KWAZULU-NATAL PROVINCE

EDUCATION
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 10

MATHEMATICS PAPER 2

NOVEMBER 2025

Stanmorephysics.com

MARKS : **100**

TIME: **2 hours**

This question paper consists of 11 pages, including an information sheet.

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INSTRUCTIONS AND INFORMATION

Read the following instructions carefully before answering the questions.

1. This question paper consists of 9 questions.

2. Answer ALL the questions.

3. Number the answers correctly according to the numbering system used in this question paper.

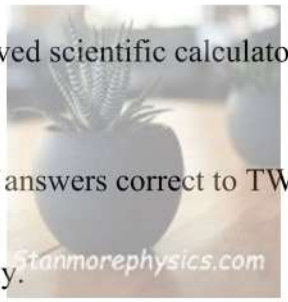
4. Clearly show ALL calculations, diagrams, graphs, etc. which you have used in determining your answers.

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. Write neatly and legibly.



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QUESTION 1

The table below shows the number of public schools from the NINE provinces in South Africa.

Provinces	Number of public schools
Eastern Cape	5 468
Free State	1 214
Gauteng	x
KwaZulu-Natal	5 895
Limpopo	3 867
Mpumalanga	1 725
Northern Cape	544
North West	1 472
Western Cape	1 450
Total	**23 718**

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1.1 Determine the value of x. (1)

1.2 Calculate the mean number of schools in South Africa. (2)

1.3 Write down the median province. (1)

1.4 Determine the interquartile range. (3)

1.5 Due to the population increase in South Africa, 0,68% more schools will be required in the next 15 years. Determine the number of schools needed in the next 15 years. (2)

[9]

QUESTION 2

The following table represents the grade 10 mathematics test results at Excel Secondary School.

MARKS (in %)	FREQUENCY
$20 \leq x < 30$	6
$30 \leq x < 40$	11
$40 \leq x < 50$	9
$50 \leq x < 60$	7
$60 \leq x < 70$	8
$70 \leq x < 80$	13
$80 \leq x < 90$	6

2.1 How many learners wrote the test? (1)

2.2 Calculate the estimated mean. (4)

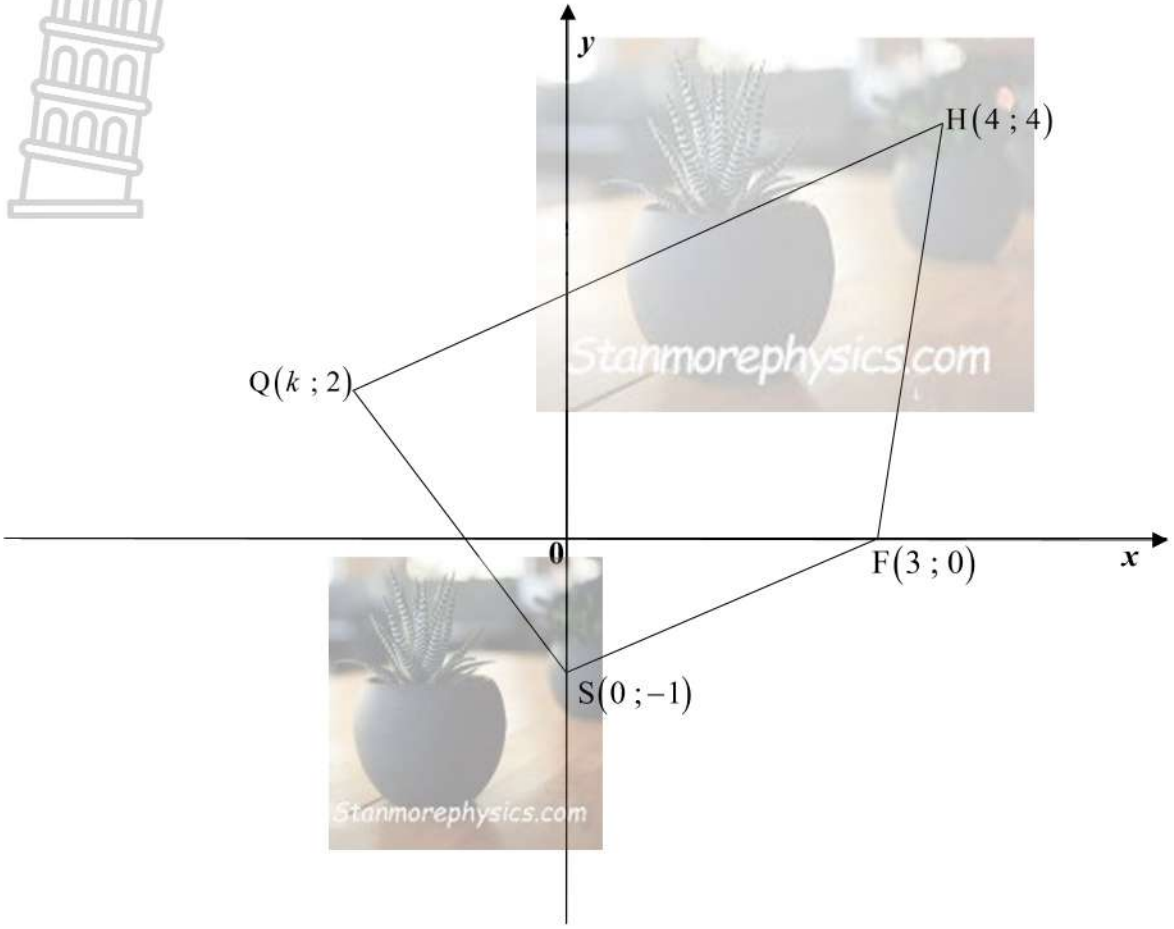
2.3 Calculate the percentage of learners who obtained less than SIXTY PERCENT. (2)

