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KWAZULU-NATAL PROVINCE

EDUCATION
REPUBLIC OF SOUTH AFRICA

PROVINCIAL STANDARDISED ASSESSEMENT

GRADE 10

MATHEMATICS

SEPTEMBER 2026

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MARKS: 75

TIME: $1\frac{1}{2}$ hours

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INSTRUCTIONS AND INFORMATION

Read the following instructions carefully before answering the questions.

1. This question paper consists of 7 questions.
2. Answer ALL the questions.
3. Number the answers correctly according to the numbering system used in this question paper.
4. Clearly show ALL calculations, diagrams, graphs, etc. which you have used in determining your answers.
5. Answers only will NOT necessarily be awarded full marks.
6. You may use an approved scientific calculator (non-programmable and non-graphical), unless stated otherwise.
7. If necessary, round off answers correct to TWO decimal places, unless stated otherwise.
8. Diagrams are NOT necessarily drawn to scale.
9. Write neatly and legibly.

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QUESTION 1

Sompukwane Secondary school conducted a survey on the amount of data (in GB) a group of teachers used last year on Tik-Tok on their cellphones.

5	7	9	10	11	13	16	18	21	25	25	27	31

1.1 Determine the interquartile range. (3)

1.2 Draw a box and whisker to represent the data. (3)

1.3 Comment on the skewness of the data. (1)

[7]

QUESTION 2

The number of goals that Orlando Pirates F.C scored in their League matches during 2024/2025 season was recorded in the table below. stanmorephysics.com

League Matches	**Number of Goals**
$0 < x \leq 5$	9
$5 < x \leq 10$	14
$10 < x \leq 15$	6
$15 < x \leq 20$	5
$20 < x \leq 25$	8
$25 < x \leq 30$	t

2.1 If $1 < t < 5$, in which interval does the lower quartile lie? (2)

2.2 If the estimated mean is 12,61, calculate the value of t (number of goals that Orlando Pirates F.C scored in their last five matches). (4)

2.3 Draw a histogram to represent the number of goals scored. (3)

[9]

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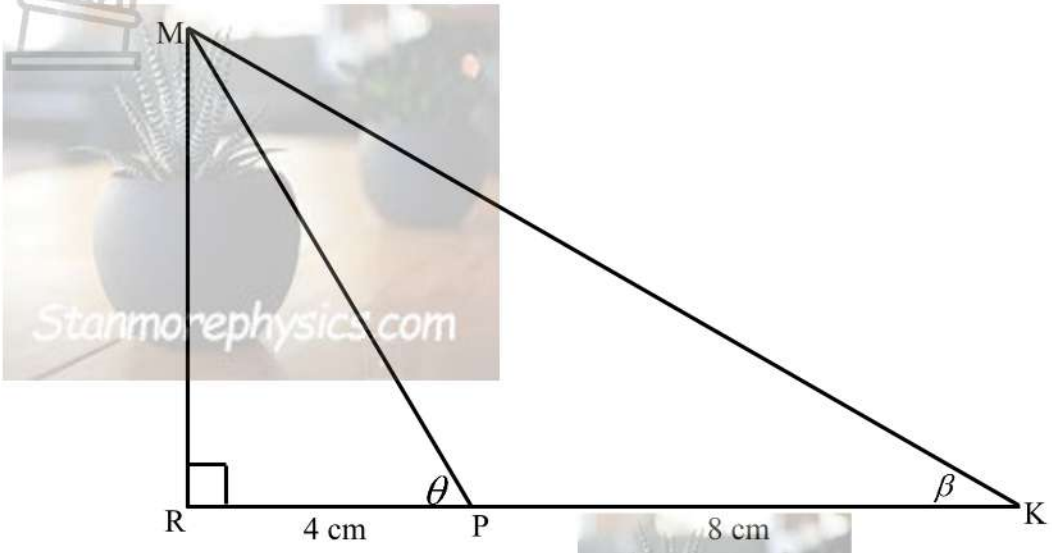
QUESTION 3

Given below is triangle MRK with point P on RK. RP = 4cm and PK = 8cm.

$\widehat{MPR} = \theta$ and $\widehat{MKR} = \beta$.



