MEMORANDUM - ANSWER KEY

MATHEMATICS PRACTICE TEST

Grade: 6

Term: Whole year | **Time:** 90 minutes

Name: _____



ExamGen

Marks obtained: _____ **/ 100**

Percentage: _____ **%**

Every part of this practice test was drafted by AI and checked in advance. Please check this practice test and its memo carefully before use.

1: Numbers, Operations and Relationships (50)

1.1 Round 248 576 off to the nearest 100. (1 mark)

Answer: 248 600

Solution:

248 576 rounded to the nearest 100 = 248 600.

Hint:

Look at the digit just to the right of the rounding place. 5 or more rounds up; 4 or less stays the same.

1.2 Write TRUE or FALSE next to each statement. (4 marks)

29 is a prime number. **TRUE**

33 is a prime number. **FALSE**

7 is a prime number. **TRUE**

49 is a prime number. **FALSE**

Solution:

A prime number has exactly two factors: 1 and itself. 29: prime; 33: not prime; 7: prime; 49: not prime. 1 mark per correct statement.

Hint:

Check if the number can be divided by any number other than 1 and itself. If yes, it is NOT prime.

1.3 Fill in <, > or = between the two numbers: **(1 mark)**

89 045 ___ 89 054

Answer: <

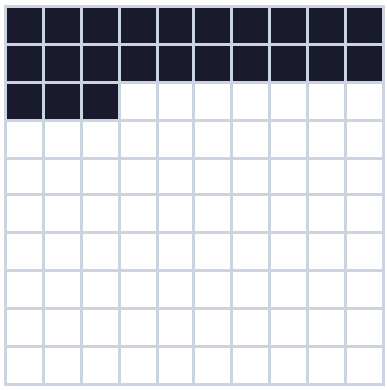
Solution:

89 045 < 89 054. Compare digit by digit from the left, in the highest place value first.

Hint:

"<" means "is smaller than", ">" means "is greater than". The open mouth always points at the bigger number.

1.4 The grid below has 100 equal blocks. Count the shaded blocks to find what percentage of the grid is shaded. **(2 marks)**



Answer: 23%

Solution:

The grid has 100 blocks in total, so each shaded block is worth 1%. 23 blocks are shaded, so 23% of the grid is shaded.

Hint:

Count in full rows of ten first (each full row = 10%), then count the loose blocks in the last row.

1.5 Which number is represented by the following? **(1 mark)**

1 million + 5 hundred thousands + 3 ten thousands + 12 tens + 4 units

Answer: 1 530 124

Solution:

Add up the value of each part: 1 million = 1 000 000; 5 hundred thousands = 500 000; 3 ten thousands = 30 000; 12 tens = 120; 4 units = 4. Total = 1 530 124.

Hint:

The parts are not in order, and one of them may hold more than nine — for example, 15 hundredths is 0,15, not a digit you can copy across. Work out each part on its own, then add them.

1.6 Estimate the answer by rounding first: 312 × 48 **(2 marks)**

Answer: 15 000

Solution:

Round each number first: 312 ≈ 300 and 48 ≈ 50. Estimate = 300 × 50 = 15 000. 1 mark for rounding, 1 mark for the estimate. (Accept reasonable rounding.)

Hint:

Estimating is NOT the exact answer — round to easy numbers so you can do the sum in your head.

1.7 Match the fractions to their decimal equivalents **(3 marks)**

Column A	Answer
A1. $\frac{1}{10}$	C. 0,1
A2. $\frac{1}{5}$	A. 0,2
A3. $\frac{3}{5}$	B. 0,6

1.8 Complete the table below. The rate is 12 R/kg. **(5 marks)**

Answer: Row 2: Price=36; Row 3: Mass=5; Row 4: Price=120; Row 5: Mass=20; Row 6: Price=300

Solution:

Use the rate 12 R/kg: multiply to find Price from Mass; divide to find Mass from Price. Row 2: 3 × 12 = 36; Row 3: 60 ÷ 12 = 5; Row 4: 10 × 12 = 120; Row 5: 240 ÷ 12 = 20; Row 6: 25 × 12 = 300. 1 mark for each correctly filled cell (5 marks total for 5 missing cells).

1.9 Calculate: $3\frac{1}{4} + 2\frac{1}{2} =$ ___ **(2 marks)**

Answer: $5\frac{3}{4}$

Solution:

Add the whole numbers first: 3 + 2 = 5. Then add the fraction parts, written over the same denominator: $\frac{1}{4} + \frac{2}{4} = \frac{3}{4}$. Final answer: $5\frac{3}{4}$.

