

FINAL



KWAZULU-NATAL PROVINCE

EDUCATION
REPUBLIC OF SOUTH AFRICA

**PROVINCIAL STANDARDISED
ASSESSEMENT**

GRADE 12

MATHEMATICS P2

SEPTEMBER 2026

PREPARATORY EXAMINATION

MARKING GUIDELINES

MARKS: 150

These marking guidelines consist of 15 pages.

QUESTION 1

1.1	$\bar{x} = \frac{107}{10}$ $= 10,7$ Answer only: Full marks	✓A $\bar{x} = \frac{107}{10}$ ✓CA answer (2)
1.2	$a = 49,51$ $b = 2,62$ $\hat{y} = 49,51 + 2,62x$	✓A value of a ✓A value of b ✓CA equation (3)
1.3	$r = 0,96$ Penalty for incorrect rounding: Only in this question.	✓A answer (1)
1.4	There is a very strong correlation between gym hours and maximum performance minutes.	✓CA very strong (1)
1.5	$\hat{y} = 49,51 + 2,62(4)$ $= 59,99$ minutes OR 59,97 minutes (from calculator)	✓CA substitution ✓CA answer (2) OR ✓✓A A answer (2)
1.6	Increase	✓A answer (1)
[10]		

QUESTION 2

2.1	200	✓A answer (1)
2.2.1	R3920	✓A answer (accept: R3850 – R4000) (1)
2.2.2	No. of Bolt vehicles for which fares are R5000 or less = 153 No of Bolt vehicles for which fares are more than R5000 $= 200 - 153$ $= 47$	✓A 153 (accept: 150 – 155) ✓CA subtraction ✓CA answer (accept: 45 – 50) (3)
2.3	20% of 200 = 40 Reading from the graph this equates to R2425 in fares. $\text{distance travelled} = \frac{2425}{25}$ $= 97 \text{ km}$ $\therefore x = 97$	✓A 40 ✓CA amount in fares (accept: R2400 – R2450) ✓CA dividing amount by 25 ✓CA answer (accept: 96 to 98 km) (4)
[9]		

QUESTION 3

3.1.1	Midpoint of EH $= \left(\frac{-2+2}{2}; \frac{-3+0}{2} \right)$ $= \left(0; \frac{-3}{2} \right)$ Answer only: Full marks	✓A x-value ✓A y-value (2)
3.1.2	$m_{EF} = \frac{-5-(-3)}{2-(-2)}$ $= \frac{-1}{2}$ Answer only: Full marks	✓A substitution ✓CA answer (2)
3.1.3	$m_{DG} = m_{EF} = \frac{-1}{2}$ [DG ∥ EF] $y = mx + c$ Substitute (2 ; 0): $0 = \left(\frac{-1}{2} \right)(2) + c$ $c = 1$ $\therefore y = \frac{-1}{2}x + 1$	✓CA $m_{DG} = \frac{-1}{2}$ ✓CA substitution ✓CA answer (3)
3.1.4	$m_{DG} = \tan \hat{DHC} = -\frac{1}{2}$ $\hat{DHC} = 153,43^\circ$ $\alpha = 180^\circ - 153,43^\circ = 26,57^\circ$ [∠s on a straight line] $\theta = 90^\circ + 26,57^\circ = 116,57^\circ$ [ext ∠ of ΔDOH]	✓CA $\tan \hat{DHC} = -\frac{1}{2}$ ✓CA size of $\hat{DHC}$ ✓CA size of θ (3)
3.2	D(0;1) $m_{DE} = \frac{-3-1}{-2-0} = 2$ $m_{DE} \times m_{DG} = 2 \times -\frac{1}{2} = -1$ $\therefore DE \perp DG$	✓CA coordinates of D ✓CA $m_{DE} = 2$ ✓A showing that product of gradients = -1 (3)
3.3.1	$\left(0; \frac{-3}{2} \right)$	✓CA answer (1)