3.1 Determine the length of MR in terms of β. (2)

3.2 If MP = 8cm and $\theta = 2\beta$, calculate the numerical value of MK. (4)
[6]

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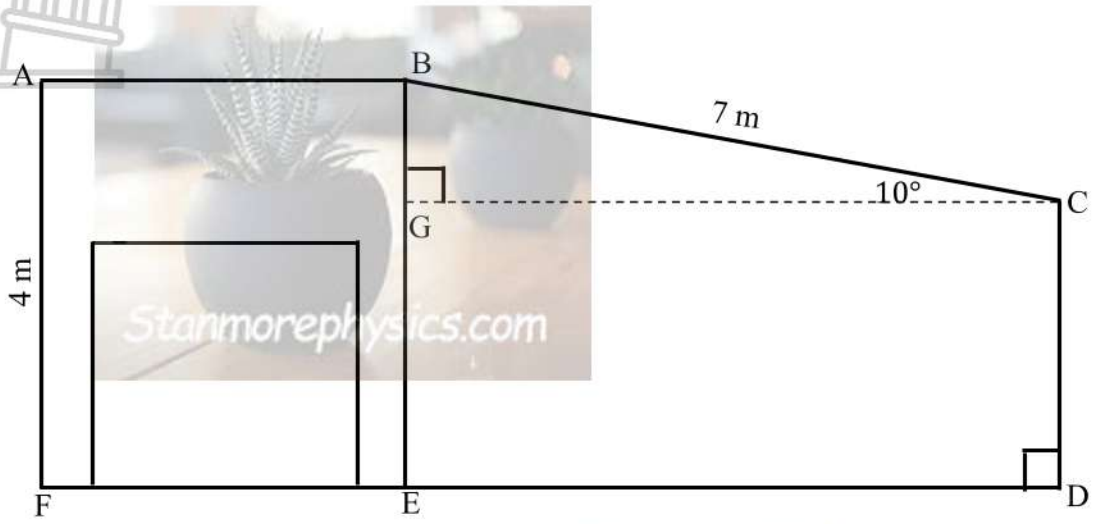
QUESTION 4

Mr Mavundla is adding a corrugated iron roof to the side of his 4m high garage (ABEF). He uses a roof sheet (BC) that is 7m long. From point C, the angle of elevation to the top of the roof at point B is 10°. 3FE = ED.



4.1 How high must he build the wall CD? (correct to TWO decimal places) (4)

4.2 Calculate the length of FD. (correct to ONE decimal place) (4)
[8]

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QUESTION 5

5.1 Six years ago, a certain amount of money was invested in a bank. The value of the investment is currently R230 000. Calculate the original amount invested, if the interest rate was 6,5% per annum simple interest. stanmorephysics.com (3)

5.2 John buys a computer which costs R18 000. He takes out a 36-month hire purchase agreement. He pays a deposit of 10% and the interest charged on the balance is 13,5% per annum simple interest. Calculate:

5.2.1 How much he must pay each month. (4)

5.2.2 The actual amount paid for the computer. (2)

5.3 Grade 10 learners are studying the population growth of a species of frog. In a pond constructed for the frogs, they start with 56 frogs and notice that after 10 months the number of frogs has increased to 67. Calculate the average monthly growth rate. (3)

5.4 A certain smart watch costs €390 in Germany or £285 in England. Which price is better for the South African buyer, if the exchange rates are R19,25 to the euro and R22,10 to the pound? (3)

[15]

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QUESTION 6

6.1 If P(A) = 0,2 and P(B) = 0,3 where A and B are mutually exclusive events, determine P(A and B). (1)

6.2 Given: P(A) = 0,6 P(B) = 0,4 and P(A and B) = 0,3. Determine the following:

6.2.1 P(A or B) (3)

6.2.2 P(not A) (2)

6.3 A 6-sided die is rolled **twice**.

Determine **the probability** that: (**Leave your answers as fractions**)

6.3.1 the sum is 8. (2)

6.3.2 the sum is greater than 8. (2)

6.4 In a group of Grade 10 learners, some take Mathematics (**M**), some take Business Studies (**BS**) and some take neither subject.

- P(M) = 0,6
- P(BS) = 0,5
- P(M and BS) = 0,3

6.4.1 Draw a Venn diagram showing all probabilities. (3)

6.4.2 Hence, determine the probability that a learner takes:

(a) Mathematics only. (1)

(b) Neither subject. (1)

[15]