Hint:

Add the whole numbers, then add the fraction parts. If the fraction part makes a whole or more, regroup it. (Changing to improper fractions first also works.)

1.10 Arrange the following in descending (largest to smallest) order: 1,1; $\frac{11}{10}$; $1\frac{1}{2}$; 0,9; $\frac{7}{5}$ **(2 marks)**

Answer: $1\frac{1}{2}$; $\frac{7}{5}$; 1,1 = $\frac{11}{10}$ (either order); 0,9

Solution:

Convert each item to a decimal number to compare: 1,1 = 1,100; $\frac{11}{10}$ = 1,100; $1\frac{1}{2}$ = 1,500; 0,9 = 0,900; $\frac{7}{5}$ = 1,400. Then arrange in descending (largest to smallest) order. 1,1 and $\frac{11}{10}$ are equal, so accept them in either order. 1 mark for correct conversion, 1 mark for correct order.

Hint:

Convert everything to decimals (or to fractions with the same denominator) before trying to order them. Otherwise it is hard to compare mixed forms directly.

1.11 Calculate 25% of 80. **(2 marks)**

Answer: 20

Solution:

25% = $\frac{25}{100}$. $\frac{25}{100}$ × 80 = 20. 1 mark for the method, 1 mark for the answer.

Hint:

"Per cent" means "out of 100". 10% is one tenth, 25% is one quarter, 50% is half.

1.12 Danie buys 3 rugby kits at R100 each. The shop gives 10% discount on the total. Danie pays with R500. How much change does Danie get back? Show all your steps. **(6 marks)**

Answer: R230

Solution:

Step 1: 3 × R100 = R300 (subtotal). Step 2: 10% of R300 = R30 (discount). Step 3: R300 − R30 = R270 (price after discount). Step 4: R500 − R270 = R230 (change). Allocation: 1 mark subtotal, 2 marks discount, 1 mark final price, 1 mark change, 1 mark R unit + work shown.

Hint:

Write down the answer of each step before moving on — don't keep working in your head.

1.13 Lerato buys a packet of seeds for R12,50, a watering can for R31,99 and a pair of garden gloves for R27,45. She pays with a R200 note. **(3 marks)**

How much change does she get? Show your working.

Answer: R128,06

Solution:

Total cost = R12,50 + R31,99 + R27,45 = R71,94. Change = R200,00 − R71,94 = R128,06. 1 mark for adding the three prices, 1 mark for lining up the decimal commas correctly in the subtraction, 1 mark for the final answer.

Hint:

Two decimal operations, one after the other — add the prices first to find the total, then subtract the total from the amount paid. Keep the decimal commas under each other.

1.14 Calculate: $\frac{11}{12} - \frac{6}{12} =$ ___ (1 mark)

Answer: $\frac{5}{12}$

Solution:

Same denominator — subtract the numerators: 11 − 6 = 5. Answer = $\frac{5}{12}$.

Hint:

When denominators are the same, keep the denominator and only subtract the top numbers.

1.15 A container holds 9,5 ℓ of juice. It is poured into bottles that each hold 600 mℓ. (2 marks)

How many FULL bottles can be filled, and how many millilitres of juice are left over?

Answer: 15 full bottles, with 500 mℓ left over.

Solution:

9,5 ℓ = 9 500 mℓ (1 ℓ = 1 000 mℓ). 9 500 ÷ 600 = 15 remainder 500. Only FULL bottles count, so 15 full bottles; the remainder, 500 mℓ, is the juice left over. 1 mark for the correct number of full bottles, 1 mark for the correct leftover amount.

Hint:

Change the litres to millilitres first, so that you divide whole numbers. The answer to the division is the number of FULL bottles; the remainder is the juice left over — it is not part of a bottle.

1.16 If 12 chairs cost R2 808, how much will 2 567 of the same chairs cost? Show your working. (3 marks)

Answer: R600 678

Solution:

Step 1: the price of ONE chair = R2 808 ÷ 12 = R234. Step 2: R234 × 2 567 = R600 678. 1 mark for the price of one, 1 mark for the multiplication, 1 mark for the answer with R.

Hint:

First work out the rate — the price of ONE — then multiply it by the new number of items.