3.3.2	$(x-0)^2 + \left[y - \left(-\frac{3}{2}\right)\right]^2 = r^2$ $x^2 + \left(y + \frac{3}{2}\right)^2 = r^2$ $r^2 = (2-0)^2 + \left[0 - \left(-\frac{3}{2}\right)\right]^2$ $= 4 + \frac{9}{4} = \frac{25}{4}$ $\therefore x^2 + \left(y + \frac{3}{2}\right)^2 = \frac{25}{4}$ Answer only: 3/4	✓CA substitution of coordinates of centre ✓CA substitution of $H(2; 0)$ ✓CA value of r^2 ✓CA equation of circle (4)
[18]		

QUESTION 4

4.1	$(x-4)^2 + (y-6)^2 = 10^2$ $(-4-4)^2 + (p-6)^2 = 10^2$ $(p-6)^2 = 36$ $p-6 = \pm\sqrt{36} \quad \text{OR} \quad p^2 - 12p + 36 = 36$ $p-6 = 6 \text{ or } p-6 = -6 \quad p(p-12) = 0$ $p = 12 \text{ or } p \neq 0 \quad p = 12 \text{ or } p \neq 0$ $\therefore p = 12 \quad \therefore p = 12$	✓A equation of the circle/distance formula ✓CA substitution of point J ✓CA simplification ✓A $p-6 = \pm\sqrt{36}$ OR $p(p-12) = 0$ (4)
4.2.1	$C(4; 6-10)$ $\therefore C(4; -4)$ Answer only: Full marks	✓A x-coordinate ✓A y-coordinate (2)
4.2.2	$m_{MJ} = \frac{12-6}{-4-4} = -\frac{3}{4}$ $\therefore m_{AJB} = \frac{4}{3} \quad [\text{radius} \perp \text{tangent}]$ $y = \frac{4}{3}x + c$ Subst. point J: $12 = \frac{4}{3}(-4) + c$ $c = \frac{52}{3}$ $y = \frac{4}{3}x + \frac{52}{3}$	✓A gradient of radius ✓CA gradient of tangent ✓CA substitution of gradient and point J ✓CA equation of tangent (4)

4.2.3	$y_A = \frac{4}{3}(4) + \frac{52}{3} = \frac{68}{3}$ $AC = y_A - y_C = \frac{68}{3} - (-4) = \frac{80}{3}$ Calculate x-coordinate of B: $\frac{x_B + 4}{2} = -9$ $\therefore x_B = -22$ height of $\triangle ABC \perp AC = 4 - (-22) = 26$ units $\therefore \text{Area of } \triangle ABC = \frac{1}{2} \times \text{base} \times \text{height}$ $= \frac{1}{2} \times \frac{80}{3} \times 26$ $= \frac{1040}{3} = 346,67 \text{ units}^2$ OR Coordinates of A: $y_A = \frac{4}{3}(4) + \frac{52}{3} = \frac{68}{3}$ $AC = y_A - y_C = \frac{68}{3} - (-4) = \frac{80}{3}$ Coordinates of B: $\frac{x_B + 4}{2} = -9 \qquad \frac{-4 + y_B}{2} = -8$ $\therefore x_B = -22 \qquad \therefore y_B = -12$ $\therefore B(-22; -12)$ Length of AB = $\sqrt{(-22 - 4)^2 + \left(-12 - \frac{68}{3}\right)^2} = \frac{130}{3}$ $\tan^{-1}\left(\frac{4}{3}\right) = 53,13^\circ$ $\therefore \hat{A} = 180^\circ - 90^\circ - 53,13^\circ = 36,87^\circ$ $\therefore \text{Area of } \triangle ABC = \frac{1}{2} AB \cdot AC \sin A$ $= \frac{1}{2} \left(\frac{130}{3}\right) \left(\frac{80}{3}\right) \sin 36,87^\circ$ $= 346,67 \text{ units}^2$	✓CA calculation of y_A ✓CA length of AC ✓CA calculation of x_B ✓CA value of x-coordinate of B ✓CA height of $\triangle ABC$ ✓CA substitution into area formula ✓CA answer (7) OR ✓CA calculation of y_A ✓CA length of AC ✓CA values of coordinates of B ✓CA length of AB ✓CA size of $\hat{A}$ ✓CA substitution into area formula ✓CA answer (7)
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Grade 12 - Marking Guidelines

