Name and Surname: .....

Grade/Class : 10/..... **Mathematics Teacher**: File .....

Hudson Park High School

GRADE 10

MATHEMATICS

June Examination
(only paper)

2026

Marks : 100

Time : 2 hours

Examiner : PHL

Date : Monday, 25 May 2026

Moderator(s) : SLT VNT SBL VPT MTT

INSTRUCTIONS

1. Illegible work, in the opinion of the marker, will earn zero marks.

2. Number your answers clearly and accurately, exactly as they appear on the question paper.

3. **Start each Question at the top of new page.**

4. **A blank space of at least two lines should be left after each answer.**

5. **Fill in the details requested on the front of this Question Paper, before you start answering any questions.**

6. Hand in your submission in the following manner:

   (on top) **Answers (on lined paper, stapled together)**
   (below) **Question Paper**

   Please **DO NOT STAPLE** your Answers and Question Paper together.

7. Employ relevant formulae and show all working out.
   Answers alone *may* not be awarded full marks.

8. (Non-programmable and non-graphical) Calculators may be used, unless their usage is specifically prohibited.

9. **Answers must be written in blue or black ink, as distinctly as possible, on both sides of the page.**
   An HB pencil (but not lighter eg. 2H) may be used for diagrams.

10. Round off answers to 2 decimal places, where necessary, unless instructed otherwise.

11. If (Euclidean) GEOMETRIC statements are made, REASONS must be stated appropriately.

QUESTION 1

CALCULATORS MAY NOT BE USED IN THIS QUESTION

1.1. Write $7,\dot{2}\dot{3}\dot{4}$ as a fully simplified improper fraction. (3)

1.2. Between which two consecutive integers does $\sqrt[3]{67}$ lie ? (2)

1.3. For which value(s) of x, will $\sqrt{19-3x}$ be real ? (2)

[7]

QUESTION 2

2.1. Multiply out and simplify fully :

2.1.1. $(2x-3)(2x+3)(4x^2-6x+9)(4x^2+6x+9)$ (3)

2.1.2. $\left(x^{\frac{1}{2}} - x^{-\frac{1}{2}}\right)^2$ (2)

2.2. Simplify fully :

2.2.1. $\frac{2x-3}{5} - \frac{3x-2}{10}$ (2)

2.2.2. $\frac{\frac{x}{y} - \frac{25y}{x}}{\frac{5y}{x^2} - \frac{1}{x}}$ (4)

2.2.3. $\frac{11.2^x}{2^{x+2} + 3.2^{x-1}}$ (3)

2.3. Factorise fully :

2.3.1. $2x + 24 - 12x^2$ (2)

2.3.2. $\frac{1}{2}x^3 - 4$ (2)

2.3.3. $y^2 - 6y - x^2 + 9$ (3)

2.3.4. $2.3^{2x+1} - 3^x - 2$ (2)

2.3.5. $3^x - 3^{-x}$ (2)

2.3.6. $-7x^{-\frac{3}{4}} + 6x^{-\frac{3}{2}} - 20$ (1)

[26]

QUESTION 3

3.1. Solve for :

3.1.1. $x^2 = 7x$ (3)

3.1.2. $2(x-3)^2 = 112$ (4)

3.1.3. $3.5^{-4x+7} = 8$ (3)

3.1.4. $4x^{\frac{3}{5}} + 7 = 0$ (2)

3.1.5. $x^{\frac{4}{3}} = 5$ (1)

3.1.6. $x^{\frac{1}{4}} = -5$ (1)

3.1.7. $\frac{x}{a} - 1 = 1 - \frac{x}{b}$ (where $a \neq 0$ and $b \neq 0$) (3)

3.2. Given : $-3 \leq -2x + 3 < 11$

3.2.1. Solve the given inequality for x. (2)

3.2.2. Represent your answer to (3.2.1.)

(a) on a number line (1)

(b) in interval notation (1)

3.3. Solve for x and y :

$4x + y = -5$ and $3x + 4y = 19$ (4)

[25]

QUESTION 4

4.1. Given : $8\,;3\,;-2\,;\cdots\,;-492$

For this sequence, determine :

4.1.1. the general term, T_n. Simplify your answer. (2)

4.1.2. the twenty second term. (2)

4.1.3. the number of terms in the sequence. (2)

4.2. Calculate the value(s) of y for which

$$y^2-2y\,;2y^2+4y\,;4y^2-24$$

will be an arithmetic sequence. (4)

[10]

QUESTION 5

5.1. If $x = 100°$ and $y = 67°$, calculate value of :

5.1.1. $\dfrac{\tan x}{\cos y - 8}$ (1)

5.1.2. $5 \operatorname{cosec} x$ (1)

5.1.3. $3 \sin^2 4(x + 10°)$ (1)

