FOR TEACHERS · AGES 16–19

80 chat prompts

Prompts for Mathematics Teachers · Upper Secondary.

Ready-to-use prompts for planning, teaching and reflection.

The right tool at the right time.
Part of the WISE Framework for Education at choosewise.education.

VOL. 30

Glossary

A few terms that recur throughout this guide. If you already know them, skip ahead to the framework on the next page.

AI — Artificial Intelligence

An attempt to make machines mimic brain functions — to "think" and learn roughly the way humans do. We don't fully understand how the brain works, but we can try to replicate the parts we do understand.

Prompt

An instruction given to a chatbot to get a desired response or task performed.

Iterate

After receiving a response from a chatbot, you refine and clarify the parts you're not satisfied with — sharpening the answer until it's what you want. The better your starting prompt, the fewer iterations you'll need.

Chatbot

A chatbot has been trained to find patterns in large amounts of text. It uses those patterns to generate a response to your prompt. The answer is produced in real time.

GPT

The underlying model (Generative Pre-trained Transformer) that a chatbot uses. The same GPT can power different chatbots — for example, Copilot and ChatGPT have both used OpenAI's GPT.

Generative AI

AI that creates (generates) text, images, video, or sound in real time when prompted to do so.

Bias

AI responses can be skewed or partial, depending on the data the AI was trained on and the biases present in that data. These biases are harder to spot in chatbots than in image-generating AI.

Hallucination

The text you receive from a chatbot is based on patterns in its training data, but word generation also involves randomness — meaning generated words can sometimes create a meaning that simply isn't true.

A framework for writing your own prompts

Role: Act as an experienced physics teacher.

Task: Create a lesson plan that introduces year 8 students to optics.

Context: I teach at a middle school, have 25 students in my class, and the lesson is 60 minutes long.

Format: Link content and activities to the physics curriculum and give me a plan that describes each part of the lesson and the materials required.

Tone: Use a formal but friendly tone.

A few chatbots to know

AI can also generate images and more, but we focus here on chat capabilities.

ChatGPT — OpenAI's chatbot

Gemini — Google's chatbot

NotebookLM — Google's tool that can, among other things, generate a two-voice podcast

Copilot — Microsoft's chatbot

Claude — Anthropic's chatbot

Perplexity — From San Francisco, was early to include source links

Duck AI — DuckDuckGo's chatbot, lets you pick among several GPTs

Mistral AI — A chatbot from France

Most chatbots have age restrictions.

BEFORE YOU START

How to use the prompts

All the prompts are starting points — examples to get you going.
Adapt them to fit your context.

After using a chatbot for a while, you'll learn what kinds of prompts work better or worse. Try the same prompt twice — first as-is, then with the prefix "Act as an experienced expert teacher in [subject]" — and see whether the quality of the response improves. A good response means a good prompt. A poor response means the prompt needs more context or adjustment. Some chatbots are better than others at certain tasks, so if you're not satisfied despite multiple tries, consider switching chatbot.

Brackets and privacy

You paste the prompt text into the chatbot's input field. Wherever brackets *[like this]* appear, replace the text inside with whatever fits your context.

Always double-check the responses — chatbot output is not guaranteed to be accurate.

Note: Think carefully before uploading texts or documents. Never upload personal data or sensitive information. Mind GDPR.

80 PROMPTS

Upper Secondary Mathematics Teacher

01 Create 5 tasks for Mathematics 1b where students solve linear equations such as 2x + 5 = 15, and provide a step-by-step explanation of how to solve one of them.

02 Write a 200-word text explaining what a function is and how it is used in everyday life for Mathematics 2b, and create 5 questions that test students' understanding of the concept of a function.

03 Create 5 tasks for Mathematics 3c where students solve quadratic equations using the square root method, and provide an example of how to explain the solution graphically.

04 Write a 150-word text on exponential functions and their applications for Mathematics 4, and create 4 questions focusing on growth and decay.

05 Create 5 tasks for Mathematics 1a where students simplify algebraic expressions such as 3x + 5x – 2, and provide an explanation of how to combine like terms.