4.3	For circles touching externally, the distance between centres: $d = r_1 + r_2$ $(4-4)^2 + (6-n)^2 = (10+10)^2$ $36 - 12n + n^2 = 400$ $n^2 - 12n - 364 = 0$ $(n+14)(n-26) = 0$ $\therefore n = -14 \quad \text{or} \quad n = 26$ OR $n = 6 - 2(r) \quad \text{or} \quad n = 6 + 2(r)$ $= 6 - 2(10) \quad \quad \quad = 6 + 2(10)$ $= -14 \quad \quad \quad = 26$	✓A $d = r_1 + r_2$ ✓A substitution ✓A $n = -14$ ✓A $n = 26$ (4) OR ✓A $n = 6 - 2(r)$ ✓A $n = 6 + 2(r)$ ✓A $n = -14$ ✓A $n = 26$ (4)
[21]		

QUESTION 5

5.1.1	$x = -3 ; y = -\sqrt{7}$ $(-3)^2 + (-\sqrt{7})^2 = r^2 \quad \quad \quad [\text{Pythagoras}]$ $r^2 = 16$ $r = 4$ $\therefore \cos \alpha = \frac{-3}{4}$	✓A substitution ✓CA value of r ✓CA answer (3)
5.1.2	$\sin 3\alpha \cos 2\alpha - \cos 3\alpha \sin 2\alpha$ $= \sin(3\alpha - 2\alpha)$ $= \sin \alpha$ $= \frac{-\sqrt{7}}{4}$	✓A $\sin \alpha$ ✓CA answer (2)
5.2	$\frac{\sin 290^\circ \cdot \sin(90^\circ + x) \cdot \sin 160^\circ}{\cos(-x - 360^\circ) \cdot \sin 220^\circ}$ $= \frac{(-\sin 70^\circ) \cdot (\cos x) \cdot \sin 20^\circ}{\cos x \cdot (-\sin 40^\circ)}$ $= \frac{-\cos 20^\circ \cdot \sin 20^\circ}{-\sin 40^\circ}$ $= \frac{\sin 20^\circ \cos 20^\circ}{2 \sin 20^\circ \cos 20^\circ}$ $= \frac{1}{2}$	✓A $-\sin 70^\circ$ and $\sin 20^\circ$ ✓A $\cos x$ (in numerator) ✓A $\cos x$ (in denominator) ✓A $-\sin 40^\circ$ ✓CA $\sin 70^\circ = \cos 20^\circ$ ✓CA double angle expansion ✓CA answer (7)

5.3.1	$\frac{\frac{1}{4} - \cos(\theta - 60^\circ) \cdot \cos(\theta + 60^\circ)}{\sin 2\theta}$ $= \frac{\frac{1}{4} - [(\cos \theta \cos 60^\circ + \sin \theta \sin 60^\circ)(\cos \theta \cos 60^\circ - \sin \theta \sin 60^\circ)]}{2 \sin \theta \cos \theta}$ $= \frac{\frac{1}{4} - [\cos^2 \theta \cos^2 60^\circ - \sin^2 \theta \sin^2 60^\circ]}{2 \sin \theta \cos \theta}$ $= \frac{\frac{1}{4} - \cos^2 \theta \left(\frac{1}{2}\right)^2 + \sin^2 \theta \left(\frac{\sqrt{3}}{2}\right)^2}{2 \sin \theta \cos \theta}$ $= \frac{\frac{1}{4} - \frac{1}{4} \cos^2 \theta + \frac{3}{4} \sin^2 \theta}{2 \sin \theta \cos \theta}$ $= \frac{\frac{1}{4}(1 - \cos^2 \theta) + \frac{3}{4} \sin^2 \theta}{2 \sin \theta \cos \theta}$ $= \frac{\frac{1}{4} \sin^2 \theta + \frac{3}{4} \sin^2 \theta}{2 \sin \theta \cos \theta}$ $= \frac{\sin^2 \theta}{2 \sin \theta \cos \theta}$ $= \frac{1}{2} \tan \theta$ $= \text{RHS}$	✓A compound $\angle$ expansions ✓A double $\angle$ expansion ✓A simplifying numerator ✓A special angle values ✓A common factor ✓A using square identity ✓A $\frac{\sin^2 \theta}{2 \sin \theta \cos \theta}$ (7)
5.3.2	Undefined at $\theta = 90^\circ$, because $\tan 90^\circ$ is undefined. Also undefined when $\sin 2\theta = 0$ $2\theta = 0^\circ + k \cdot 180^\circ$ $\therefore \theta = 0^\circ + k \cdot 90^\circ$ Therefore, in the interval $\theta \in [0^\circ; 180^\circ]$, the identity is undefined at: $\theta = 0^\circ; 90^\circ; 180^\circ$.	✓A 0° ✓A 90° ✓A 180° (3)
[22]		