[7]

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QUESTION 3

3.1 In the diagram below, trapezium QHFS is drawn, such that QH//SF.



3.1.1 Determine the gradient of SF. (2)

3.1.2 Determine the equation of QH. (3)

3.1.3 Calculate the value of k. (2)

3.1.4 Determine the length of HF. (2)

3.1.5 Calculate the coordinates of M, the midpoint of HS. (3)

3.2 Line segment AB is perpendicular to the segment CD. $A(-5 ; 2)$ and $B(p ; -1)$ are points on AB. If the gradient of segment CD is 2, calculate the value of p. (3)

[15]

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QUESTION 4

4.1 If $x = 67,7°$ and $y = 52,3°$. Calculate the following correct to TWO decimal places.

4.1.1 $\dfrac{\sin x}{2}$ (2)

4.1.2 $\cos(3y)$ (2)

4.1.3 $\text{cosec}\left(\dfrac{x-y}{2}\right)$ (2)

4.2 Solve for θ in the following equations (correct to ONE decimal place).

4.2.1 $3 + \cos 4\theta = 3,706$ (3)

4.2.2 $4\tan\theta = 7 - 4\tan\theta$ (3)

4.3 In which quadrant does the terminal arm of the angle θ lie if:

4.3.1 $\sin\theta < 0$ and $\cos\theta < 0$ (1)

