Know the question. Show the steps.

MATHEMATICS • GRADE 12

A small start for Papers 1 and 2.

Recognise the structure. Choose a method. Write each step. Check the answer. Then solve a new question without the worked example.

Inside this draft

Three worked methods, three independent questions, worked answers, a seven-session study routine and an error log.

Use it alongside your lessons

This is original revision practice, not an official DBE paper or a prediction. It does not replace your textbook, class notes or complete past papers. No official marks are assigned to these examples.

This editorial draft has not yet had independent Grade 12 teacher review. The R99 price is a proposed once-off price for the fuller subject pack, not a payment request.

Paper 1 = BLUE. Paper 2 = PURPLE. Every question also carries its paper label. Click a method in the index to jump to it; use the footer to return.

How to read the maths

Fractions use a horizontal bar. Powers sit above the base, and square roots have a bar over the expression. The symbol ≈ means approximately equal; ± means both plus and minus. Angles marked ° are in degrees.

Question-method index

Click any row to open its worked method. Blue = Paper 1; purple = Paper 2.

MR-M-02 | PAPER 1 | Factorisable quadratic

MR-M-06 | PAPER 1 | Surd equation

MR-M-20 | PAPER 2 | Equation on a stated interval

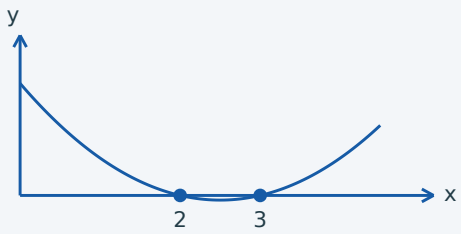
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Factorisable quadratic

MR-M-02 • There is an x^2 term. Move all terms to one side, then look for factors.

Worked example

Solve $x^2 - 5x + 6 = 0$.



$y = x^2 - 5x + 6$

Solutions occur where the curve crosses the x-axis.

Question sketch - schematic; use the stated values, not measurements.

1. Find two numbers with product 6 and sum −5: −2 and −3.
2. Split the middle term: $x^2 - 2x - 3x + 6 = 0$.
3. Group and factor: $x(x - 2) - 3(x - 2) = 0$.
4. Take out the common bracket: $(x - 2)(x - 3) = 0$.
5. Set each factor equal to zero: $x - 2 = 0$ or $x - 3 = 0$.
6. Add 2 in the first branch and 3 in the second: $x = 2$ or $x = 3$.

Check your answer

Substituting either 2 or 3 gives zero.

Avoid this mistake

The zero-product rule requires one side to be zero. Do not divide by a factor and lose a root.

Your turn

Solve $2x^2 - 7x + 3 = 0$.

Work in your notebook before looking at the answer section. Record any mistake in your error log.

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Surd equation

MR-M-06 • x is under a square root. Isolate the root and check candidates after squaring.

Worked example

Solve $\sqrt{x+5} = x - 1$.

1. The right side must be nonnegative: $x \geq 1$. This also makes the radicand nonnegative.

2. Square BOTH sides: $x + 5 = (x - 1)^2$.

3. Expand the square: $x + 5 = x^2 - 2x + 1$.

4. Subtract x and 5 from both sides: $0 = x^2 - 3x - 4$.

5. Factor: $(x - 4)(x + 1) = 0$.

6. Set each factor to zero: $x = 4$ or $x = -1$.

7. Check the ORIGINAL equation: $x = 4$ gives $3 = 3$; $x = -1$ gives $2 = -2$. Reject -1.

Check your answer

The only solution is $x = 4$: $\sqrt{9} = 3$.

Avoid this mistake

Squaring can introduce an extraneous solution. Never skip the original-equation check.

Your turn

Solve $\sqrt{2x+3} = x$.

Work in your notebook before looking at the answer section. Record any mistake in your error log.

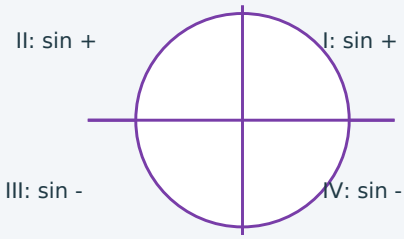
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Equation on a stated interval

MR-M-20 • Find all angles in the specified interval, not only the calculator principal value.

Worked example

Solve $2\sin x = 1$ for $0° \leq x \leq 360°$.



Find every angle in the stated interval.

Use the reference angle in positive-sine quadrants.

Question sketch - schematic; use the stated values, not measurements.