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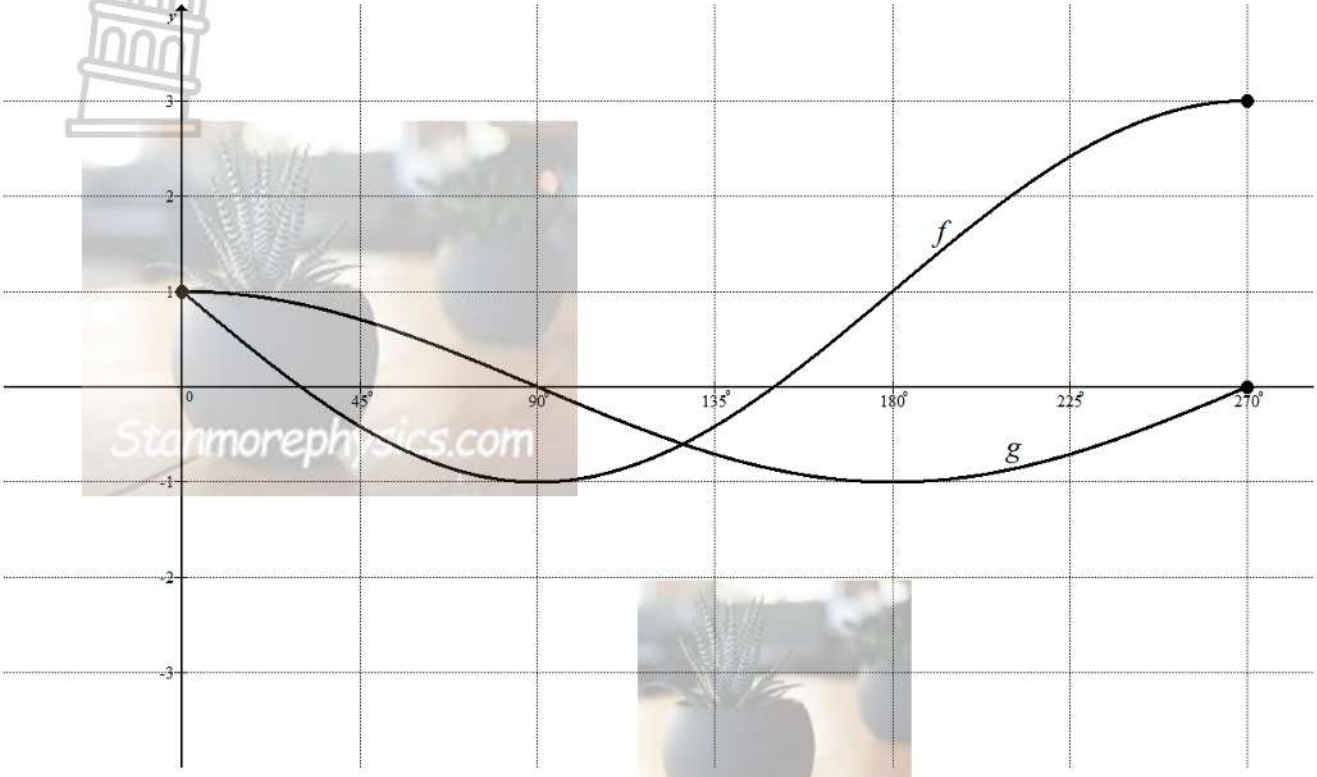
QUESTION 7

In the diagram , the graphs of $f(x)=a\sin x+1$ and $g(x)=\cos x$ are drawn for the interval $x\in[0°;270°]$.



7.1 Determine the value of a. (1)

7.2 Write down the range of $f(x)$. (2)

7.3 Write down the period of $g(x)$. (1)

7.4 For which values of x, in the interval $x\in[0°;270°]$ is f increasing? (2)

7.5 Use the graphs to determine the values of x, in the interval $x\in[0°;270°]$ for which:

7.5.1 $2g(x)=-2$ (2)

7.5.2 $(f(x)-1).g(x)\leq 0$ (4)

7.6 The graph of h is obtained when f is reflected in the x-axis and then shifted 2 units down. Determine the equation of h. (3)

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[15]

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PROVINCIAL STANDARDISED ASSESSMENT

GRADE 10

MATHEMATICS

SEPTEMBER 2026

SPECIAL ANSWER BOOK

Learner's Name & Surname	
School Name	
Grade	
Date	

For Educator / Moderator Use Only (Not for learners to complete)							
QUESTION	**Q1**	**Q2**	**Q3**	**Q4**	**Q5**	**Q6**	**Q7**
Total Per Question	**7**	**9**	**6**	**8**	**15**	**15**	**15**
Marks Scored							
Moderated Mark							

75

This answer book consists of 9 pages and 1 additional space page.

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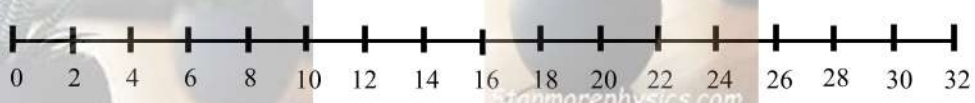
QUESTION 1

5	7	9	10	11	13	16	18	21	25	25	27	31

	Solution	Marks
1.1		(3)
1.2		(3)
1.3		(1)
		[7]