QUESTION 6

6.1.1	$A(210^\circ; -1)$	✓A 210° ; ✓A -1 (2)
6.1.2	$\sin(2x - 60^\circ) = 1$ $2x - 60^\circ = 90$ $2x = 150^\circ$ $x = 75^\circ$ $\therefore B(75^\circ; 1)$ OR $y = \sin(2x - 60^\circ) = \sin 2(x - 30^\circ)$ The graph of $y = \sin 2(x - 30^\circ)$ is obtained by translating the graph of $y = \sin 2x$ to the right by 30° . $y = \sin 2x$ has a maximum turning point at $x = 45^\circ$. Therefore, the graph of $y = \sin(2x - 60^\circ)$ will have a maximum turning point at $x = 45^\circ + 30^\circ = 75^\circ$. Therefore, the coordinates of B will be $(75^\circ; 1)$.	✓A setting up equation ✓A x-coordinate ✓A y-coordinate (3) OR ✓A translation of 30° to the right ✓A x-coordinate ✓A y-coordinate (3)
6.2	360°	✓A answer (1)
6.3	Range of $y = \cos(x - 30^\circ)$ is $-1 \leq y \leq 1$ $\therefore$ Range of $y = 2^{\cos(x-30^\circ)}$ is $\frac{1}{2} \leq y \leq 2$ Answer only: Full marks	✓A range of $\cos(x - 30^\circ)$ ✓✓CA CA answer (3)
6.4.1	$\frac{1}{2} \sin 2x - \frac{\sqrt{3}}{2} \cos 2x = \cos(x - 30^\circ)$ $\sin 2x \cos 60^\circ - \cos 2x \sin 60^\circ = \cos(x - 30^\circ)$ $\sin(2x - 60^\circ) = \cos(x - 30^\circ)$ $\sin(2x - 60^\circ) = \sin(90 - (x - 30^\circ))$ $\sin(2x - 60^\circ) = \sin(120^\circ - x)$ $2x - 60^\circ = 120^\circ - x + k.360^\circ$ or $2x - 60^\circ = 180^\circ - (120^\circ - x) + k.360^\circ$ $3x = 180^\circ + k.360^\circ$ $x = 120^\circ + k.360^\circ, k \in \mathbb{Z}$ $x = 60^\circ + k.120^\circ, k \in \mathbb{Z}$ OR $k \in \mathbb{Z} :$ at least once.	✓A special angles ✓A compound angle identity used ✓CA co-ratio ✓CA both equations ✓CA $x = 120^\circ + k.360^\circ$ ✓CA $x = 60^\circ + k.120^\circ$ (6) OR