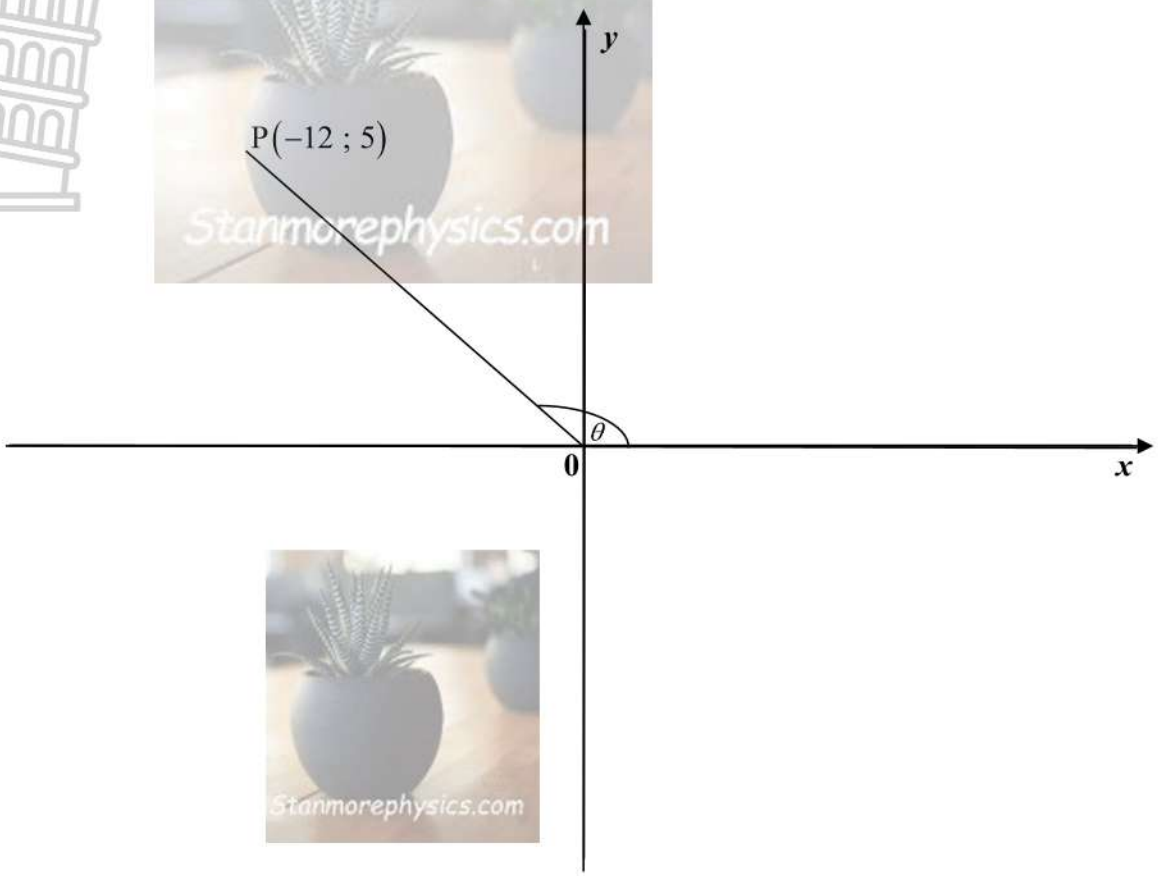
4.3.2 $\tan\theta < 0$ and $\cos\theta \geq 0$ (1)

[14]

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QUESTION 5

5.1 In the diagram below, $P(-12\ ;\ 5)$ is a point in the Cartesian plane such that $X\hat{O}P = \theta$.



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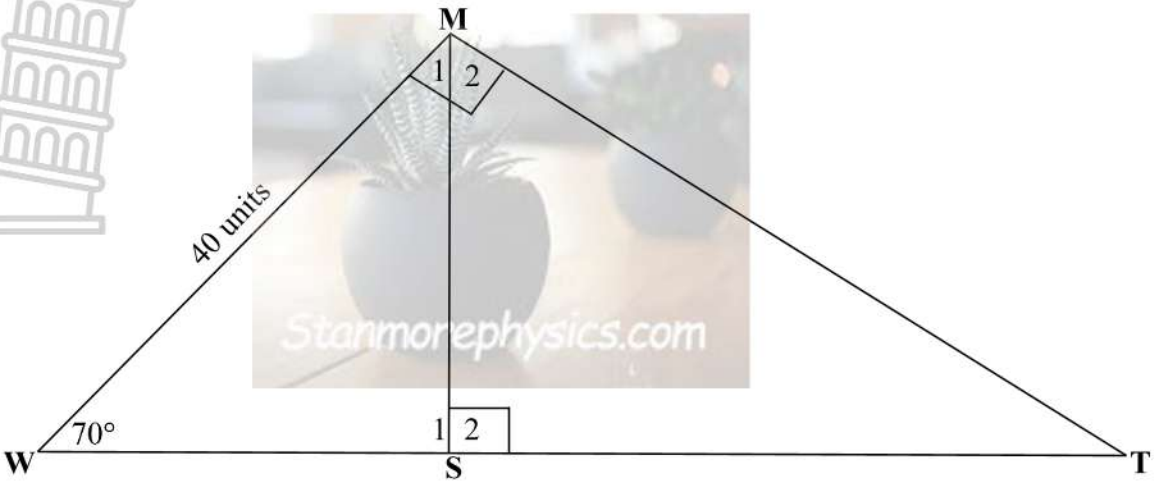
5.1.1 Calculate the length of OP. (2)