1. Divide BOTH sides by 2: $\sin x = \frac{1}{2}$.

2. Use inverse sine to find the reference angle: 30°.

3. Sine is positive in quadrants I and II.

4. Quadrant I: $x = 30°$. Quadrant II: $x = 180° - 30° = 150°$.

5. Both lie in the required interval; neither endpoint is a solution.

Check your answer

Both angles give sine $\frac{1}{2}$. Neither endpoint satisfies the equation.

Avoid this mistake

Use degree mode here and include both solutions. A general solution is a different requested form.

Your turn

Solve $\cos x = -\frac{1}{2}$ for $0° \leq x \leq 360°$.

Work in your notebook before looking at the answer section. Record any mistake in your error log.

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Factorisable quadratic

MR-M-02 • Try the question before reading this answer.

Solve $2x^2 - 7x + 3 = 0$.

Step-by-step answer

1. Multiply the leading coefficient and constant: $2 \times 3 = 6$. Find numbers with sum -7: -6 and -1.

2. Split the middle term: $2x^2 - 6x - x + 3 = 0$.

3. Group: $2x(x - 3) - 1(x - 3) = 0$.

4. Factor: $(2x - 1)(x - 3) = 0$.

5. Set each factor to zero: $2x - 1 = 0$ or $x - 3 = 0$.

6. Add the constant to both sides in each branch: $2x = 1$ or $x = 3$.

7. Divide the first branch by 2: $x = \frac{1}{2}$ or $x = 3$.

Return to the worked method

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Surd equation

MR-M-06 • Try the question before reading this answer.

Solve $\sqrt{2x + 3} = x$.

Step-by-step answer

1. The right side must be nonnegative: $x \geq 0$.

2. Square both sides: $2x + 3 = x^2$.

3. Subtract $2x$ and 3 from both sides: $0 = x^2 - 2x - 3$.

4. Factor: $(x - 3)(x + 1) = 0$.

5. Candidates: $x = 3$ or $x = -1$.

6. Check the original: 3 gives $3 = 3$; -1 gives $1 = -1$. Therefore $x = 3$ only.

Return to the worked method

Equation on a stated interval

MR-M-20 • Try the question before reading this answer.

Solve $\cos x = -\frac{1}{2}$ for $0° \leq x \leq 360°$.

Step-by-step answer

1. Reference angle 60°; cosine is negative in quadrants II and III.

2. $x = 180° - 60° = 120°$ or $x = 180° + 60° = 240°$.

Return to the worked method

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Turn practice into progress

Use seven study sessions, not a promise that seven days can cover the entire curriculum. Shorten or repeat the routine around your actual exam dates.

1. Diagnose: attempt a mixed set without notes. Mark what you can and cannot do.
2. Repair: revise the prerequisite behind your first two mistakes.
3. Practise: do two question families. Explain aloud why each method fits.
4. Mix: shuffle families so that you must choose the method yourself.
5. Time: attempt a section of an official paper and use its matching memo.
6. Correct: rework incorrect questions from a blank page, then try new variants.
7. Retest: revisit the same skills after a gap; use the remaining time for weak areas.

In the exam

Read the actual paper instructions. Follow the required answer-book format. Show working, label diagrams and keep calculator precision until the final step. If stuck, record a valid first step, move on and return.

For a 180-minute, 150-mark Maths paper, reserving 15 minutes to check leaves about 1.1 minutes per mark. This is a personal pacing guide, not a rule for every question or extra reading time.

Your error log

Question ID: _____ Date: _____
My incorrect step: _____
Why it failed: _____
Correct first step: _____
Retry date and result: _____

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Use official papers next

Source review date: 9 October 2026. The 2021 DBE exam guidelines were extended to 2026 by Circular E17 of 2025. The older date on the guideline does not, by itself, make it obsolete.

Open the DBE subject examination guidelines

Open DBE released papers, memos and the 2026 timetable

Open DBE Mind the Gap study guides

Open free Siyavula textbooks

The resource titles above are clickable in this PDF. Official resources remain freely available; this pack adds original methods and practice.

A released-paper practice route

In the DBE May/June 2026 Mathematics P1, try Q1.1.1–Q1.1.4 and Q1.2 after the algebra methods. Use the matching memo to inspect both the working and the valid answers. These references are practice pointers, not a forecast for November.

Coverage limits

The fuller draft samples all main Maths paper topic groups, but does not cover every subtopic or level of difficulty. Inverse/logarithmic graphs, quadratic sequences, loan balances, regression, advanced trigonometry, similarity and formal geometry proofs need further study. Use a full curriculum checklist and complete papers.

Topic-weight percentages are intentionally omitted: the official Mathematics ATP and guideline disagree on the P2 Trigonometry/Euclidean Geometry split. See the research brief for the exact conflict.

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