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DATE: Nov / Dec Hols.

Holiday Assignment

WB 2 pg 54.

Term 2 Test 4.

1. (a) Distance apart on map

$\rightarrow \frac{1}{25\,000} \times 4500m$

$= 0.18m$

$= 18cm$

(b) $\frac{25000^2}{1^2} \times 40cm^2$

$= 2.5km^2$.

$\therefore$ The actual area is $2.5km^2$. //

Area on map $\rightarrow \frac{1^2}{50000^2} \times 2.5km^2$

$= 10cm^2$ //

2. (a) $24s^2 - 13s - 2$

$= (8s - 2)(3s + 1)$ //

(b) $64a^2 - 25b^2 - (8a - 5b)$

$= (8a + 5b)(8a - 5b) - (8a - 5b)$

$= (8a + 5b - 1)(8a - 5b)$

(c). $(2u - v)^2 - 16w^2$

$= [(2u - v) + 4w][(2u - v) - 4w]$

$= (2u - v + 4w)(2u - v - 4w)$.

3. (a). $5x + 15(x - 4) = 2(x - 3)$

$5x + 15x - 60 = 2x - 6$

$20x - 2x = -6 + 60$

$18x = 54$

$x = 3$ //

(b) $(y - 2)^2 - 25 = 0$

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

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

$(y - 7)(y + 3) = 0$.

$\therefore y - 7 = 0$ OR $y + 3 = 0$

$y = 7$. // $y = -3$ //

(c). $2z^2 - 7z - 4 = 0$.

$(2z + 1)(z - 4) = 0$.

$\therefore 2z + 1 = 0$ OR $z - 4 = 0$

$z = -\frac{1}{2}$ // $z = 4$ //

4. $(2p - q)(r + 5) = r(p - 1)$.

$2pr + 10p - qr - 5q = rp - r$

$2pr - qr - rp + r = -10p + 5q$

$r(2p - q - p + 1) = -10p + 5q$.

$r = \frac{5(q - 2p)}{-q + p + 1}$.

$r = \frac{5(-3) - 2(6)}{-(-3) + (6) + 1}$

$= \frac{5(-9)}{10}$

$= \frac{-75}{10}$

$= -7.5$ //

5. (a) $\frac{2y+1}{5} - \frac{3y-2}{10} + \frac{y}{2}$

$= \frac{4y+2}{10} - \frac{3y-2}{10} + \frac{5y}{10}$

$= \frac{4y + 2 - 3y + 2 + 5y}{10}$

$= \frac{6y + 4}{10}$

$= \frac{3y + 2}{5}$ //

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(b). $\frac{k}{u-k} - \frac{v}{u-v}$

$= \frac{k(u-v) - (v(u-k))}{(u-k)(u-v)}$

$= \frac{ku - kv - vu + vk}{(u-k)(u-v)}$

$= \frac{ku - vu}{(u-k)(u-v)}$

$= \frac{u(k-v)}{(u-k)(u-v)}$ //

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

$= \frac{2(1-\frac{1}{b}) - 1}{1-\frac{1}{b}}$

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

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

$= (1 - \frac{2}{b}) \div (1 - \frac{1}{b})$

$= \frac{1 - \frac{2}{b}}{1} \times \frac{1}{1 - \frac{1}{b}}$

$= \frac{\frac{b-2}{b}}{1} \times \frac{1}{\frac{b-1}{b}}$

$= \frac{b-2}{b-1}$ //

6. (a).

Collected from sales = $60 + 119.80

= 179.80.

No. apples sold = $179.80 \div 0.35$

= 228

No apples thrown = 240 − 228

= 12.

∴ percentage thrown = $\frac{12}{240} \times 100\%$

= 5%. //

(b) percentage of profit = $\frac{19.8}{60} \times 100\%$

= 33%. //

7. (a) $\frac{\frac{3}{x} - \frac{x}{3}}{\frac{1}{x} - \frac{1}{3}} = \frac{\frac{9-x^2}{3x}}{\frac{3-x}{3x}} = \frac{9-x^2}{3x} \times \frac{3x}{3-x}$

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

$= 3+x$ //

(b) $\frac{\frac{6}{y} - 5 + y}{\frac{1}{2} + \frac{1}{2y} - \frac{3}{y^2}} = \frac{6 - 5y + y^2}{y} \Big/ \frac{y^2 + y - 6}{2y^2}$

$= \frac{6 - 5y + y^2}{y} \times \frac{2y^2}{y^2 + y - 6}$

$= \frac{(y-2)(y-3)}{y} \times \frac{2y^2}{(y+3)(y-2)}$

$= \frac{2y(y-3)}{y+3}$

(c) $\frac{10u^2v + 2uv^2}{2u^2v}$

$= \frac{2uv(5u+v)}{2u^2v}$

$= \frac{5u+v}{u}$

8. $\frac{AB}{PQ} = \frac{8}{14}$

$= \frac{4}{7}$.

∴ $x\text{cm} = BC = \frac{4}{7} \times 10\text{cm}$

$= 5\frac{5}{7}$ cm //

∴ $y\text{cm} = RP = \frac{7}{4} \times 10\text{cm}$

$= 17\frac{1}{2}$ cm //

$x = 5\frac{5}{7}$, $y = 17\frac{1}{2}$.

9. (a) $\frac{6t-3}{2t+7} = \frac{3t-2}{t+5}$

$(2t+7)(3t-2) = (t+5)(6t-3)$.

$6t^2 - 4t + 21t - 14 = 6t^2 - 3t + 30t - 15$

$6t^2 + 17t - 14 = 6t^2 + 27t - 15$

$-10t + 1 = 0$.

$-10t = -1$

$t = \frac{1}{10}$. //

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(b). $6x - 4 = \frac{2}{x}$.

$6x^2 - 4x = 2$.

$6x^2 - 4x - 2 = 0$.

$(3x+1)(2x-2) = 0$.

$\therefore 3x + 1 = 0$ or $2x - 2 = 0$.

$3x = -1$ $\quad$ $2x = 2$

$x = -\frac{1}{3}$ // $\quad$ $x = 1$. //

10. (a). Let the height be $x$ cm.

$\therefore$ area of triangle $= \frac{1}{2} \times h \times b$

$= \frac{1}{2} \times x \times (x+3)$

$= \frac{1}{2} \times (x^2 + 3x)$

$\frac{1}{2} \times (x^2 + 3x) = 35$

$\frac{1}{2}x^2 + 1.5x = 35$

$x^2 + 3x = 70$.

$x^2 + 3x - 70 = 0$.

$(x-7)(x+10) = 0$.

$\therefore (x-7) = 0$ or $x + 10 = 0$

$x = 7$ $\quad$ $x = -10$.

↑ negative. ~~cannot be a~~ measurement.

Base $= x + 3$

$= 7 + 3$

$= 10$ cm. //

(b). No. of $\angle$s $159°$ $= \left(360° - [(180° - 115°) + (180° - 95°)]\right) \div (180° - 159°)$

$= 10$.

$\therefore$ Total no. of side $= 10 + 2$

$= 12$. //