	$\frac{1}{2}\sin 2x - \frac{\sqrt{3}}{2}\cos 2x = \cos(x - 30^\circ)$ $\sin 30^\circ \sin 2x - \cos 30^\circ \cos 2x = \cos(x - 30^\circ)$ $-(\cos 30^\circ \cos 2x - \sin 30^\circ \sin 2x) = \cos(x - 30^\circ)$ $-\cos(2x + 30^\circ) = \cos(x - 30^\circ)$ $2x + 30^\circ = 180^\circ - (x - 30^\circ) + k.360^\circ \quad \text{or} \quad 2x + 30^\circ = 180^\circ + (x - 30^\circ) + k.360^\circ$ $3x = 180^\circ + k.360^\circ \quad \text{or} \quad x = 120^\circ + k.360^\circ, k \in Z$ $x = 60^\circ + k.120^\circ, k \in Z$ OR $\frac{1}{2}\sin 2x - \frac{\sqrt{3}}{2}\cos 2x = \cos(x - 30^\circ)$ $\cos 60^\circ \sin 2x - \sin 60^\circ \cos 2x = \cos(x - 30^\circ)$ $\sin 2x \cos 60^\circ - \cos 2x \sin 60^\circ = \cos(x - 30^\circ)$ $\sin(2x - 60^\circ) = \cos(x - 30^\circ)$ $\sin 2(x - 30^\circ) = \cos(x - 30^\circ)$ $2\sin(x - 30^\circ)\cos(x - 30^\circ) = \cos(x - 30^\circ)$ $\cos(x - 30^\circ)[2\sin(x - 30^\circ) - 1] = 0$ $\cos(x - 30^\circ) = 0 \quad \text{or} \quad \sin(x - 30^\circ) = \frac{1}{2}$ $x - 30^\circ = 90^\circ + k.180^\circ \quad \text{or} \quad x - 30^\circ = 30^\circ + k.360^\circ \quad \text{or}$ $x - 30^\circ = 150^\circ + k.360^\circ$ $x = 120^\circ + k.180^\circ, k \in Z \quad x = 60^\circ + k.360^\circ, k \in Z \quad x = 180^\circ + k.360^\circ, k \in Z$	✓A special angles ✓A compound angle identity used ✓CA co-ratio ✓CA both equations ✓CA $x = 120^\circ + k.360^\circ$ ✓CA $x = 60^\circ + k.120^\circ$ (6) OR ✓A special angles ✓A compound angle identity used ✓CA factorisation ✓CA all 3 equations ✓CA $x = 120^\circ + k.180^\circ$ ✓CA $x = 60^\circ + k.360^\circ$ and $x = 180^\circ + k.360^\circ$ (6)
6.4.2	60°	✓CA answer (1)
[16]		

QUESTION 7

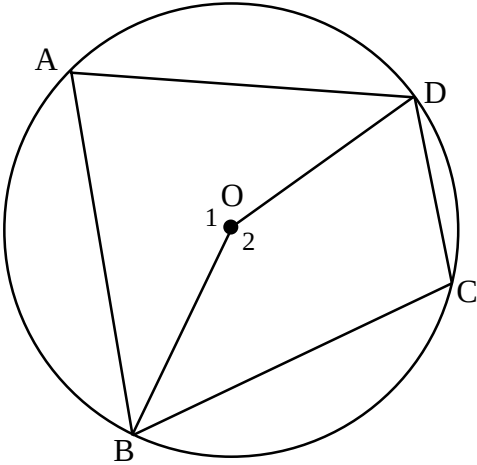
7.1	In $\triangle ABC$: $\frac{AB}{r} = \tan 2\theta$ $\therefore AB = r \tan 2\theta$ In $\triangle ABD$: $\frac{AB}{R} = \tan \theta$ $\therefore AB = R \tan \theta$ $\therefore r \tan 2\theta = R \tan \theta$ $R = \frac{r \tan 2\theta}{\tan \theta}$ $= \frac{(r) \frac{\sin 2\theta}{\cos 2\theta}}{\frac{\sin \theta}{\cos \theta}}$ $= \left(\frac{r \cdot 2 \sin \theta \cos \theta}{2 \cos^2 \theta - 1} \right) \times \frac{\cos \theta}{\sin \theta}$ $= \frac{2r \cos^2 \theta}{2 \cos^2 \theta - 1}$	✓A $\frac{AB}{r} = \tan 2\theta$ ✓A $\frac{AB}{R} = \tan \theta$ ✓A equating ✓A quotient identity ✓A double angle expansion ✓A double angle expansion (6)
7.2	$BD = \frac{2r \cos^2 \theta}{2 \cos^2 \theta - 1} = \frac{2(2) \cos^2 30^\circ}{2 \cos^2 30^\circ - 1} = 6 \text{ m}$ In $\triangle BCD$: $CD^2 = BD^2 + BC^2 - 2BD \cdot BC \cdot \cos \hat{C}BD$ $7^2 = 6^2 + 2^2 - 2(6)(2) \cos \hat{C}BD$ $\cos \hat{C}BD = -\frac{9}{24}$ $\hat{C}BD = 112,02^\circ$ Area of $\triangle BCD = \frac{1}{2} \cdot BC \cdot BD \cdot \sin \hat{C}BD$ $= \frac{1}{2} (2)(6) \sin 112,02^\circ$ $= 5,6 \text{ m}^2$ OR	✓A length of BD ✓CA substitution into cosine rule ✓CA value of $\cos \hat{C}BD$ ✓CA size of $\hat{C}BD$ ✓CA substitution into area rule ✓CA answer (6) OR

