

$$= m(1\tfrac{1}{2}, 3\tfrac{1}{2})$$

(ii) $x - 3y + 9 = 0$.

$$\text{Pd.} \left| \frac{ax_1 + by_1 + c}{\sqrt{a^2 + b^2}} \right| = \left| \frac{-3 \times 3/2 + 8 \times 7/2 + 1}{\sqrt{-3^2 + 8^2}} \right|$$

$$= \frac{-4\tfrac{1}{2} + 28 + 1}{\sqrt{73}}$$

$$= \frac{22\tfrac{1}{2}}{\sqrt{73}}.$$

$$m = \frac{y_2 - y_1}{x_2 - x_1} \quad \frac{5-2}{1-2}.$$

$$= -3.$$

$$y - y_1 = m(x - x_1)$$

$$y - 7/2 = -3(x - 3/2)$$

$$y - 7/2 = -3x + 9/2.$$

$$y = -3x + 8.$$

(iii)