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 CONCEPTS AND OPERATIONS (20 MARKS)

1. Write down the place value of the digit 7 in the number 9 374 258.
   _____ (2)
2. Calculate the LCM of 15 and 20.
   _____ (2)
3. Write 0.625 as a simplified fraction.
   _____ (2)
4. Find the value of:
   a) $5^3 – 2^4$
   b) $(–4)^2 + 3 \times 2$
   _____ (4)
5. Convert the fraction 9/16 to a decimal (to 3 decimal places).
   _____ (3)
6. Round 582 749 to the nearest 1 000.
   _____ (2)
7. Write 1 394 in Roman numerals.
   _____ (3)

SECTION B: ALGEBRA AND PATTERNS (20 MARKS)

8. Simplify:
   a) $7x – 4x + 6y – 2y$
   b) $2(3a + 5) – (a + 3)$
   _____ (4)
9. Solve for x:
   a) $5x + 3 = 18$
   b) $4(x – 2) = 12$
   _____ (4)
10. Factorise:
    a) $18m + 24$
    b) $x^2 – 16$
    _____ (4)
11. Identify the next two numbers and the rule:
    2, 6, 18, 54, ___, ___
    _____ (4)
12. Write an algebraic expression for:
    “The sum of a number z and 9, multiplied by 4.”
    _____ (4)

SECTION C: GEOMETRY AND MEASUREMENT (25 MARKS)

13. Name the quadrilateral with the following properties:
    a) Opposite sides are equal and parallel, but angles are not 90°.
    b) Four equal sides and four right angles.
    _____ (4)
14. Draw a right-angled triangle with sides 6 cm, 8 cm and 10 cm. Label the hypotenuse.
    _____ (3)
15. Calculate the area of a trapezium with parallel sides 7 cm and 12 cm and height 5 cm.
    _____ (3)
16. Calculate the surface area of a rectangular prism with length 8 cm, width 5 cm, and height 4 cm.
    _____ (4)
17. A circular garden has a diameter of 14 m. Find the circumference and area of the garden. Use π = 3.14.
    _____ (5)
18. Convert the following:
    a) 3.6 km to meters
    b) 4500 ml to liters
    _____ (3)

SECTION D: DATA HANDLING AND PROBABILITY (15 MARKS)

MYST PATHWORKS

19. The number of goals scored by 5 football teams in a tournament are: 4, 7, 2, 7, 5.
    a) Find the mean number of goals.
    b) Find the mode.
    _____ (4)
20. Draw a pie chart to represent the data:
    Apples – 30, Bananas – 45, Grapes – 25
    _____ (5)
21. A box contains 2 red, 3 blue, and 5 yellow balls. What is the probability of:
    a) Picking a yellow ball?
    b) Not picking a blue ball?
    _____ (6)

SECTION E: WORD PROBLEMS (20 MARKS)

22. A shop sells 6 chocolate bars at R12.50 each and 4 packets of chips at R8.75 each. How much will a customer pay in total?
    _____ (4)

23. A car travels 300 km in 4 hours. What is the average speed in km/h?
    _____ (3)
24. If a recipe needs 3/4 cup of flour and you want to make half the recipe, how much flour is needed?
    _____ (3)

25. In a school of 360 learners, 25% take part in drama. How many learners do not take part?
    _____ (3)
26. A rectangular swimming pool is 20 m long, 10 m wide, and 2 m deep. Calculate:
    a) The area of the pool surface.
    b) The volume of water the pool can hold.
    _____ (7)

TOTAL: 100 MARKS

MYST PATHWORKS

MEMO

SECTION A: NUMBER CONCEPTS AND OPERATIONS (20 MARKS)

1. Place value of 7 in 9 374 258 = 70 000 ✔ (2)
2. LCM of 15 and 20:

- Multiples of 15: 15, 30, 45, 60, 75, ...
- Multiples of 20: 20, 40, 60, 80, ...