	$BD = \frac{2r \cos^2 \theta}{2 \cos^2 \theta - 1} = \frac{2(2) \cos^2 30^\circ}{2 \cos^2 30^\circ - 1} = 6 \text{ m}$ In $\triangle BCD$: $BD^2 = BC^2 + CD^2 - 2BC \cdot CD \cdot \cos \hat{BCD}$ $6^2 = 2^2 + 7^2 - 2(2)(7) \cos \hat{BCD}$ $\cos \hat{BCD} = \frac{17}{28}$ $\hat{BCD} = 52,62^\circ$ $\text{Area of } \triangle BCD = \frac{1}{2} \cdot BC \cdot CD \cdot \sin \hat{BCD}$ $= \frac{1}{2}(2)(7) \sin 52,62^\circ$ $= 5,6 \text{ m}^2$ OR $BD = \frac{2r \cos^2 \theta}{2 \cos^2 \theta - 1} = \frac{2(2) \cos^2 30^\circ}{2 \cos^2 30^\circ - 1} = 6 \text{ m}$ In $\triangle BCD$: $BC^2 = BD^2 + CD^2 - 2BD \cdot CD \cdot \cos \hat{BDC}$ $2^2 = 6^2 + 7^2 - 2(6)(7) \cos \hat{BDC}$ $\cos \hat{BDC} = \frac{81}{84}$ $\hat{BDC} = 15,36^\circ$ $\text{Area of } \triangle BCD = \frac{1}{2} \cdot BD \cdot CD \cdot \sin \hat{BDC}$ $= \frac{1}{2}(6)(7) \sin 15,36^\circ$ $= 5,6 \text{ m}^2$	✓ A length of BD ✓ CA substitution into cosine rule ✓ CA value of $\cos \hat{BCD}$ ✓ CA size of $\hat{BCD}$ ✓ CA substitution into area rule ✓ CA answer (6) OR ✓ A length of BD ✓ CA substitution into cosine rule ✓ CA value of $\cos \hat{BDC}$ ✓ CA size of $\hat{BDC}$ ✓ CA substitution into area rule ✓ CA answer (6)
[12]		

QUESTION 8

8.1.1	$\hat{A}DC = 67^\circ$ [ext $\angle$ of cyclic quad]	✓S ✓R (2)
8.1.2	$\hat{A} = 67^\circ$ [alt $\angle$ s; $BC \parallel AD$]	✓S ✓R (2)
8.1.3	$\hat{C} = 180^\circ - 67^\circ$ $= 113^\circ$ [opp $\angle$ s of cyclic quad]	✓ R ✓ S (2)
8.1.4	$\hat{B}_2 = \hat{A} = 67^\circ$ [$\angle$ s opp = sides] $\hat{D}_1 = \hat{B}_2 = 67^\circ$ [tan-chord th]	✓S/R ✓S ✓R (3)
8.2	$\hat{D}_2 = \hat{B}_3$ [alt. $\angle$ s; $BC \parallel AD$] $\therefore AB = CD$ [converse: equal chords subtend equal angles] OR $\hat{D}_2 = 180^\circ - (67^\circ + 67^\circ)$ [sum of $\angle$ s in Δ] $= 46^\circ$ $\hat{B}_3 = 180^\circ - (67^\circ + 67^\circ)$ [$\angle$ s on a str line] $= 46^\circ$ $\hat{D}_2 = \hat{B}_3$ $\therefore AB = CD$ [converse: equal chords subtend equal angles]	✓S ✓R ✓R OR ✓S/R ✓S $\hat{B}_3 = 46^\circ$ ✓R (3)
[12]		

