

T1) $\angle AP = \angle BP$

$\angle DAP = \angle EBP$

$\angle BPA =$

1) Tap A fills = Both Taps fill + 4 hours = x

Tap B fills = Both taps fill + 9 hours = y

Both taps together open = 2

$y = 2x + 1$

$2 + 9 = 2(2 + 4) + 1$ $2x + 1$ $2 + 9 = 2(2 + 4) + 1$

$2 + 9 = 2(2 + 8) + 1$

$2 + 9 - 1 = 2x$

$2 + 9 = 2x + 9$

$2 + 8 = 2x$

$2 = 2x$

$\frac{2+8}{2} = x$

$\frac{2}{2} + 4 = x$

2) father have x coins

son have y coins

son gave 12 to father father will have 3 times of son

$x + 12 = 3y \rightarrow (1)$

father gave 18 to son son will have 2 times of father

$12 + y = 2x \rightarrow (2)$

$12 + y = 2x$

$\frac{12+y}{2} = x = 6 + \frac{y}{2} = x$

$y + 18 = x + 12 = 3y$

$\frac{x+12}{3} = y = \frac{x+4}{3} = y$

$6 + \frac{x+y}{3} = 4x$

$6 + \frac{x+12}{3} = 6 + \frac{x+12}{3} \times 2 = 6 + \frac{2x+24}{3} = 6 + \frac{2x}{3} + 8 = x$

$$2) \quad 6 + \frac{2x}{3} + 8 = x \Rightarrow 14 + \frac{2x}{3} = x \Rightarrow 14 = x - \frac{2x}{3} \Rightarrow 14 = \frac{x}{3}$$

$$2x = 14$$

$$6 + \frac{2x}{3} + y = \frac{x}{3} + 4$$

$$y = \frac{14}{3} + 4$$

$$y = 5 + \frac{14}{3} \text{ (nearly)}$$

$$y = 9$$

$$3) \quad 15 \text{ apples} + 10 \text{ oranges} = 15x + 10y = 290$$

$$12 \text{ apples} + 18 \text{ oranges} = 12x + 18y = 324$$

$$15x + 10y = 290$$

$$12x + 18y = 324$$

$$27x + 28y = 614 \quad \text{--- (1)}$$

$$15x + 10y = 290$$

$$- \quad 12x + 18y = 324$$

$$3x + 8y = 34 \quad \text{--- (2)}$$

$$(1) - (2)$$

$$27x + 28y = 614$$

$$- \quad 3x + 8y = 34$$

$$(2) \quad 24x + 20y = 580$$

$$4(6x + 5y) = 4(145)$$

$$6x + 5y = 145 \quad \text{--- (3)}$$

$$(3) - (2)$$

$$6x + 5y = 145$$

$$- \quad 3x + 8y = 34$$

$$3x - 3y = 131$$

$$3) \text{ 5 notebooks + 3 pens = 190}$$

Pens cost: y , note books cost: x

$$5x + 3y = 190 \rightarrow (1)$$

$$3 \text{ note books + 2 pens = 118}$$

$$3x + 2y = 118 \rightarrow (2)$$

$$(1) - (2)$$

$$5x + 3y = 190$$

$$(-) \underline{3x + 2y = 118}$$

$$2x + y = 72 \rightarrow (3)$$

$$(2) - (3)$$

$$3x + 2y = 118$$

$$(-) \underline{2x + y = 72}$$

$$x + y = 46 \rightarrow (4)$$

$$(3) - (4)$$

$$2x + y = 72$$

$$(-) \underline{x + y = 46}$$

$$x = 26 \rightarrow (5)$$

$$x = 26$$

$$x + y = 46$$

$$26 + y = 46$$

$$y = 46 - 26$$

$$y = 20$$

Ti)

$$AP = BP$$

$$\angle BAD = \angle ABE$$

$\triangle OAP$ and $\triangle OBP$

$$\angle OAP = \angle OBP$$

$$\angle APO = \angle BPO$$

$$\angle O$$

$$Ti) AP = BP$$

$$\angle DAP = \angle EBP$$

$$\angle DPA = \angle EPB \quad \angle EPA + \angle EPD = \angle EPD = \angle OPB + \angle DPE$$

$$\angle DPA = \angle EPD$$

$$\angle DPA = \angle EPA + \angle EPD = \angle EPB$$

$$\angle EPD = \angle OPB + \angle DPE$$

$$\angle DPA = \angle EPD$$

$$AS \angle EPA = \angle OPB \text{ (Given)}$$

$$\angle DPE = \angle DPE \text{ (common)}$$

$$\angle DPA = \angle EPD$$

$$\triangle DAP \cong \triangle EPB \text{ (SAS ASA congruence rule)}$$

$$ii) AP = BP$$

$$\angle DPA = \angle DPB$$

$$AD = BE \text{ (C.P.C)}$$