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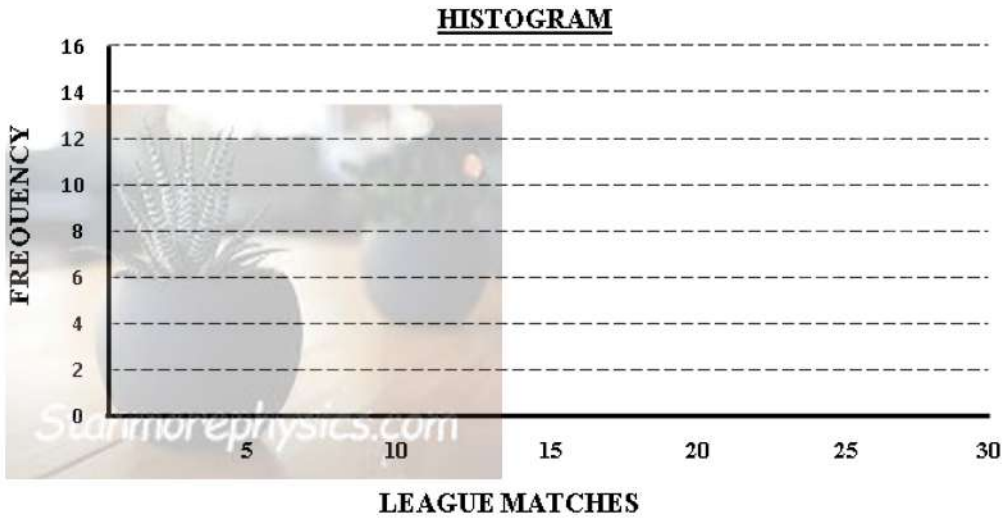
QUESTION 2

League Matches	Number of goals
$0 < x \leq 5$	9
$5 < x \leq 10$	14
$10 < x \leq 15$	6
$15 < x \leq 20$	5
$20 < x \leq 25$	8
$25 < x \leq 30$	t

	Solution	Marks
2.1		(2)
2.2		(4)
2.3		(3)
		[9]

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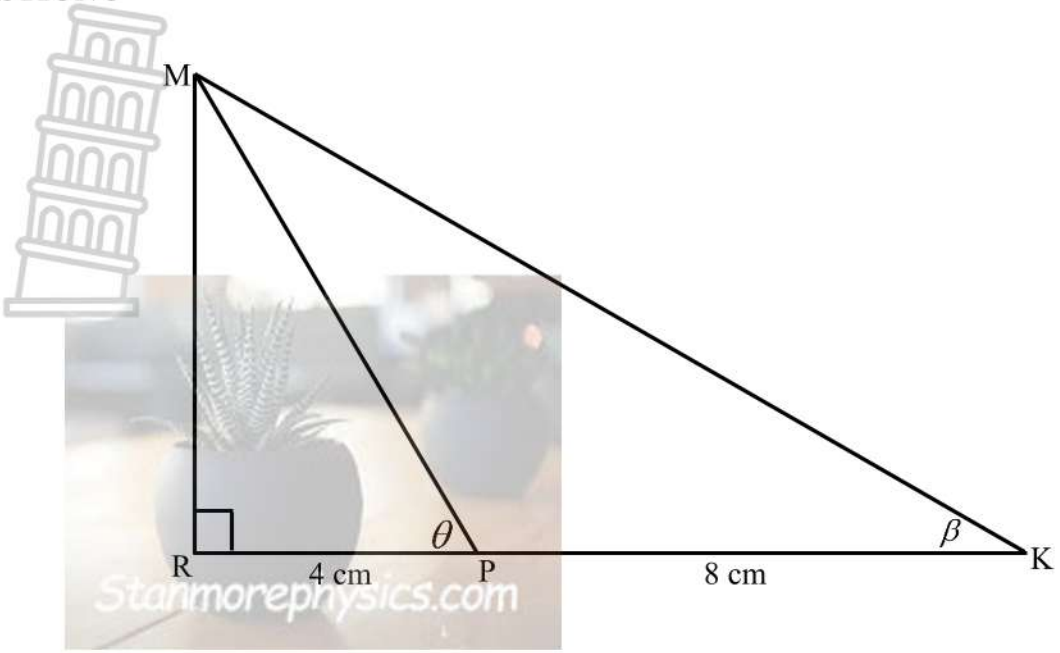
QUESTION 3



	Solution	Marks
3.1		(2)
3.2		(4)
		[6]

