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DATE: Nov / Dec Hols.

Holiday Assignment

- Assessment paper set A.

(TB pg 181, 28)

1. Cost of petrol → $\frac{418}{11} \times \$1.05$

= $39.90.

2. $x^2 = -\frac{27}{x}$

$x^3 = -27$

$x = \sqrt{-27}$

$x = -3$. //

3. Wage per week = (6 × $28.50) + (2 × $28.50)

= $228.

Total wage = $228 × 3

= $684 //

4. (a) 0745 − 0900 = $1\frac{1}{4}$h

Average speed = $\frac{450}{1} \times \frac{4}{5}$

= 600km/h.

(b) A recieves = $\frac{3}{8} \times \$88$

= $33. //

B recieves = $\frac{5}{8} \times \$88$

= $55 //

5. (a) Percentage increase

= $\frac{75}{500} \times 100\%$.

= 15%.

7. $(\frac{1}{x} - 3)^2 = \frac{4}{9}$

$\frac{1}{x} - 3 = \pm\frac{2}{3}$

$\frac{1}{x} = \pm\frac{2}{3} + 3$

$\frac{1}{x} = \frac{11}{3}$ or $\frac{7}{3}$

$x = \frac{3}{11}$ or $\frac{7}{3}$ //

8. (a) $-\frac{16}{27}$, $\frac{32}{81}$

(b). 8192, 2 097 152.

9. (a) Graph A. As the water level rises to the middle, the circumference round it decreases, therefore less water is needed to fill the small area so it's water level rises faster at the centre.

(b).

11. (a) sum of 3 no. → 12 × 3

= 36. //

(b) Total of 8 no. → (18 × 5) + 36

= 126

Mean of 8 no. → $\frac{126}{8}$

= 15.75 //

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12. Volume of cone → $\frac{1}{3} \times (6.3^2 \times 3.14) \times 8.4$

$= 349 \text{ cm}^3$ // (nearest cm^3).

Area (surface) of cone → $3.14 \times 6.3 \times$ [slant height] $+ (3.14 \times 6.3^2)$.

$=$

13. $O\hat{A}B = (180^\circ - 120^\circ) \div 2$ (common Ls of isoc. Δ)

$= 30^\circ$

$\therefore C\hat{A}B = 90^\circ - 30^\circ$ (angles of a right ∠).

$= 60^\circ$

$\tan 60^\circ = \frac{BC}{10}$

$BC = 10 \tan 60^\circ$

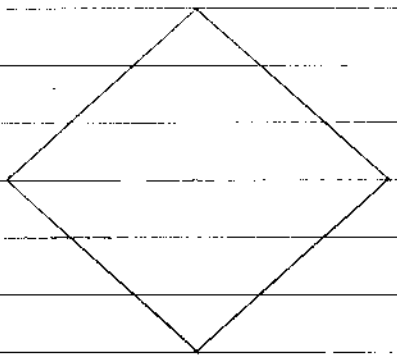
$= 10\sqrt{3}$ cm

Hence, area of rectangle.

$= 10 \text{ cm} \times 10\sqrt{3} \text{ cm}$

$= 100\sqrt{3} \text{ cm}^2$ //

16.



rhombus

rectangle.

14. (a) $\tan B\hat{Q}P = \frac{2}{4}$

$B\hat{Q}P = \tan^{-1}(\frac{1}{2})$

$= 30^\circ$

$B\hat{Q}P = C\hat{Q}R = 30^\circ$.

$\tan 30^\circ = \frac{x}{QC}$

$QC = \frac{x}{\tan 30^\circ}$

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

$= 2x$ cm //

(b) $B\hat{Q}P = R\hat{A}D = 30^\circ$.

$\therefore \tan 30^\circ = \frac{7}{AD}$

$AD = \frac{7}{\frac{1}{2}}$

$= 14$ cm.

$2x + 4\text{cm} = 14$ cm

$2x = 2(14 - 4)$ cm

$x = 5$ //

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Paper II

(TB 2B PG 184.).

Section A.

2. (a) $\cos 62^\circ = \frac{CB}{10}$

$CB = 4.6947$ cm (5 s.f.).

$\tan 45^\circ = \frac{CD}{CB}$

$= \frac{CD}{4.6947}$

$CD = 4.6947 \tan 45^\circ$

$= 4.69$ cm (3 s.f.) //.

(b) $\cos 62^\circ = \frac{NB}{4.6947}$

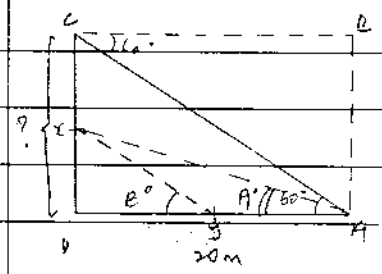
$NB = 2.2040$ cm (5 s.f.).

$AN = 10 - 2.2040$

$= 7.796$ cm

$= 7.80$ cm (3 s.f.) //.

3.



(a) $\tan 60^\circ = \frac{CD}{20}$

$CD = 20 \tan 60^\circ$

$= 34.641$ m (5 s.f.).

$= 35$ m (nearest m).

∴ the apartment is 35 m tall //.

(b). $\tan A^\circ = \frac{\frac{1}{2}(34.641)}{20}$

$A^\circ = 40.893^\circ$ (5 s.f.).

$= 41^\circ$ (nearest °) //

∴ the angle of elevation is 41°.

(c). $\tan B^\circ = \frac{\frac{1}{2}(34.641)}{10}$

$B^\circ = 60.000^\circ$ (5 s.f.).

$= 60^\circ$

//

5. (a) Trapezium //

(b). Area of $\triangle ABE = \frac{1}{2} \times 2x \times 2x$

$= 2x^2$ cm^2 //

(c). Area of $\triangle PQT = \frac{1}{2} \times x \times x$

$= \frac{x^2}{2}$ cm^2

Area of BESR $= 2x^2 - \frac{x^2}{2}$

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

$= \frac{3x^2}{2}$ cm^2

$\therefore \frac{\text{area of } \triangle PQT}{\text{area of BESR}} = \frac{\frac{x^2}{2}}{\frac{3x^2}{2}}$

$= \frac{1}{3}$ //

Section B.

6. (a) 9 exterior angles $= 360^\circ$

1 exterior angle $= 40^\circ$

∴ 1 interior angle $= 180^\circ - 40^\circ$

$= 140^\circ$ //

(b) interior angle of 3 sided polygon

$= 180^\circ \div 3$

$= 60^\circ$

∴ interior angle of n-sided polygon

$= 360^\circ - 60^\circ - 140^\circ$

$= 160^\circ$ //.

(c) exterior angle of n-sided polygon

$= 180^\circ - 160^\circ$

$= 20^\circ$

$\therefore n = 360^\circ \div 20^\circ$

$= 18$. //

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7. (b) the first n patterns $= 3+5+7+9 \cdots +(2n+1)$ or $(n+1)^2-1$

OR $(n+1)^2-1$

OR $n(n+2)$

(a) First 4 patterns $= 3+5+7+9$ or 5^2-1

First 5 patterns $= 3+5+7+9+11$ or 6^2-1

(c). $((n+1)^2-1) = 1000$

$(n+1)^2 = 1001$

$n+1 = 31.639$ (5 s.f.).

$n = 31.639 - 1$

$= 30.639.$

≈ 30 (round down).

∴ The value of n is 30. //

(d). $1000 - (31^2-1) = 40.$

∴ 40 sticks would be left over. //