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Class: 3C3

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Maths D Holiday Hw

Algebra 3.5 P2

6a(i). Price in the sale = $\$ \left(\frac{85}{100} \times 41 \right)$
 $= \$34.85$ #

a(ii) Normal price = $\$ \left(\frac{100}{85} \times 51 \right)$
 $= \$60$ #

b(i). $\frac{60}{x}$ #

b(ii). $\frac{60}{x+2}$ #

b(iii). $\frac{60}{x} + \frac{60}{x+2} = 11$

$$\frac{60x+120+60x}{x(x+2)} = 11$$

$$120x + 120 = 11x^2 + 22x$$

$$11x^2 - 98x - 120 = 0 \quad (\text{shown})$$
 #

b(iv) $11x^2 - 98x - 120 = 0$

$$(11x+12)(x-10) = 0$$

$$11x+12=0 \quad \text{or} \quad x-10=0$$

$$\therefore x = -\frac{12}{11} \quad \text{or} \quad x = 10$$

(rejected)

Megade's produced in 1hr = $\frac{60}{10+2}$
 $= 5$ #

7a(i) Time taken = $\frac{3000}{v}$ h #

a(ii) Return journey = $\frac{3000}{2v}$ h #

a(iii) $\frac{3000}{v} - \frac{3000}{2v} = 4$

$$\frac{6000v - 3000v}{2v^2} = 4$$

$$3000v = 8v^2$$

$$v^2 = 375v$$

$$v = 375 \text{ km/h}$$
 #

b(i) Speed = $6 = \frac{48}{60}$
 $= 7\frac{1}{2} \text{ km/h}$

$$x = y + 7\frac{1}{2}$$

$$x - y = 7\frac{1}{2} \quad (\text{shown})$$
 #

$$b(ii) \text{ speed} = 6 = \frac{36}{60}$$

$$= 10 \text{ km/h}$$

$$x = 10 - y$$

$$x + y = 10 \quad \#$$

$$b(iii) \quad x - y = 7\frac{1}{2} \dots (1)$$

$$x + y = 10 \dots (2)$$

$$(2) - (1)$$

$$x + y - x + y = 10 - 7\frac{1}{2}$$

$$2y = 2\frac{1}{2}$$

$$\therefore y = 1.25 \text{ km/h} \quad \#$$

$$\therefore x = 10 - 1.25$$

$$= 8.75 \text{ km/h} \quad \#$$

$$\text{Usual time taken} = \frac{6}{8.75}$$

$$= 41.14 \dots$$

$$= 41.1 \text{ mins (3sf)} \quad \#$$

$$8a. \quad (x-2)^2 + (2x-1)^2 = (2x+3)^2$$

$$x^2 - 4x + 4 + 4x^2 - 4x + 1 = 4x^2 + 12x + 9$$

$$5x^2 - 8x + 5 = 4x^2 + 12x + 9$$

$$x^2 - 20x - 4 = 0 \quad (\text{shown})$$

$$b. \quad x = \frac{20 \pm \sqrt{20^2 - 4(1)(-4)}}{2}$$

$$= \frac{20 \pm \sqrt{416}}{2}$$

$$= \frac{20 + \sqrt{416}}{2} \quad \text{or} \quad \frac{20 - \sqrt{416}}{2}$$

$$= 20.198 \dots \quad \text{or} \quad -0.198 \dots$$

$$= 20.2 \quad \text{or} \quad -0.20 \quad (2dp) \quad \#$$

(rejected)

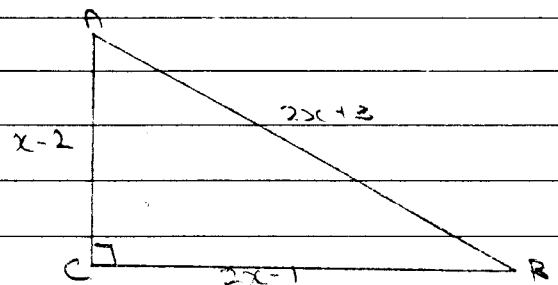
$$c. \quad AC = 20.198 - 2 = 18.198 \text{ m}$$

$$CB = 2(20.2) - 1 = 39.4 \text{ m}$$

$$\text{Area} = \frac{1}{2} \times AC \times CB$$

$$= \frac{1}{2} \times 18.2 \times 39.4$$

$$= 358.54 \text{ m}^2$$



9a. x Rupees = 1 Mark

$$\text{No. of marks} = \frac{1140}{x} \quad \#$$

b. $(x+1)$ Rupees = 1 Mark

$$\text{No. of Marks} = \frac{1140}{x+1} \quad \#$$

$$\frac{1140}{x} - \frac{1140}{x+1} = 3$$

$$\frac{1140x + 1140 - 1140x}{x(x+1)} = 3$$

$$\frac{1140}{x^2+x} = 3$$

$$3x^2 + 3x = 1140$$

$$3x^2 + 3x - 1140 = 0$$

$$x^2 + x - 380 = 0 \quad (\text{shown}) \quad \#$$

 d. $x^2 + x - 380 = 0$

$$(x+20)(x-19) = 0$$

$$x+20 = 0 \quad \text{or} \quad x-19 = 0$$

$$x = -20 \quad x = 19$$

(rejected)

∴ Exchange rate in May 1994 : 19 Rupees = 1 mark #

10a. Time taken = 70×0.17
 $= 11.9$

$$\approx 12 \text{ s} \quad (\text{shown}) \quad \#$$

b(i)(a) $50b - 50a = \#$

 (i)(b) $50b - 50a = 0.5$

$$100b - 100a = 1 \quad (\text{shown}) \quad \#$$

(ii) $50a - 47b = 0.1 \quad \#$

(iii). $100b - 100a = 1 \dots (1)$

$$50a - 47b = 0.1 \dots (2)$$

$$(2) \times 2$$

$$100a - 94b = 0.2 \dots (3)$$

$$(1) + (3)$$

$$100b - 100a + 100a - 94b = 1 + 0.2$$

$$6b = 1.2$$

$$\therefore b = 0.2 \text{ sec} \quad \#$$