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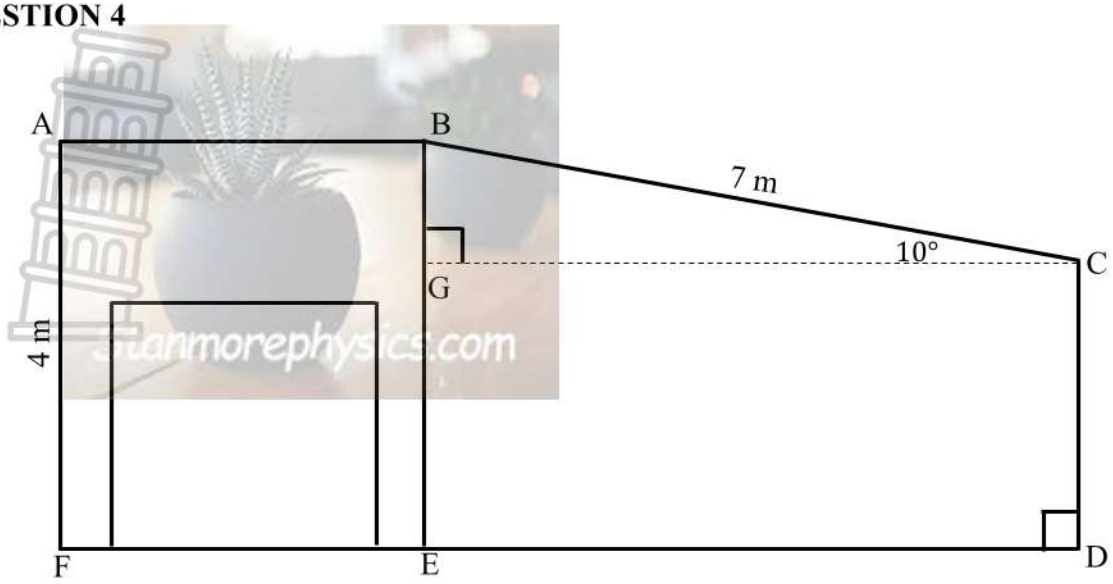
QUESTION 4



	Solution	Marks
4.1		(4)
4.2		(4)
		[8]

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QUESTION 5

	Solution	Marks
5.1		(3)
5.2.1		(4)
5.2.2		(2)
5.3		(3)
5.4		(3)
		[15]

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QUESTION 6

	Solution	Marks
6.1		(1)
6.2.1		(3)
6.2.2		(2)
6.3.1		(2)
6.3.2		(2)
6.4.1		(3)
6.4.2(a)		(1)
6.4.2(b)		(1)
		[15]

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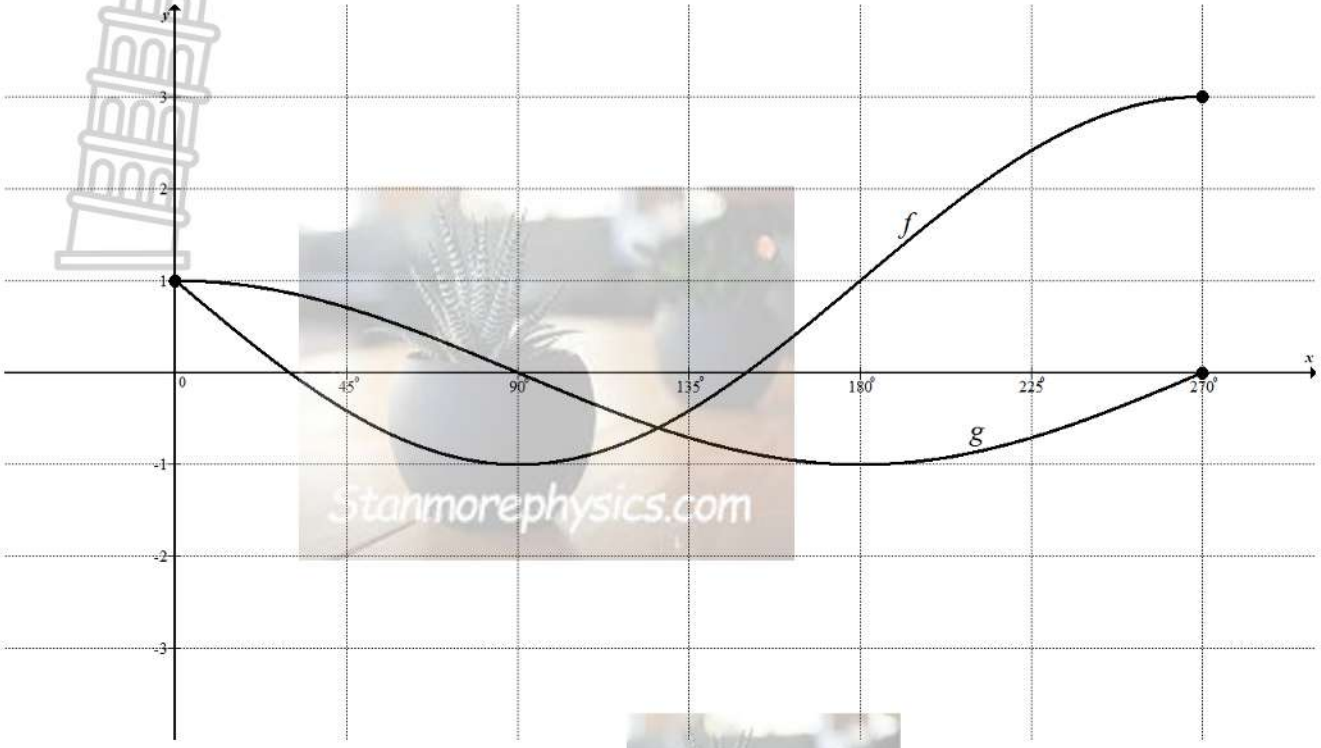
QUESTION 7



	Solution	Marks
7.1		(1)
7.2		(2)
7.3		(1)
7.4		(2)
7.5.1		(2)

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	Solution	Marks
7.5.2		(4)
7.6		(3)
		[15]

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	Additional space	Marks

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MARKING GUIDELINES

MARKS: 75

These marking guidelines consist of 8 pages.