LCM = 60 ✔ (2)

3. 0.625 = 625/1000 = 5/8 ✔ (2)
4.

a) $5^3 – 2^4 = 125 – 16 = 109$ ✔
b) $(–4)^2 + 3 \times 2 = 16 + 6 = 22$ ✔ (4)

5. 9/16 = 0.5625 ≈ 0.563 (3 decimal places) ✔ (3)
6. 582 749 rounded to nearest 1 000 = 583 000 ✔ (2)
7. 1 394 in Roman numerals = MCCCXCIV ✔ (3)

SECTION B: ALGEBRA AND PATTERNS (20 MARKS)

8.

a) 7x – 4x + 6y – 2y = 3x + 4y ✔
b) 2(3a + 5) – (a + 3) = 6a + 10 – a – 3 = 5a + 7 ✔ (4)

9.

a) 5x + 3 = 18 → 5x = 15 → x = 3 ✔
b) 4(x – 2) = 12 → x – 2 = 3 → x = 5 ✔ (4)

10.

a) 18m + 24 = 6(3m + 4) ✔
b) $x^2 – 16 = (x – 4)(x + 4)$ ✔ (4)

11.

MP MYSTPATHWORKS

Next numbers: 162, 486
Rule: Multiply by 3 each time ✔ (4)

12.

Expression: 4(z + 9) ✔ (4)

SECTION C: GEOMETRY AND MEASUREMENT (25 MARKS)

13.

a) Parallelogram ✔
b) Square ✔ (4)

14. Right-angled triangle with sides 6 cm, 8 cm, 10 cm drawn, hypotenuse labeled 10 cm ✔ (3)
15. Area trapezium = ½ × (sum of parallel sides) × height
    = ½ × (7 + 12) × 5 = ½ × 19 × 5 = 47.5 cm² ✔ (3)
16. Surface area rectangular prism = 2(lw + lh + wh)
    = 2(8×5 + 8×4 + 5×4) = 2(40 + 32 + 20) = 2 × 92 = 184 cm² ✔ (4)
17.

Circumference = π × diameter = 3.14 × 14 = 43.96 m
Area = πr² = 3.14 × 7² = 3.14 × 49 = 153.86 m² ✔ (5)

18.

a) 3.6 km = 3 600 m ✔
b) 4 500 ml = 4.5 litres ✔ (3)

SECTION D: DATA HANDLING AND PROBABILITY (15 MARKS)

19.

a) Mean = (4 + 7 + 2 + 7 + 5) ÷ 5 = 25 ÷ 5 = 5 ✔
b) Mode = 7 ✔ (4)

20. Pie chart:

- Total = 30 + 45 + 25 = 100
- Apples = 30% → 108° (30/100 × 360)

MYST PATHWORKS

- Bananas = 45% → 162°
- Grapes = 25% → 90°
  (Bar angles or a rough sketch accepted) ✔ (5)

21.

Total balls = 2 + 3 + 5 = 10
a) Probability yellow = 5/10 = 1/2 ✔
b) Probability not blue = (2 + 5)/10 = 7/10 ✔ (6)

SECTION E: WORD PROBLEMS (20 MARKS)

22.

6 × R12.50 = R75.00
4 × R8.75 = R35.00
Total = R75.00 + R35.00 = R110.00 ✔ (4)

23.

Average speed = distance ÷ time = 300 ÷ 4 = 75 km/h ✔ (3)

MYST PATHWORKS

24.

Half of 3/4 cup = ½ × 3/4 = 3/8 cup ✔ (3)

25.

Drama participants = 25% of 360 = 0.25 × 360 = 90
Not participating = 360 – 90 = 270 ✔ (3)

26.

a) Area = length × width = 20 × 10 = 200 m² ✔
b) Volume = area × depth = 200 × 2 = 400 m³ ✔ (7)

TOTAL: 100 MARKS

MYST PATHWORKS