1.17 Use the clue board below to calculate: 6 193 ÷ 189. Show all your working. **(6 marks)**

Answer: 32 r 145

Solution:

6 193 ÷ 189 = 32 r 145. Alternative (breaking-down) method: 6 193 ÷ 189 = (5 670 ÷ 189) + (523 ÷ 189) = 30 + 2 r 145 = 32 r 145. Allocation: 4 marks for the division working (using the clue board's multiples correctly, subtracting, bringing down digits), 2 marks for the correct final answer (quotient and remainder, or "no remainder" if it divides exactly). The clue board is provided pre-filled and is not marked — the working below it is what earns marks.

Hint:

Use the clue board — it gives you the building blocks (1x to 9x, and 10x to 90x the divisor) to work out the division without knowing the times table by heart.

1.18 Nadia and Dewald share 36 sweets in the ratio 1 : 2. How many sweets does each one get? Show all your working. **(4 marks)**

Answer: Nadia: 12 sweets, Dewald: 24 sweets

Solution:

Step 1: Total parts = 1 + 2 = 3. Step 2: One part = 36 ÷ 3 = 12. Step 3: Nadia = 1 × 12 = 12; Dewald = 2 × 12 = 24. Check: 12 + 24 = 36. (1 mark for total parts, 1 for one part, 1 for each share.)

Hint:

First add the ratio numbers to get the total parts, then divide the total by that to find ONE part. Multiply one part by each ratio number.

2: Patterns, Functions and Algebra **(10)**

2.1 Given: 6 × 12 = 72. Use this fact to complete: 72 ÷ 12 = ☐ **(1 mark)**

Answer: 6

Solution:

Multiplication and division are inverse operations — dividing the product by one factor gives the other factor back: 72 ÷ 12 = 6. [1]

Hint:

You already know the answer from the multiplication fact — no calculation needed.

2.2 For which pair of numbers does the rule "multiply the first number by 5 and then add 9 to get the second number" work? **(2 marks)**

Answer: C) first number 7, second number 44

Solution:

Answer: C. 7 × 5 = 35, then + 9 = 44, so the pair is (7; 44). (2 marks for the correct letter.)

2.3 Calculate: 5 + 6 × 6 - 3 **(3 marks)**

Show all your working in the correct order of operations.

Answer: 38

Solution:

BODMAS order applied:
Step 1: 5 + 36 - 3
Step 2: 41 - 3
Step 3: 38
Final answer: 38. 1 mark for the correct order, 1 mark for the correct step-by-step calculation, 1 mark for the final answer.

Hint:

BODMAS — Brackets, Of, Division, Multiplication, Addition, Subtraction. Always work in this order, left to right within the same level.

2.4 Write a number sentence for the following word problem (YOU DO NOT need to work out the answer): **(1 mark)**

The sum of 9 583 and 3 945 is halved.

Answer: (9 583 + 3 945) ÷ 2

Solution:

Number sentence: (9 583 + 3 945) ÷ 2. Acceptable alternative forms: (9583+3945)÷2 OR (9 583 + 3 945) / 2. The point here is the ALGEBRAIC expression — the student must show the operations in the correct order, without calculating the final value.

Hint:

First identify the mathematical operations in the words ("sum"=+, "difference"=−, "product"=×, "quotient"=÷). Use brackets when a whole group must be calculated first.

2.5 A pattern is built from joined triangles, each new one sharing one side with the last: 1 triangle → 3 straws; 2 triangles → 5 straws; 3 triangles → 7 straws. (a) Describe, IN WORDS, the general rule for the number of straws needed for any number of triangles. (b) Use your rule to find the number of straws needed for 10 triangles. **(3 marks)**

Answer: (a) Start with 3 straws for the first triangle, then add 2 more straws for every extra triangle (or: multiply the number of triangles by 2 and add 1).
(b) 21.

Solution:

(a) Accept the rule in either form: "start with 3 and add 2 for every extra triangle", or "multiply the number of triangles by 2 and add 1"; any other rule that gives 3, 5, 7, … is also correct. (2 marks: full rule: 2 marks; only one part right (for example "add 2" with no starting number, or "multiply by 2" without adding 1): 1 mark; otherwise: 0.)
(b) For 10 shapes: $3 + 2 \times 9 = 21$, or $2 \times 10 + 1 = 21$. (1 mark)

Hint:

Look at how much the total grows EACH time a new shape is added — that growth amount is smaller than one whole shape, because shapes share a side.

3: Space and Shape (Geometry) (15)

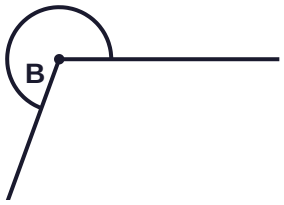
3.1 I am a 3-D object. All my faces are flat. Every angle on my faces is a right angle, and all 6 of my faces are equal squares. What am I? **(1 mark)**

Answer: a cube

Solution:

a cube (1 mark).