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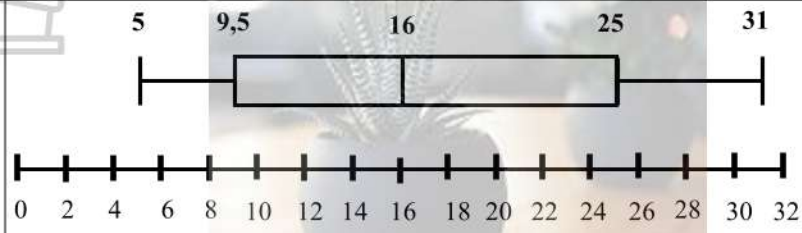
QUESTION 1

1.1	$Q_1 = 9,5$ $Q_3 = 25$ $IQR = 25 - 9,5$ $= 15,5$ Penalty for incorrect rounding: Only in this question.	✓A $Q_1 = 9,5$ ✓A $Q_3 = 25$ ✓CA answer (3)
1.2	 	✓A min & max ✓A Q_2 ✓CA Q_1 & Q_3 (3)
1.3	Skewed to the right /positively skewed stanmorephysics.com	✓CA answer (1)
		[7]

QUESTION 2

2.1	$5 < x \leq 10$	✓✓AA answer (2)
2.2	$\bar{x} = \frac{22,5 + 105 + 75 + 87,5 + 180 + 27,5t}{42 + t}$ $12,61 = \frac{470 + 27,5t}{42 + t}$ $14,89t = 59,62$ $t = 4$ $1 < t < 5;\ t \in \mathbb{N}$	✓A numerator ✓A $42 + t$ ✓CA simplification ✓CA answer (4)

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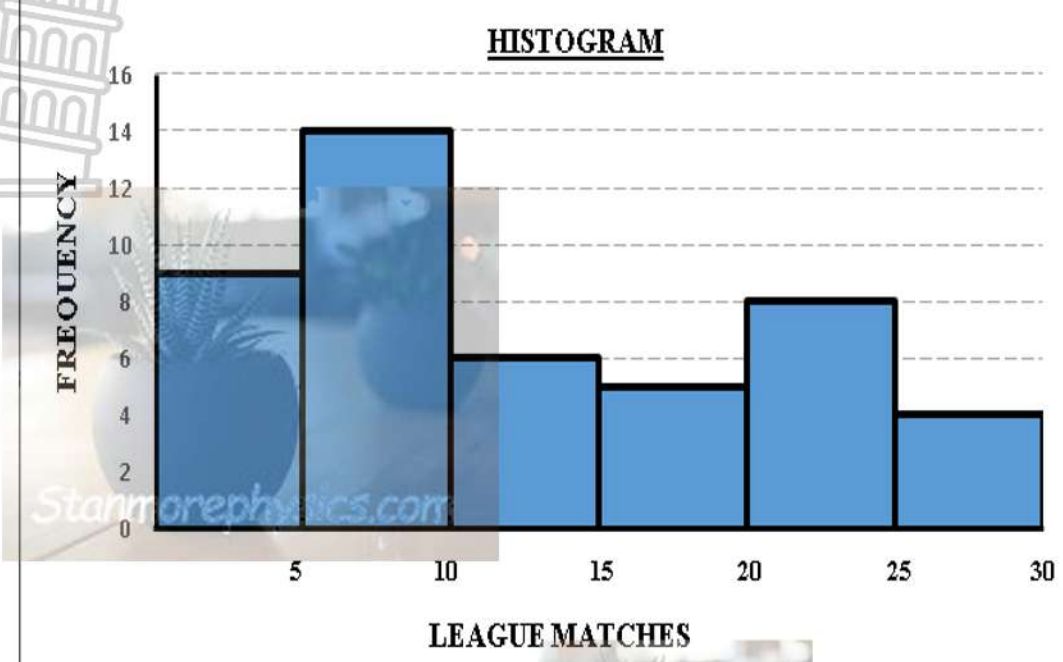
2.3		✓A 1st, 2nd and 3rd bars ✓A 4th and 5th bars ✓CA 6th bar (3)
		[9]