5.1.2 Hence, WITHOUT the use of a calculator, determine the value of:

a) $\tan\theta$ (1)

b) $(\sin\theta + \cos\theta)^2$ (3)

5.2 In the diagram below $W\hat{M}T = 90°$, $MS \perp WT$, $\hat{W} = 70°$ and $MW = 40$ units.



5.2.1 Determine the length of WS. (3)

5.2.2 Hence, or otherwise determine the length of ST. (5)

[14]

QUESTION 6

Given: $g(x) = \cos x + 1$ and $f(x) = 2\sin x$ for $x \in [0° ; 360°]$.

6.1 On the grid provided in your SPECIAL ANSWER BOOK, sketch the graphs of f and g on the same set of axes for $x \in [0° ; 360°]$. (4)

6.2 Write down the period of f. (1)

6.3 Determine the range of g. (2)

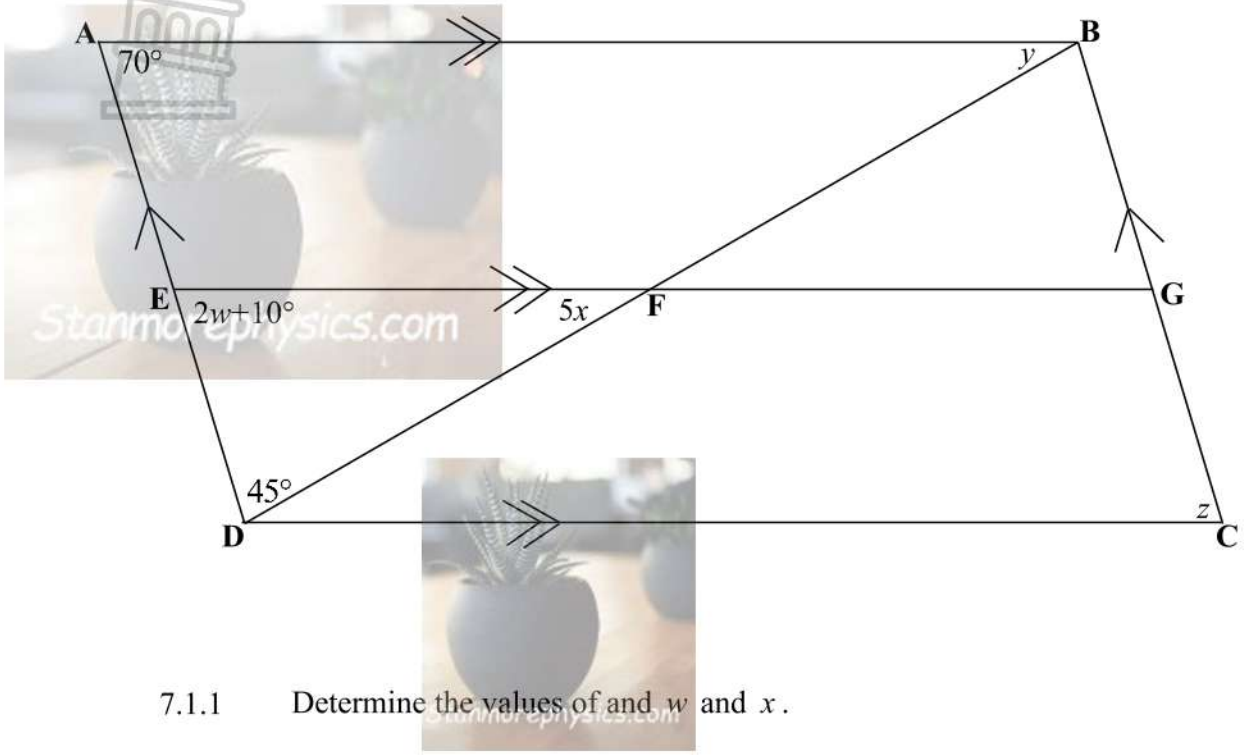
6.4 For which value of x will $\frac{g(x) - f(x)}{3} = 1$? (2)