QUESTION 9

9.1		
	Construct radii OD and OB. $\hat{O}_1 = 2\hat{C}$ [$\angle$ at centre = $2 \times \angle$ at circumf] $\hat{O}_2 = 2\hat{A}$ [$\angle$ at centre = $2 \times \angle$ at circumf] $\hat{O}_1 + \hat{O}_2 = 360^\circ$ [$\angle$ s around a point] $\therefore 2\hat{C} + 2\hat{A} = 360^\circ$ $\hat{C} + \hat{A} = 180^\circ$ or: $\hat{A} + \hat{C} = 180^\circ$	✓ construction ✓S ✓R ✓S/R ✓S
9.2.1	$\hat{G}_2 = 90^\circ$ [radius $\perp$ tangent] $\hat{H}_4 = 90^\circ$ [line from centre to midpoint of chord] $\hat{G}_2 + \hat{H}_4 = 180^\circ$ $\therefore$ OGEH is a cyclic quadrilateral [converse opp $\angle$ s of cyclic quad] OR $\hat{G}_2 = 90^\circ$ [radius $\perp$ tangent] $\hat{H}_1 = 90^\circ$ [line from centre to midpoint of chord] $\hat{G}_2 + \hat{H}_1 = 180^\circ$ $\therefore$ OGEH is a cyclic quadrilateral [converse: exterior $\angle$ of cyclic quad]	✓S/R ✓S ✓R ✓R OR S/R ✓S ✓R ✓R
9.2.2	In $\triangle AHC$ and $\triangle DHC$ 1. $AH = DH$ [given] 2. $HC = HC$ [common] 3. $\hat{H}_2 = \hat{H}_3$ [both = 90°] $\therefore \triangle AHC \equiv \triangle DHC$ [SAS] $\therefore \hat{C}_1 = \hat{C}_2$ [congruent $\triangle$ s]	✓S ✓R ✓R

QUESTION 10

10.1.1	$\frac{CE}{EA} = \frac{FC}{BF}$ [prop th , EF AB] $\therefore \frac{CE}{EA} = \frac{3}{2}$	✓R ✓ answer (2)
10.1.2	In ΔEFC and ΔABC 1) $\hat{C}_2 = \hat{C}_2$ [common] 2) $\hat{E}_1 = \hat{A}_1$ [corr ∠s , AB EF] 3) $\hat{EFC} = \hat{B}$ [sum of ∠s in Δ] $\therefore \Delta EFC \parallel \Delta ABC$ [∠∠∠] $\frac{EF}{AB} = \frac{FC}{BC}$ [Δs] $\therefore \frac{EF}{AB} = \frac{3}{5}$	✓S ✓S/R ✓R ✓S/R ✓S (5)
10.2	In ΔEGF and ΔCGD 1) $\hat{E}_1 = \hat{C}_1$ [alt ∠s , EF CD] 2) $\hat{F}_2 = \hat{D}_2$ [alt ∠s , EF CD] 3) $\hat{G}_3 = \hat{G}_1$ [vert opp ∠s] $\therefore \Delta EGF \parallel \Delta CGD$ [∠∠∠] $\frac{EG}{CG} = \frac{EF}{CD}$ [Δs] But, CD = AB [opp sides of parm ABCD] $\therefore \frac{EG}{CG} = \frac{EF}{AB}$ $\therefore EG = \frac{CG \cdot EF}{AB}$	✓S/R ✓S/R ✓S/R ✓S/R ✓S (5)
[12]		

TOTAL: 150 MARKS