QUESTION 3

3.1	$\frac{MR}{RK} = \tan\beta$ $\frac{MR}{12} = \tan\beta$ $MR = 12\tan\beta$	✓A $RK = 12$ and correct trig ratio ✓CA answer (2)
3.2	$\cos\theta = \frac{RP}{MP}$ $\cos\theta = \frac{4}{8}$ $\theta = 60°$ $\therefore \beta = 30°$ $\cos\beta = \frac{12}{MK}$ $\cos 30° = \frac{12}{MK}$ $MK = 8\sqrt{3}$ / 13,86 cm **OR**	✓A $\cos\theta = \frac{4}{8}$ ✓A $\beta = 30°$ ✓CA $\cos 30° = \frac{12}{MK}$ ✓CA answer (4)

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	$\cos\theta = \frac{RP}{MP}$ $\cos\theta = \frac{4}{8}$ $\theta = 60°$	✓A $\theta = 60°$
	$MR = 12\tan\left(\frac{1}{2}\theta\right)$ $MR = 12\tan(30°)$ $MR = 4\sqrt{3}$	✓CA MR=$4\sqrt{3}$
	$\therefore MK^2 = MR^2 + RK^2$ $MK^2 = \left(4\sqrt{3}\right)^2 + (12)^2$ $MK = 8\sqrt{3}/13{,}86$ cm	✓CA substitution into Pythagoras ✓CA answer (4)
	OR	
	$\cos\theta = \cos 2\beta = \frac{4}{8}$ $2\beta = 60°$ $\therefore \beta = 30°$	✓A $\beta = 30°$
	$MR = 12\tan 30°$ $MR = 4\sqrt{3}$	✓CA MR=$4\sqrt{3}$
	$\therefore MK^2 = MR^2 + RK^2$ $MK^2 = \left(4\sqrt{3}\right)^2 + (12)^2$ $MK = 8\sqrt{3}/13{,}86$ cm	✓CA substitution into Pythagoras ✓CA answer (4)
	OR	
	In $\triangle MRP$ $MR^2 = MP^2 - RP^2$ $MR^2 = (8)^2 - (4)^2$ $MR^2 = 48$ cm	✓A substitution into Pythagoras ✓CA answer
	In $\triangle MRK$ $MK^2 = MR^2 + RK^2$ $MK^2 = 48 + (12)^2$ $MK = 8\sqrt{3}/13{,}86$ cm stanmorephysics.com	✓CA substitution into Pythagoras ✓CA answer (4)
		[6]

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QUESTION 4

4.1	$\sin 10° = \frac{BG}{7}$ $BG = 1,215537244$ or $BG = 7\sin 10°$ $\therefore CD = 4 - 1,215537244$ $CD = 4 - 7\sin 10°$ $CD = 2,78\text{m}$		✓✓AA correct trig ratio and substitution ✓CA ✓CA answer (4)
4.2	$GC^2 + BG^2 = BC^2$ $GC^2 + (1,22)^2 = (7)^2$ $GC = 6,8928...$ $ED = GC = 6,8928...$ $3FE = 6,8928...$ $FE = 2,2976...$ $FD = 6,8929 + 2,2976$ $FD = 9,2\text{m}$		✓CA correct substitution ✓CA $GC = 6,8928...$ ✓ CA $FE = 2,2976\ldots$ ✓CA answer (4)
	OR		
	$\cos 10° = \frac{GC}{7}$ $GC = 7\cos 10°$ $GC = 6,8936...$ $\therefore ED = GC = 6,8936...$ $3FE = ED$ $3FE = 6,8936...$ $FE = 2,2978...$ $FD = 4(2,2978)$ $FD = 9,2\text{m}$		✓CA $\cos 10° = \frac{GC}{7}$ ✓CA $ED = GC = 6,8936...$ ✓CA $FE = 2,2978...$ ✓CA answer (4)
	OR		
	$\tan 10° = \frac{BG}{GC}$ $\tan 10° = \frac{1,22}{GC}$ $GC = 6,9189...$ or $GC = \frac{1,22}{\tan 10°}$ $\therefore ED = GC = 6,9189...$ $3FE = ED$ $3FE = 6,9189...$ $FE = 2,306...$ $FD = 4(2,306)$ $\therefore FD = 9,2\text{m}$	Penalty if answer is not correct to one decimal place.	✓CA $\tan 10° = \frac{1,22}{GC}$ ✓CA $ED=GC=6,9189...$ ✓CA $FE=2,306321273$ ✓CA answer (4)
			[8]