[9]

In the next TWO questions, ensure you give reasons for each statement you make.

QUESTION 7

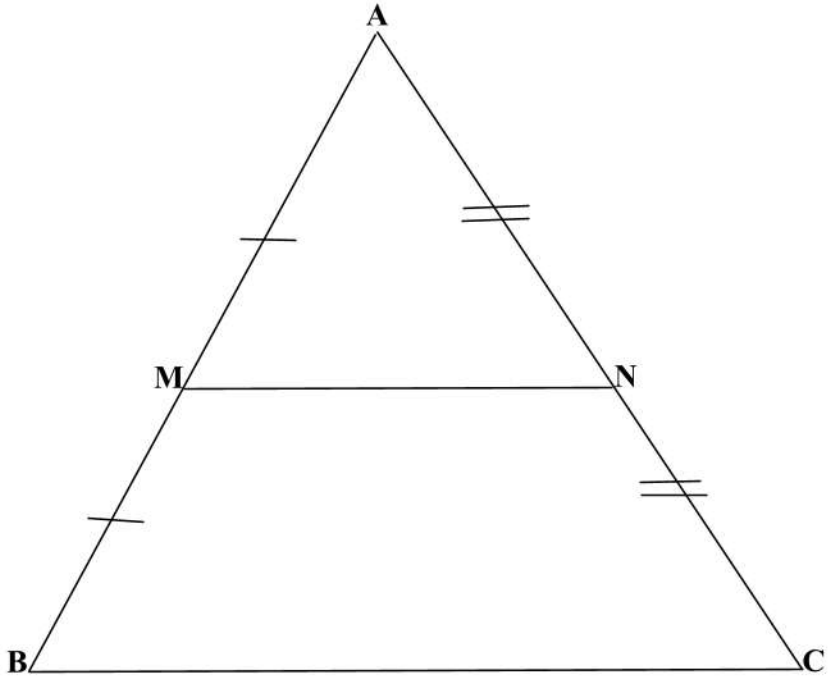
7.1 In the diagram below, ABCD is a parallelogram with AB//EG//DC.



7.1.1 Determine the values of and w and x. (4)

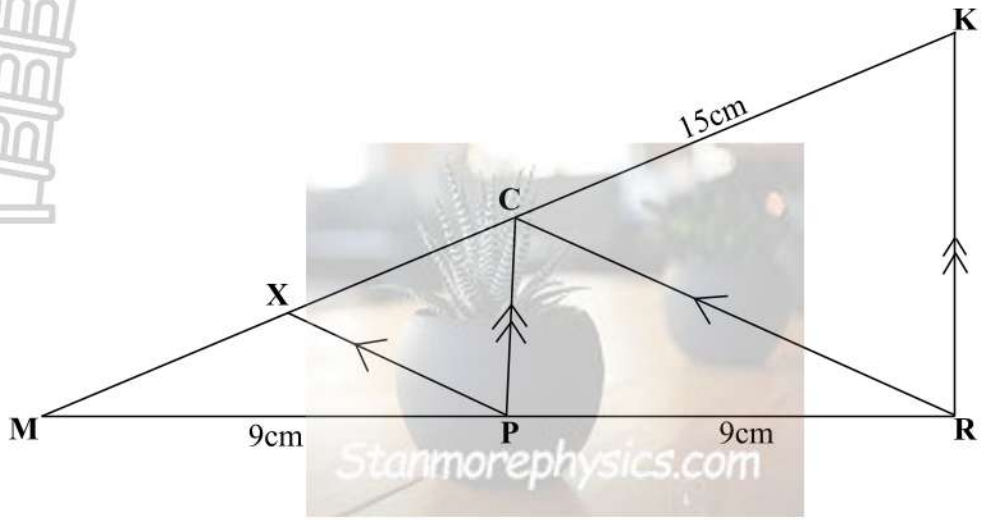
7.1.2 Calculate the values of y and z. (4)

