

Holiday Assignment

-WB 2, pg 55

Term 2 Test 8.

$$1. (a) \frac{12a^4b^2c^2}{8b^3c^5} \div \frac{3a^2c^4}{2b^3} \\ = \frac{3 \cancel{12} a^4 b^2 c^2}{\cancel{8} b^3 c^5} \times \frac{2 b^3}{3 a^2 c^4} \\ = \frac{a^2 b}{c^3}$$

$$(b) \frac{(3x+2)}{4} - \frac{(x-4)}{2} - \frac{7}{3} \\ = \frac{(9x+6) - (6x-24) - 28}{12} \\ = \frac{9x+6-6x+24-28}{12} \\ = \frac{3x+2}{12}$$

2. (a) Let the cost price of the book be x rupees.

- profit be ₹100.

$$\text{Profit made on book} = \frac{20}{100} \times x$$

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

$$\text{Loss made on other book} = \frac{25}{100} \times (33-x) \\ = \frac{1}{4}(33-x)$$

$$\frac{1}{5}x - \frac{1}{4}(33-x) = ₹3$$

$$\frac{9}{20}x = ₹3 + ₹8.25 = ₹11.25$$

$$(b) t(t+42) = 400 \quad x = ₹25$$

$$t^2 + 42t - 400 = 0$$

$$(t-50)(t-8) = 0$$

$$\therefore (t+50) = 0 \text{ OR}$$

$$t = -50$$

$$(t-8) = 0$$

$$t = 8$$

↑ can't be negative

∴ Speed of the train is

$$= (t+42) \text{ km/h}$$

$$= (8+42) \text{ km/h}$$

$$= 50 \text{ km/h. //}$$

$$3. (a) p = \frac{q+r}{q-5}$$

$$pq-sp = q+r$$

$$pq-q = r+sp$$

$$q(p-1) = r+sp$$

$$q = \frac{r+sp}{p-1}$$

$$(b) q = \frac{r+sp}{p-1} \\ = \frac{8 + (-1)(2)}{(2)-1} \\ = \frac{8-2}{1} \\ = 6$$

$$4. (a) (a+b)^2 - 4ac^2 \\ = [(a+b) + 7c] [(a+b) - 7c] \\ = (a+b+7c)(a+b-7c) //$$

$$(b) m^2 - 2n - m + 2mn \\ = m(m-1) - 2n(m-1) \\ = (m-1)(m+2n) //$$

$$(c) 6x^2 - 7xy - 3y^2 \\ = (3x+y)(2x-3y)$$

$$\begin{array}{r|l} 3x & y \\ \times & 2x-3y \\ \hline 6x^2 & -3y^2 \\ & -7xy \end{array}$$

5. (a) $(3x+1)^2 = (x+4)^2$

$$9x^2 + 6x + 1 = x^2 + 8x + 16$$

$$-1\frac{1}{4} \quad 8x^2 - 2x - 15 = 0.$$

$$(2x-3)(4x+5) = 0.$$

$$\therefore 2x = 3 \quad \text{or} \quad 4x = -5$$

$$x = 1\frac{1}{2} \quad // \quad x = -1\frac{1}{4} //$$

(b). $y + 3 = \frac{10}{y}$

$$y^2 + 3y = 10$$

$$y^2 + 3y - 10 = 0.$$

$$(y-2)(y+5) = 0$$

$$\therefore y = 2 \quad \text{or} \quad y = -5$$

6. (a). No. of light bulbs produced

$$= \frac{100}{96} \times 336$$

$$= 350 //$$

①

(b) ② 7kg of rice + 12kg sugar = ₹17.30

15kg of rice + 5kg sugar : ₹20.50.

From ①: 35kg R + 60kg S = ₹86.50.

From ②: 180kg R + 60kg S = ₹246.

$$\therefore (180 - 35) \text{kg R} = ₹246 - ₹86.50$$

$$145 \text{kg R} = ₹159.50.$$

$$1 \text{kg R} = ₹1.10.$$

$$5 \text{kg S} = ₹20.50 - (15 \times ₹1.10)$$

$$= ₹4.$$

$$1 \text{kg S} = ₹0.80.$$

$$\therefore 4 \text{kg R} + 3 \text{kg S} = (4 \times ₹1.10) + (3 \times ₹0.80)$$

$$= ₹6.80 //$$

7. (a). $\frac{2x-1}{3} - \frac{x+5}{4}$

$$= \frac{8x-4 - 3x-15}{12}$$

$$= \frac{5x-19}{12} //$$

(b). $\frac{1}{2(x+2)} - \frac{1}{x-2}$

$$= \frac{x-2 - 2x-4}{2x+4(x-2)}$$

$$= \frac{-x-6}{2(x+2)(x-2)} //$$

8. (a) $by - ay = x$

$$y(b-a) = x$$

$$y = \frac{x}{b-a} //$$

(b). $t^2 = \frac{y-x}{1+xy}$

$$t^2 + t^2xy = y - x$$

$$t^2xy - y = -x - t^2$$

$$y(t^2x - 1) = -x - t^2$$

$$y = \frac{-x - t^2}{t^2x - 1}$$

$$y = -\frac{x+t^2}{1-t^2x} //$$

10. (a). (i). 2 ; 2

(ii). 0 ; 2

(b) (i). length of road on map.

$$= \frac{1}{250000} \times 31 \text{ km}$$

$$= 12.4 \text{ cm}$$

(ii). actual area of forest.

$$= \frac{250000^2}{1^2} \times 50 \text{ cm}^2$$

$$= 312.5 \text{ km}^2$$

9. (a) $(x-4)^2 = 81$

$$x^2 - 8x + 16 = 81$$

$$x^2 - 8x - 65 = 0$$

$$(x-13)(x+5) = 0$$

$$\therefore x = 13 \text{ or } x = -5 //$$

(b). $(3x-4)^2 = 5(3x-4)$

$$9x^2 - 24x + 16 = 15x - 20$$

$$9x^2 - 39x + 36 = 0$$

$$(3x-9)(3x-4) = 0$$

$$\therefore 3x = 9 \text{ or } 3x = 4$$

$$x = 3 \text{ or } x = 1\frac{1}{3} //$$

(c). $4\left(\frac{1}{3x} - 1\right) = 3\left(\frac{1}{2x} - 2\right)$

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

$$\frac{12}{9x} - \frac{3}{1x} = 4 - 6$$

$$\frac{4}{9x} = -2$$

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

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