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QUESTION 5

5.1	$A = P(1+in)$ $230\,000 = P\left(1+\frac{6,5}{100}\times 6\right)$ $P = \text{R}165\,467,63$	✓A value of n ✓A correct substitution into correct formula ✓CA answer (3)
5.2.1	$A = P(1+in)$ $P = 90\% \times \text{R}18000$ $= \text{R}16\,200$ $A = 16\,200\left(1+\frac{13,5}{100}\times 3\right)$ $A = \text{R}\,22\,761$ $\text{Monthly payment} = \frac{22\,761}{36}$ $= \text{R}\,632,25$	✓A value of P ✓CA substitution into correct formula ✓CA dividing A by 36 ✓CA answer (4)
5.2.2	Total amount paid = R 22 761 + 10% × 18 000 = R 24 561	✓CA adding a deposit ✓CA answer (2)
5.3	$A = P\left(1+\frac{r}{100}\right)^n$ Accept: $A = P(1+i)^n$ $67 = 56\left(1+\frac{r}{100}\right)^{10}$ $r = \left(\left(\frac{67}{56}\right)^{\frac{1}{10}} - 1\right)\times 100$ **or** $r = \left(\sqrt[10]{\frac{67}{56}} - 1\right)\times 100$ $\therefore r = 1,81\%$	✓A substitution into correct formula ✓CA simplification ✓CA answer (3)
5.4	€390 × 19,25 = R 7 507,50 £285 × 22,10 = R 6 298,50 ∴ £285 or R 6 298,50 is the better price.	Answer only: Award 1 mark. ✓A R 7 507,50 ✓A R 6 298,50 ✓CA answer (3)
		[15]

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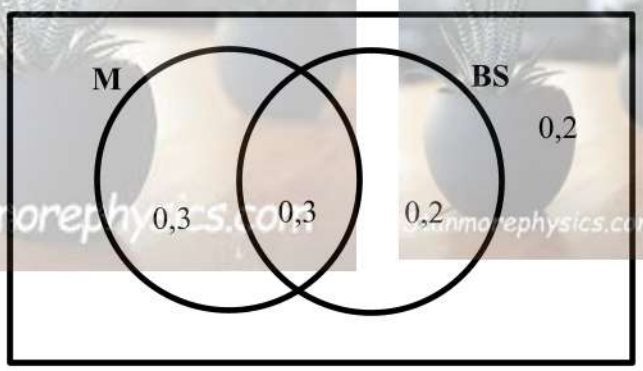
QUESTION 6

6.1	$P(A \text{ and } B) = 0$	✓A (1)
6.2.1	$P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$ $= 0,6 + 0,4 - 0,3$ $= 0,7$ Use of Venn Diagram to get 0,7 : Full marks	✓A formula ✓A correct substitution ✓CA answer (3)
6.2.2	$P(\text{not } A) = 1 - P(A)$ $= 1 - 0,6$ $\therefore P(\text{not } A) = 0,4$	✓A correct substitution ✓CA answer (2)
6.3.1	$P(\text{sum} = 8) = \frac{5}{36}$	✓A 5 ✓A 36 (2)
6.3.2	$P(\text{sum} > 8) = \frac{10}{36}$ or $\frac{5}{18}$	✓A 10 or 5 ✓A 36 or 18 (2)
6.4.1		✓A $P(M \text{ and } BS) = 0,3$ ✓A P(M only) & P(BS only) ✓A $P(\text{neither}) = 0,2$ (3)
6.4.2 (a)	$P(M \text{ only}) = 0,3$	✓CA (1)
6.4.2 (b)	$P(\text{Neither}) = 0,2$	✓CA (1)
		[15]

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QUESTION 7

7.1	$a=-2$	✓A $a=-2$ (1)
7.2	$y\in[-1;3]$ **OR** $-1\le y\le 3$	✓✓AA $y\in[-1;3]$ or $-1\le y\le 3$ (2)
7.3	Period $=360^\circ$	✓A 360° (1)
7.4	$90^\circ<x<270^\circ$ **OR** $x\in(90^\circ;270^\circ)$	✓✓AA $90^\circ<x<270^\circ$ **OR** ✓✓AA $x\in(90^\circ,270^\circ)$ (2)
7.5.1	$2\cos x=-2$ $\cos x=-1$ $x=180^\circ$ Answer only: Full marks.	✓A $\cos x=-1$ ✓CA answer (2)
7.5.2	$0^\circ\le x\le 90^\circ$ or $180^\circ\le x\le 270^\circ$ **OR** $x\in[0^\circ;90^\circ]\cup x\in[180^\circ;270^\circ]$	✓✓AA $0^\circ\le x\le 90^\circ$ or ✓✓AA $180^\circ\le x\le 270^\circ$ (4) **OR** ✓✓AA $x\in[0^\circ;90^\circ]$ ✓✓AA $x\in[180^\circ;270^\circ]$ (4)
7.6	$h(x)=-(-2\sin x+1)-2$ $h(x)=2\sin x-3$ Answer only: Full marks.	✓CA $h(x)=-(-2\sin x+1)-2$ ✓CA $2\sin x$ ✓CA -3 (3)
		[15]

TOTAL: 75 MARKS

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