7.2 Given ΔABC, where $AM = MB$ and $AN = NC$.



Prove the theorem which states that $MN = \frac{1}{2}BC$ (5)

7.3 In the diagram below KR//CP, PX//RC , $MP = PR = 9\text{cm}$ and $CK = 15\text{cm}$.



7.3.1 Prove that $MX = \frac{15}{2}\text{cm}$ (3)

7.3.2 Calculate KR if $KR = \frac{16}{5}MX$ (2)

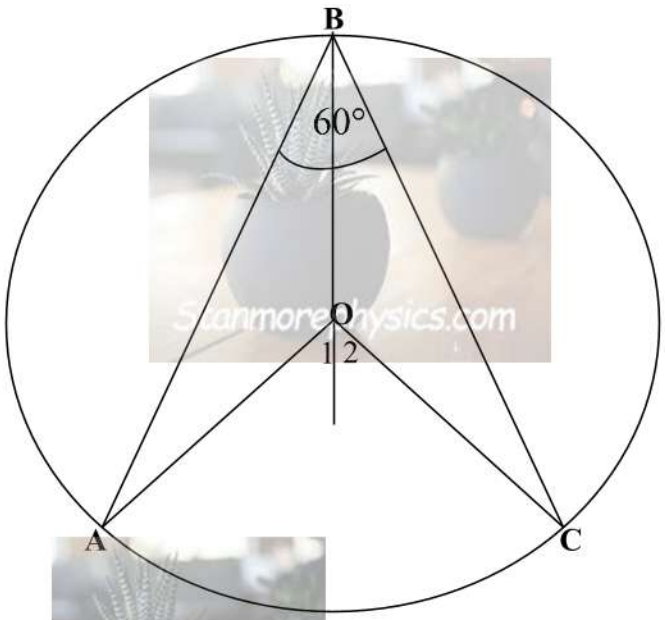
7.3.3 Hence, prove that $M\hat{R}K = 90°$ (2)

[20]

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QUESTION 8

In the diagram below, OB bisects $A\hat{B}C$. O is the centre of the circle and $A\hat{B}C = 60°$.



8.1 Determine the size of $A\hat{B}O$. (1)

8.2 Calculate the size of $\hat{O}_1$. (3)

8.3 Hence, prove that $\Delta OAB \equiv \Delta OCB$. (3)

[7]

QUESTION 9

A globe of the world, spherical in shape, is placed in a geography classroom.
The globe has a radius of 21 cm.



9.1 Calculate the volume of the globe, correct to ONE decimal place. (2)

9.2 Determine the area of the globe, correct to ONE decimal place. (2)

9.3 If the radius is doubled, what would be the ratio of the volume of the original sphere to the volume of the new sphere? (1)

[5]

TOTAL MARKS: 100

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INFORMATION SHEET: MATHEMATICS