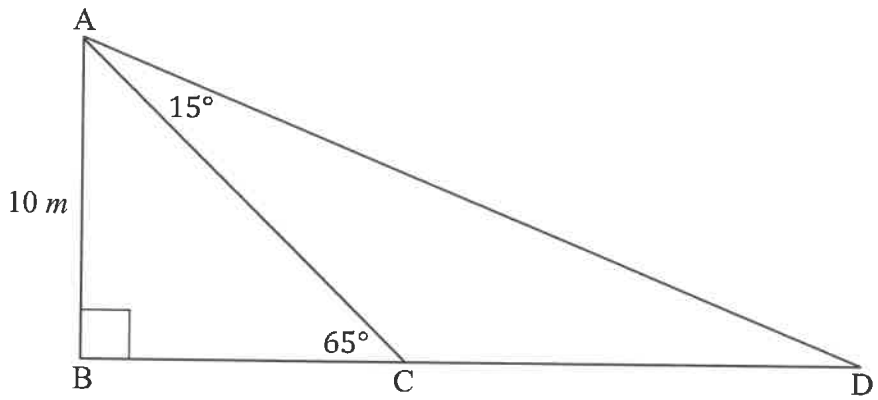
5.2. Solve for x :

5.2.1. $\dfrac{\sin 2x}{5} = \dfrac{\sin 15°}{7}$ where $2x \in (0°; 90°)$ (3)

5.2.2. $5^2 = 6^2 + 7^2 - 2.6.7. \cos x$ where $x \in (0°; 90°)$ (2)

5.2.3. $\frac{2}{3} \sec x = \sin 70°$ where $x \in (0°; 90°)$ (3)

5.3. In the diagram, AB ⊥ BD, $B\hat{C}A = 65°$, $C\hat{A}D = 15°$ and AB = 10 metres.



Calculate the length of CD. (6)

[17]

QUESTION 6

CALCULATORS MAY NOT BE USED IN THIS QUESTION

6.1. Draw the special diagrams used to evaluate the trigonometric ratios of :

6.1.1. $30°$ and $60°$ (1)

6.1.2. $45°$ (1)

6.1.3. $0°$ and $90°$ (1)

6.2. Hence, determine the following :

6.2.1. $\tan 30°$ (1)

6.2.2. $\cos 45°$ (1)

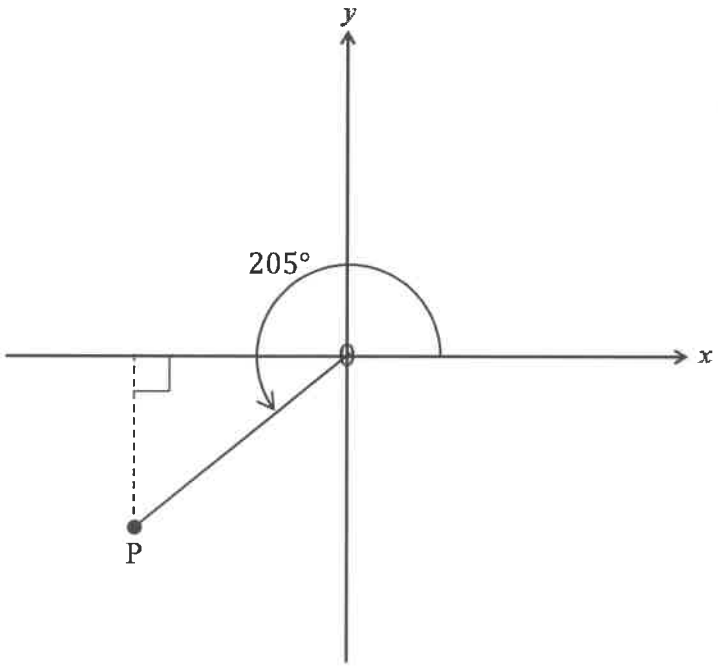
6.2.3. $\sec 0°$ (1)

6.3. Given : $2\tan\theta + 1 = 0$ and $\sin\theta > 0$

6.3.1. Explain why θ will be an angle in Quadrant 2. (2)

6.3.2. Draw a diagram in Quadrant 2 representing the given information. Include ALL relevant details on your diagram, especially θ and the x, y and r values. (2)

6.4. Given : $\cos 205° = -k$ (where $0 < k < 1$) and :



6.4.1. Determine the coordinates of point P, in terms of k. (3)

6.4.2. Now, determine the following, in terms of k :

(a) $\sin 205°$ (1)

(b) $\cos 25°$ (1)

[15]

TOTAL	100

5. INFORMATION SHEET

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

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

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

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

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

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

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

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

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

$$\text{In } \Delta ABC: \; \frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C} \qquad a^2 = b^2 + c^2 - 2bc.\cos A \qquad \text{area } \Delta ABC = \frac{1}{2}ab.\sin C$$

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

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

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

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

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

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