

SMARTWIZ

GRADE 7 MATHEMATICS EXAM

MARKS: 100

MARKS

TIME: 1 hour 30 minutes

SCHOOL _____

CLASS (e.g. 4A) _____

SURNAME _____

NAME _____

MYST PATHWORKS

Instructions for Students:

- > Read all instructions carefully before beginning the exam.
- > Write your name and student ID clearly on the answer sheet/booklet.
- > Answer all questions unless otherwise stated.
- > Show all your work/calculations where applicable.
- > Write clearly and legibly.
- > Use blue or black ink only. * Do not use correction fluid/tape.
- > No electronic devices (calculators, phones, etc.) are allowed unless explicitly permitted.
- > Raise your hand if you have any questions.
- > Do not talk to other students during the exam.
- > Any form of cheating will result in disqualification.

This test consists of 4 pages, excluding the cover page.

SECTION A: NUMBER SENSE AND OPERATIONS (20 MARKS)

1. Write the number 4 205 907 in expanded form.
_____ (2)
2. Find the HCF of 36 and 54.
_____ (2)
3. Convert 0.375 to a fraction in simplest form.
_____ (3)
4. Calculate:
a) $7^3 - 4^2 =$ _____
b) $(-5) \times 6 + 3^2 =$ _____
_____ (3)
5. Express 7.5% as a decimal and a fraction.
_____ (3)
6. Round 29 678 to the nearest 100.
_____ (2)
7. Write the number 3 465 in Roman numerals.
_____ (3)

SECTION B: ALGEBRA AND PATTERNS (20 MARKS)

8. Simplify:
a) $5m - 3m + 4n - n =$ _____
b) $3(x + 4) - 2x =$ _____
_____ (4)
9. Solve for x:
a) $4x - 7 = 13$
b) $3(x - 5) = 9$
_____ (4)
10. Factorise the expression:
a) $12a + 8$
b) $x^2 - 9$
_____ (4)
11. Find the next two numbers and write the rule for the pattern:
3, 6, 12, 24, ____, ____
_____ (4)
12. Write an algebraic expression for:
“Five less than twice a number y.”
_____ (4)

SECTION C: GEOMETRY AND MEASUREMENT (25 MARKS)

13. Classify the following triangles by their sides and angles:

a) Sides 5 cm, 5 cm, 8 cm

b) Angles 40° , 90° , 50°

_____ (4)

14. Draw a parallelogram with a base of 8 cm and height of 5 cm. Label all sides.
(Use graph paper if available)

_____ (3)

15. Calculate the area of the parallelogram drawn in question 14.

_____ (2)

16. Find the volume of a cylinder with radius 7 cm and height 10 cm. (Use $\pi = 22/7$)

_____ (4)

17. Find the perimeter of a regular hexagon with side length 9 cm.

_____ (2)

18. Identify all lines of symmetry in a rectangle and a regular hexagon.

_____ (3)

19. Calculate the total surface area of a cube with side length 6 cm.

_____ (3)

20. Convert:

a) 3500 ml = _____ litres

b) 7.25 km = _____ metres

_____ (4)

SECTION D: DATA HANDLING AND PROBABILITY (15 MARKS)

21. The table below shows the number of books read by four learners in a month:

Learner	Number of Books
A	8
B	5
C	10
D	7



a) Calculate the mean number of books read.

_____ (3)

b) What is the mode?

_____ (2)

22. Construct a bar graph to represent the data above.

(You may draw this on graph paper or describe the axes and bars.)

_____ (5)

23. A bag contains 3 red, 4 green, and 5 blue marbles.
a) What is the probability of picking a green marble?
b) What is the probability of not picking a red marble?

_____ (5)

SECTION E: WORD PROBLEMS AND APPLICATION (20 MARKS)

24. Sipho buys 4 pens at R15.50 each and 3 notebooks at R23.75 each.
How much does he pay in total?
_____ (4)
25. A car travels 180 km in 3 hours. What is its average speed in km/h?
_____ (3)
26. A recipe requires $\frac{2}{3}$ cup of sugar. If you want to make 1.5 times the recipe, how much sugar is needed?
_____ (3)
27. A school has 250 learners. 60% participate in sports.
How many learners do not participate in sports?
_____ (3)
28. A rectangular swimming pool is 25 m long and 10 m wide.
a) Calculate the area of the pool.
b) If the pool is 2 m deep, calculate the volume of water it can hold.
_____ (7)

TOTAL: 100 MARKS

SECTION A: NUMBER SENSE AND OPERATIONS (20 MARKS)

1. $4\ 205\ 907 = 4\ 000\ 000 + 200\ 000 + 5\ 000 + 900 + 7$ ✓ (2)

2. HCF of 36 and 54:

Factors of 36: 1, 2, 3, 4, 6, 9, 12, 18, 36

Factors of 54: 1, 2, 3, 6, 9, 18, 27, 54

HCF = 18 ✓ (2)

3. $0.375 = 375/1000 = 3/8$ ✓ (3)

4.

a) $7^3 - 4^2 = 343 - 16 = 327$ ✓

b) $(-5) \times 6 + 3^2 = (-30) + 9 = -21$ ✓ (3)

5.