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$A = P(1+ni) \qquad A = P(1-ni) \qquad A = P(1-i)^n \qquad A = P(1+i)^n$$

$$T_n = a + (n-1)d \qquad S_n = \frac{n}{2}[2a + (n-1)d]$$

$$T_n = ar^{n-1} \qquad S_n = \frac{a(r^n - 1)}{r-1} \;;\; r \neq 1 \qquad S_\infty = \frac{a}{1-r} \;;\; -1 < r < 1$$

$$F = \frac{x[(1+i)^n - 1]}{i} \qquad P = \frac{x[1-(1+i)^{-n}]}{i}$$

$$f'(x) = \lim_{h \to 0} \frac{f(x+h) - f(x)}{h}$$

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2} \qquad \text{M}\left(\frac{x_1 + x_2}{2}; \frac{y_1 + y_2}{2}\right)$$

$$y = mx + c \qquad y - y_1 = m(x - x_1) \qquad m = \frac{y_2 - y_1}{x_2 - x_1} \qquad m = \tan\theta$$

$$(x-a)^2 + (y-b)^2 = r^2$$

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In ΔABC: $\dfrac{a}{\sin \text{A}} = \dfrac{b}{\sin \text{B}} = \dfrac{c}{\sin \text{C}}$

$$a^2 = b^2 + c^2 - 2bc.\cos A$$

$$\text{area}\,\Delta\text{ABC} = \frac{1}{2}ab.\sin \text{C}$$

$$\sin(\alpha + \beta) = \sin\alpha\cos\beta + \cos\alpha\sin\beta \qquad \sin(\alpha - \beta) = \sin\alpha\cos\beta - \cos\alpha\sin\beta$$

$$\cos(\alpha + \beta) = \cos\alpha\cos\beta - \sin\alpha\sin\beta \qquad \cos(\alpha - \beta) = \cos\alpha\cos\beta + \sin\alpha\sin\beta$$

$$\cos 2\alpha = \begin{cases} \cos^2\alpha - \sin^2\alpha \\ 1 - 2\sin^2\alpha \\ 2\cos^2\alpha - 1 \end{cases} \qquad \sin 2\alpha = 2\sin\alpha.\cos\alpha$$

$$\bar{x} = \frac{\sum x}{n} \qquad \sigma^2 = \frac{\sum_{i=1}^{n}(x_i - \bar{x})^2}{n}$$

$$\text{P(A)} = \frac{n(\text{A})}{n(\text{S})} \qquad \text{P(A or B)} = \text{P(A)} + \text{P(B)} - \text{P(A and B)}$$

$$\hat{y} = a + bx \qquad b = \frac{\sum(x - \bar{x})(y - \bar{y})}{\sum(x - \bar{x})^2}$$

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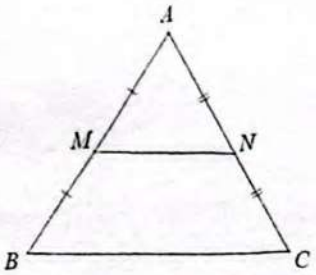
ADDENDUM TO THE PROVINCIAL COMMON EXAMINATION FOR GRADE 10 MATHEMATICS PAPER 2 NOVEMBER 2025

Please note that question 7.2 from this question paper has to be removed and replaced as shown below:

Remove question 7.2:

Given ΔABC, where AM=MB and AN=NC.

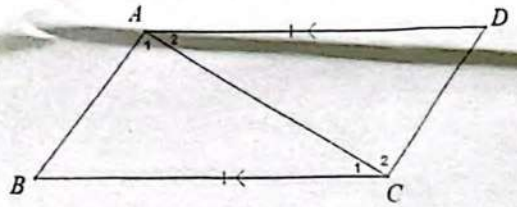




Prove the theorem which states that $MN=\frac{1}{2}BC$ **(5)**

Replace question 7.2 with:

Given quadrilateral ABCD as shown below, with AD=BC and AD || BC. Prove that ABCD is a parallelogram. **(5)**



PLEASE NOTE: THIS QUESTION MUST BE ANSWERED ON PAGE 16 UNDER ADDITIONAL SPACE

Your cooperation in this regard is highly appreciated.

DR. R.C. PENNISTON
CHIEF DIRECTOR EXAMINATIONS, ASSESSMENT AND QUALITY ASSURANCE

04.11.2025
DATE

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