06 Create a list of 5 real-world problems that can be solved using linear functions, and provide a task for Mathematics 2c where students write a 200-word report on one of the problems.

07 Write a 200-word text on how to solve systems of equations using the substitution method for Mathematics 3b, and create 5 practice tasks for students.

08 Create 5 tasks for Mathematics 5 where students work with logarithms and their properties, and provide an explanation of how to apply logarithm laws.

09 Write a 150-word text on polynomial functions and their graphs for Mathematics 4, and create 4 questions focusing on zeros and extreme points.

10 Create a task for Mathematics 2b where students analyse a linear function in a real-world context and write a 200-word text about how they interpreted the function. Geometry and Trigonometry

11 Create 5 tasks for Mathematics 1c where students calculate the area of various geometric shapes such as triangles and circles, and provide an explanation of how to derive the formula for the area of a circle.

12 Write a 200-word text on the Pythagorean theorem and its applications for Mathematics 2c, and create 5 tasks where students use the theorem to solve problems.

13 Create 5 tasks for Mathematics 3b where students use the law of sines and the law of cosines to solve triangles, and provide a step-by-step explanation for one of the tasks.

14 Write a 150-word text on how trigonometry is used in navigation for Mathematics 4, and create 4 questions focusing on angles and distances.

15 Create 5 tasks for Mathematics 1a where students calculate the perimeter and area of composite shapes, and provide an explanation of how to break the shape down into smaller parts.

16 Create a list of 5 real-world situations where geometry is used, and provide a task for Mathematics 2b where students write a 200-word text about one of the situations.

17 Write a 200-word text on how to use trigonometric identities to simplify expressions for Mathematics 5, and create 5 practice tasks for students.

18 Create 5 tasks for Mathematics 3c where students calculate the volume of three-dimensional shapes such as cones and spheres, and provide an explanation of how to derive the formula for the volume of a sphere.

19 Write a 150-word text on vectors and their use in physics for Mathematics 4, and create 4 questions focusing on addition and the scalar product.

20 Create a task for Mathematics 2c where students draw and analyse a triangle with given angles and write a 200-word text about how they solved a problem using trigonometry. Statistics and Probability

21 Create 5 tasks for Mathematics 1b where students calculate the mean, median, and mode of a data set, and provide an explanation of how to interpret these measures.

22 Write a 200-word text on how to use diagrams to present data for Mathematics 2b, and create 5 questions focusing on interpreting bar charts and pie charts.

23 Create 5 tasks for Mathematics 3c where students calculate the standard deviation of a data set, and provide a step-by-step explanation of how to perform the calculation.

24 Write a 150-word text on probability theory and its everyday applications for Mathematics 4, and create 4 questions focusing on independent events and conditional probability.

25 Create 5 tasks for Mathematics 1a where students create and interpret frequency tables, and provide an explanation of how to organise data in a table.

26 Create a list of 5 real-world situations where statistics is used, and provide a task for Mathematics 2c where students write a 200-word report on one of the situations.

27 Write a 200-word text on how to use the normal distribution to analyse data for Mathematics 5, and create 5 practice tasks for students.

28 Create 5 tasks for Mathematics 3b where students calculate probabilities using tree diagrams, and provide an explanation of how to draw a tree diagram.

29 Write a 150-word text on correlation and its significance for Mathematics 4, and create 4 questions focusing on the relationship between variables.

30 Create a task for Mathematics 2b where students collect data about their classmates' habits and write a 200-word text about how they analysed the data using statistical methods. Problem-Solving and Applications

31 Create 5 word problems for Mathematics 1c where students use linear equations to solve everyday problems such as budget planning, and provide a solution for one of them.

32 Write a 200-word text on how mathematics is used in financial planning for Mathematics 2c, and create 5 word problems focusing on interest and loans.

33 Create 5 word problems for Mathematics 3b where students use exponential functions to solve problems about population growth, and provide a step-by-step solution for one of them.

34 Write a 150-word text on how derivatives are used to optimise problems for Mathematics 4, and create 4 tasks focusing on maximum and minimum values.

