

UBRIGHT MINDS ACADEMY

CORE MATHEMATICS

School Based Assessment

Grade 10

END TERM

TERM 3, 2026

Time: 2 Hours

Name: _____ Assessment No.: _____

Signature: _____

Instructions

- (a) Write your name, assessment number and signature in the spaces provided.
- (b) This paper consists of two sections; Section A and Section B. Answer all questions.
- (c) In Section A, circle the correct response.
- (d) In Section B, write your responses in the spaces provided below each question.
- (e) Use blue or black ink only.
- (f) All responses must be written in English.
- (g) For π , use either the calculator value or 3.142 unless otherwise stated.
- (h) Non-programmable calculators may be used unless a question states otherwise.
- (i) This paper contains 9 pages. Check that all pages are printed.

For Examiner's Use Only		
Task	Maximum Score	Learner's Score
Task 1 - Numbers (Questions 1, 8, 10, 23, 24)	9	
Task 2 - Algebra (Questions 2, 4, 6, 19, 26, 28)	16	
Task 3 - Geometry (Questions 5, 11, 12, 15, 18)	5	
Task 4 - Measurements (Questions 3, 13, 14, 16, 21, 22, 25, 27)	23	
Task 5 - Statistics and Probability (Questions 7, 9, 17, 20, 29, 30)	22	
Total	75	

SECTION A (Answer all the questions by circling the correct response)

1. Simplify $(a^3)^4$.
- A. a^{12} B. a^7 C. $4a^3$ D. a
2. Factorise $x^2 - 9$.
- A. $(x - 3)^2$ B. $(x + 9)(x - 1)$ C. $x(x - 9)$ D. $(x + 3)(x - 3)$
3. A triangle has sides a , b and c . Which expression gives its semi-perimeter s ?
- A. $a + b + c$ B. $\frac{a + b + c}{2}$ C. $\frac{ab + c}{2}$ D. $\frac{a + b - c}{2}$
4. The area of a rectangle is 24 cm^2 . Its length is 2 cm more than its width x cm. Which equation represents the situation?
- A. $x(x + 2) = 24$ B. $x + (x + 2) = 24$ C. $2x + 2 = 24$ D. $x(x - 2) = 24$
5. Given $a = (2, 3)$ and $b = (4, -1)$, find $a + b$.
- A. $(6, 4)$ B. $(-2, 4)$ C. $(2, 2)$ D. $(6, 2)$
6. Two vehicles move towards each other at 50 km/h and 70 km/h. What is their relative speed?
- A. 120 km/h B. 20 km/h C. 60 km/h D. 3500 km/h
7. What is the midpoint of the class interval 20–29?
- A. 20.5 B. 24.5 C. 25 D. 29.5
8. The characteristic of $\log 0.0342$ is
- A. -1 B. -2 C. -3 D. 2
9. What is the median of 3, 5, 7, 9, 11?
- A. 7 B. 5 C. 8 D. 9
10. Simplify $\log 4 + \log 25$.
- A. $\log 29$ B. $\log 100$ C. $\log 21$ D. $\log 6.25$
11. The areas of two similar figures are in the ratio 25 : 49. What is the ratio of corresponding lengths?
- A. 5 : 7 B. 25 : 49 C. 7 : 5 D. 125 : 343

12. What is the smallest positive angle through which a square can be rotated onto itself?
- A. 90° B. 45° C. 60° D. 180°
13. In a 3-4-5 right triangle, θ is opposite the side of length 3. What is θ , correct to 1 decimal place?
- A. 53.1° B. 30.0° C. 36.9° D. 66.4°
14. A quadrant has radius 10 cm. What is its area? Take $\pi = 3.142$.
- A. 31.42 cm^2 B. 157.10 cm^2 C. 314.20 cm^2 D. 78.55 cm^2
15. The vector $(k, 12)$ has magnitude 13 and k is positive. Find k .
- A. 1 B. 7 C. 25 D. 5
16. A hemisphere has radius 7 cm. Find its volume, using $\pi = \frac{22}{7}$, correct to one decimal place.
- A. 359.3 cm^3 B. 1078.0 cm^3 C. 718.7 cm^3 D. 1437.3 cm^3
17. A fair die is rolled once. What is the probability of obtaining a 2 or a 5?
- A. $\frac{1}{6}$ B. $\frac{1}{2}$ C. $\frac{1}{3}$ D. $\frac{2}{3}$
18. A cube is enlarged so that each edge changes from 4 cm to 10 cm. By what factor does its volume increase?
- A. 2.5 B. 6.25 C. 15.625 D. 25
19. A bus leaves a town at 60 km/h. One hour later, a car leaves the same town in the same direction at 80 km/h. How far from the town does the car catch the bus?
- A. 120 km B. 180 km C. 240 km D. 320 km
20. A game is won by tossing a head and then rolling a number greater than 4 on a fair die. What is the theoretical probability of winning?
- A. $\frac{1}{3}$ B. $\frac{1}{4}$ C. $\frac{1}{2}$ D. $\frac{1}{6}$

SECTION B (Answer all the questions)

21. A kite has an area of 216 cm^2 . One diagonal is 18 cm long. Determine the length of the other diagonal. (3 marks)

22.
A closed cylindrical water tank has radius 7 cm and height 12 cm. Calculate its total surface area. Take $\pi = \frac{22}{7}$.

(3 marks)

23. Using reciprocal tables, determine the reciprocal of 386.4. Give your answer in decimal form. (3 marks)

24. Evaluate $\frac{512^{\frac{4}{3}} \times 27^{-\frac{2}{3}}}{128^2 \times 9^{-2}}$.

(3 marks)

25. Two concentric circles have radii 10.5 cm and 7 cm. Calculate the area of the annulus between them. Take $\pi = \frac{22}{7}$.

(3 marks)

26. A fire engine left a fire station at 9.15 a.m. and travelled at an average speed of 64 km/h. At 10.10 a.m., an ambulance left the same station and caught up with the fire engine at 11.40 a.m. Determine the average speed of the ambulance, to the nearest whole number.

(3 marks)

27. (a) A lampshade is in the form of a frustum of a cone with diameters 21 cm and 28 cm and perpendicular height 10 cm. Calculate its volume. (4 marks)

(b) Two circles, each of radius 5 cm, intersect such that the distance between their centres is 6 cm. Their common chord is 8 cm long. Calculate the area of intersection. (6 marks)

28. A passenger train is 180 m long and travels at 72 km/h.

(a) Express 72 km/h in metres per second.

(2 marks)

(b) Calculate the time taken for the train to completely pass a platform 120 m long.

(3 marks)

(c) The train then meets a 150 m long train travelling in the opposite direction at 54 km/h. Calculate the time taken from the instant their front ends meet until the trains completely pass each other.

(4 marks)

29. The table shows the scores of 40 learners.

Score	40–49	50–59	60–69	70–79	80–89
Frequency	5	9	15	7	4

(a) State the modal class. (1 mark)

(b) Calculate the mean score. (3 marks)

(c) Estimate the median score. (4 marks)

30. Three players A, B and C score a penalty with probabilities 0.7, 0.6 and 0.5 respectively. Assume their results are independent. Find the probability that:

(a) none scores; (2 marks)

(b) all three score; (2 marks)

(c) exactly two score; (3 marks)

(d) at least two score; (2 marks)

(e) at most two score. (1 mark)