3.2 Study the diagram below. Which option correctly names the angle shown at B? **(2 marks)**



Answer: B) reflex angle

Solution:

Answer: B (reflex angle). The angle is bigger than a straight line, so it is a reflex angle. [2]

Hint:

Smaller than a right angle = acute; exactly a right angle = right; bigger than a right angle but smaller than a straight line = obtuse; exactly a straight line = straight; bigger than a straight line = reflex.

3.3 Look at the angle that has been drawn at B. What type of angle is it? **(1 mark)**



Answer: Straight angle

Solution:

Straight angle. The angle measures 180°. It is exactly 180° (a straight line). (1 mark.)

Hint:

Smaller than 90° = acute; exactly 90° = right; between 90° and 180° = obtuse; exactly 180° = straight; bigger than 180° = reflex.

3.4 Think of a rectangular prism. **(2 marks)**

(a) How many faces does it have?

(b) Which 2-D shapes are its faces, and how many of each shape are there?

Answer: (a) 6 faces
(b) 6 rectangles (or 4 rectangles and 2 squares)

Solution:

(a) 6 faces (1 mark). (b) 6 rectangles (or 4 rectangles and 2 squares) (1 mark).

3.5 How many vertices does a hexagon have? **(1 mark)**

Answer: 6

Solution:

A hexagon has 6 sides, so it has 6 vertices (sides = vertices for any polygon).

Hint:

Number of vertices = number of sides.

3.6 Look at the angle that has been drawn at B. What type of angle is it? **(1 mark)**



Answer: Obtuse angle

Solution:

Obtuse angle. The angle measures 150°. It is between 90° and 180°. (1 mark.)

Hint:

Smaller than 90° = acute; exactly 90° = right; between 90° and 180° = obtuse; exactly 180° = straight; bigger than 180° = reflex.

3.7 Complete the table with the correct number of faces, edges and vertices for each 3D shape. **(4 marks)**

Answer: Cube vertices: 8; Pentagonal Pyramid faces: 6; Pentagonal Pyramid edges: 10; Triangular Prism faces: 5

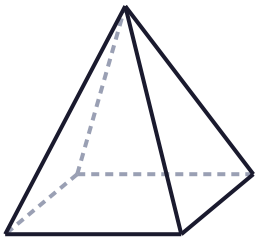
Solution:

Remember: a face is a flat surface; an edge is where two faces meet; a vertex is where three or more edges meet. Answers: Cube vertices: 8; Pentagonal Pyramid faces: 6; Pentagonal Pyramid edges: 10; Triangular Prism faces: 5. 1 mark for each correctly filled cell (4 blank cells = 4 marks).

Hint:

Visualise the shape or draw it. Count the flat surfaces (faces), the lines where two flat parts meet (edges), and the points where lines meet (vertices).

3.8 Study the 3D solid that has been drawn (a square pyramid). Complete the table by counting its faces, edges and vertices. (3 marks)



Answer: Faces: 5; Edges: 8; Vertices: 5

Solution:

Square Pyramid: 5 faces, 8 edges, 5 vertices. A face is a flat surface, an edge is where two faces meet, a vertex is a corner where edges meet. (1 mark per correct value, 3 total.)

Hint:

Count the flat surfaces (faces), the straight lines where two faces meet (edges), and the corner points (vertices) on the drawing.

4: Measurement (15)

4.1 Convert 1,28 m to cm. (2 marks)

Answer: 128 cm

Solution:

1 m = 100 cm, so 1,28 × 100 = 128 cm. Multiplying by 100 shifts the decimal comma two places right.

Hint:

1 m = 100 cm, so multiply the number of metres by 100. The decimal comma moves two places to the right.

4.2 Calculate the volume of a money box that is 10 cm long, 8 cm wide and 6 cm high. Show your working and give your answer in the correct unit. **(3 marks)**

Answer: 480 cm^3

Solution:

Volume of a rectangular prism = length × width × height = 10 × 8 × 6 = 480 cm^3. Allocation: 1 mark for a correct method (for example 10 × 8 × 6, or one layer of 10 × 8 = 80 cubes and 6 layers), 1 mark for 480, 1 mark for the correct unit (cubic cm).

Hint:

Volume is always given in CUBIC units (cm^3, m^3). Remember — volume is how much space something fills; area is how much flat surface a shape covers, in square units.