7.5% as decimal = 0.075

7.5% as fraction = $7.5/100 = 3/40$ ✓ (3)

6. 29 678 rounded to nearest 100 = 29 700 ✓ (2)

7. 3 465 in Roman numerals = MMMCDLXV ✓ (3)

SECTION B: ALGEBRA AND PATTERNS (20 MARKS)

8.

a) $5m - 3m + 4n - n = 2m + 3n$ ✓

b) $3(x + 4) - 2x = 3x + 12 - 2x = x + 12$ ✓ (4)

9.

a) $4x - 7 = 13 \rightarrow 4x = 20 \rightarrow x = 5$ ✓

b) $3(x - 5) = 9 \rightarrow x - 5 = 3 \rightarrow x = 8$ ✓ (4)

10.

a) $12a + 8 = 4(3a + 2)$ ✓

b) $x^2 - 9 = (x - 3)(x + 3)$ ✓ (4)

11.

Next two numbers: 48, 96

Rule: Multiply by 2 each time ✓ (4)

12.

Expression: $2y - 5$ ✓ (4)**SECTION C: GEOMETRY AND MEASUREMENT (25 MARKS)**

13.

- a) Sides 5 cm, 5 cm, 8 cm → Isosceles triangle ✓
 b) Angles 40° , 90° , 50° → Right-angled triangle ✓ (4)

14. Parallelogram with base 8 cm and height 5 cm drawn, sides labelled ✓ (3)

15. Area = base \times height = $8 \times 5 = 40 \text{ cm}^2$ ✓ (2)16. Volume of cylinder = $\pi r^2 h = (22/7) \times 7^2 \times 10 = (22/7) \times 49 \times 10 = 22 \times 7 \times 10 = 1540 \text{ cm}^3$ ✓ (4)17. Perimeter of regular hexagon = $6 \times 9 = 54 \text{ cm}$ ✓ (2)

18. Lines of symmetry:

Rectangle = 2 (vertical and horizontal)

Regular hexagon = 6 ✓ (3)

19. Surface area of cube = $6 \times \text{side}^2 = 6 \times 6^2 = 6 \times 36 = 216 \text{ cm}^2$ ✓ (3)

20.

- a) 3500 ml = 3.5 litres ✓
 b) 7.25 km = 7 250 metres ✓ (4)

SECTION D: DATA HANDLING AND PROBABILITY (15 MARKS)

21.

- a) Mean = $(8 + 5 + 10 + 7) \div 4 = 30 \div 4 = 7.5$ books ✓ (3)
 b) Mode = 8 (occurs most often) OR no mode (all different) – based on data, no repeats → no mode ✓ (2)

22. Bar graph:

- X-axis: Learners (A, B, C, D)
 - Y-axis: Number of books (scale 0 to 10)
- Bars: A=8, B=5, C=10, D=7 ✓ (5)

23.

Total marbles = $3 + 4 + 5 = 12$

a) Probability green = $4/12 = 1/3$ ✓

b) Probability not red = $(4 + 5)/12 = 9/12 = 3/4$ ✓ (5)

SECTION E: WORD PROBLEMS AND APPLICATION (20 MARKS)

24.

4 pens \times R15.50 = R62.00

3 notebooks \times R23.75 = R71.25

Total = R62.00 + R71.25 = R133.25 ✓ (4)

25.

Speed = distance \div time = $180 \div 3 = 60$ km/h ✓ (3)

26.

Sugar needed = $1.5 \times (2/3) = 3/2 \times 2/3 = 1$ cup ✓ (3)

27.

Learners in sports = 60% of 250 = $0.6 \times 250 = 150$

Learners not in sports = $250 - 150 = 100$ ✓ (3)

28.

a) Area = length \times width = $25 \times 10 = 250$ m² ✓

b) Volume = area \times depth = $250 \times 2 = 500$ m³ ✓ (7)

TOTAL: 100 MARKS