4.3 A learner builds a wall by stacking cube-shaped blocks, three layers high. The bottom layer has 10 blocks. The middle layer has 9 blocks. The top layer has 7 blocks. How many blocks make up the whole wall? **(3 marks)**

Answer: 26 cubes

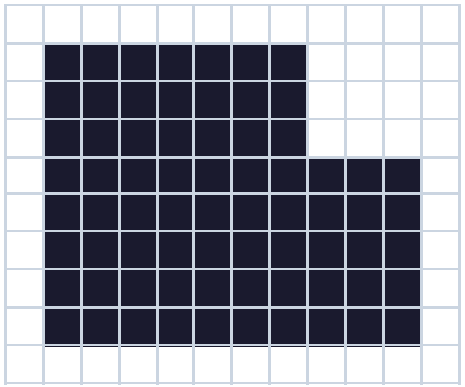
Solution:

Count the blocks in each layer, then add all three layers together: 10 + 9 + 7 = 26 cubes.

Hint:

Count how many cubes are in each layer, then ADD the layers — never multiply the size of the tower by itself.

4.4 The shaded shape below is drawn on a grid. Each small block is 1 square unit. Count the shaded squares to find the area of the shape. **(3 marks)**



Answer: 71 square units

Solution:

Count every shaded square, one at a time, working row by row so none are missed or counted twice. There are 71 shaded squares, so the area is 71 square units.

Hint:

The shape is irregular — it is not a plain rectangle. Count row by row so you don't lose your place.

4.5 How many kilograms is 2000 grams? **(1 mark)**

Answer: 2 kg

4.6 A plank 358 cm long is cut into 5 EQUAL pieces. Each cut made by the saw wastes 2 cm of wood (turned to sawdust). **(3 marks)**

How long is each piece? Show your working.

Answer: 70 cm

Solution:

5 pieces need 4 cuts, wasting 4 × 2 = 8 cm. Remaining wood = 358 − 8 = 350 cm. Each piece = 350 ÷ 5 = 70 cm. 1 mark for the number of cuts, 1 mark for the wasted length, 1 mark for the final piece length.

Hint:

N pieces always need (N − 1) cuts, not N — count the cuts between pieces, not the pieces themselves.

5: Data Handling (10)

5.1 Shoe sizes of eight Grade 6 learners: 8; 9; 8; 10; 8; 7; 9; 8. What is the MODE of this data set? (1 mark)

Answer: 8

Solution:

The mode is the value that appears most often. In this set, 8 appears most frequently. Mode = 8.

Hint:

MO-de = MO-st often. Count how many times each number appears.

5.2 What is the median of the following set of numbers? 33; 38; 29; 36; 31. Show how you ordered them. (2 marks)

Answer: 33

Solution:

Step 1: Arrange in ascending order: 29; 31; 33; 36; 38. Step 2: Find the middle value: 33. 1 mark for ordering, 1 mark for the median.

5.3 Here are the maximum temperatures (°C) over 15 days in January: 21, 26, 31, 36, 23, 28, 33, 38, 25, 30, 35, 22, 27, 32, 37. (3 marks)

Group the data into the class intervals below and complete the missing frequency in the table.

Answer: 3

Solution:

The values in 20–24 are: 21, 23, 22. That is 3 value(s), so the frequency for 20–24 is 3. (1 mark for correctly sorting the values into the interval, 2 marks for the correct count.)

Hint:

Go through the raw list ONE value at a time and tick it off against the interval it belongs to — this stops you missing one or counting one twice.

5.4 A school records how many kilograms of paper it collects for recycling each week: Week 1: 12 kg; Week 2: 16 kg; Week 3: 20 kg; Week 4: 24 kg. **(2 marks)**

If this pattern continues, PREDICT the value for Week 5. Give a reason for your prediction.

Answer: 28 kg

Solution:

Each period increases by 4 kg (Week 1: 12 kg; Week 2: 16 kg; Week 3: 20 kg; Week 4: 24 kg). Continuing the pattern: 24 kg + 4 kg = 28 kg. (1 mark for the correct prediction, 1 mark for a reason that names the trend.)

Hint:

A prediction is your best estimate based on a pattern already in the data — it is not yet a measured fact, so always say WHY (the trend you spotted), not just the number.

5.5 You toss a coin once. **(2 marks)**

(a) List all the possible outcomes.

(b) How many possible outcomes are there?

Answer: (a) Heads or tails
(b) 2 possible outcomes

Solution:

(a) 1 mark for both outcomes (heads, tails). (b) 1 mark for the number 2.

Hint:

List every outcome first, then count them. Do not work out a chance — that is not asked at this stage.

Total: 100

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