35 Create 5 word problems for Mathematics 1a where students use percentages to solve problems about discounts and VAT, and provide an explanation of how to calculate VAT.

36 Create a list of 5 professions where mathematics is important, and provide a task for Mathematics 2b where students write a 200-word text about how mathematics is used in one of those professions.

37 Write a 200-word text on how integrals are used to calculate areas for Mathematics 5, and create 5 practice tasks for students.

38 Create 5 word problems for Mathematics 3c where students use trigonometry to solve problems involving distances and angles, and provide a solution for one of them.

39 Write a 150-word text on how mathematical models are used to solve real-world problems for Mathematics 4, and create 4 questions focusing on the steps of the modelling process.

40 Create a task for Mathematics 2c where students solve a problem about budgeting for a class trip and write a 200-word text about how they used mathematics to plan. Numbers and Arithmetic

41 Create 5 tasks for Mathematics 1a where students work with fractions — such as adding and subtracting fractions with different denominators — and provide a step-by-step explanation for one of them.

42 Write a 200-word text on how percentages are used in everyday situations for Mathematics 1b, and create 5 tasks focusing on calculating discounts and price increases.

43 Create 5 tasks for Mathematics 2c where students convert between decimals, fractions, and percentages, and provide an explanation of how to convert 0.75 into a fraction and a percentage.

44 Write a 150-word text on what prime numbers are and how they are used for Mathematics 3b, and create 4 questions that test students' understanding of prime numbers and factorisation.

45 Create 5 tasks for Mathematics 1c where students work with powers — such as calculating 2^3 and 5^{-2} — and provide an explanation of how to handle negative exponents.

46 Create a list of 5 real-world situations where fractions are used, and provide a task for Mathematics 1a where students write a 200-word text about one of the situations.

47 Write a 200-word text on how square roots are used in practical contexts for Mathematics 2b, and create 5 practice tasks for students.

48 Create 5 tasks for Mathematics 3c where students work with complex numbers and their properties, and provide an explanation of how to add and multiply complex numbers.

49 Write a 150-word text on how to round numbers and why it is important for Mathematics 1b, and create 4 questions focusing on rounding to various decimal places.

50 Create a task for Mathematics 2c where students analyse a problem involving interest and write a 200-word text about how they calculated the total cost of a loan. Mathematical Analysis

51 Create 5 tasks for Mathematics 3b where students calculate derivatives of simple functions such as $f(x) = x^2 + 3x$, and provide a step-by-step explanation for one of them.

52 Write a 200-word text on how derivatives are used to find extreme points for Mathematics 4, and create 5 tasks focusing on determining maximum and minimum values.

53 Create 5 tasks for Mathematics 5 where students calculate integrals of functions such as $\int(2x + 3)\,dx$, and provide an explanation of how to solve one of them using substitution.

54 Write a 150-word text on how limits are used to analyse functions for Mathematics 4, and create 4 questions focusing on limits at infinity.

55 Create 5 tasks for Mathematics 3c where students analyse the asymptotes of functions, and provide an explanation of how to determine horizontal and vertical asymptotes.

56 Create a list of 5 real-world applications of derivatives, and provide a task for Mathematics 4 where students write a 200-word text about one of the applications.

57 Write a 200-word text on how integrals are used to calculate areas between curves for Mathematics 5, and create 5 practice tasks for students.

58 Create 5 tasks for Mathematics 3b where students determine the equation of the tangent to a curve, and provide an explanation of how to use the derivative to solve the problem.

59 Write a 150-word text on how to analyse the continuity of functions for Mathematics 4, and create 4 questions focusing on points of discontinuity.

60 Create a task for Mathematics 5 where students solve an optimisation problem using derivatives and write a 200-word text about how they arrived at the solution. Logic and Proof

61 Create 5 tasks for Mathematics 2b where students work with logical reasoning — such as determining whether a statement is true or false — and provide an explanation of how to analyse logical expressions.

62 Write a 200-word text on how mathematical induction is used to prove statements for Mathematics 5, and create 5 practice tasks for students.

63 Create 5 tasks for Mathematics 3c where students prove geometric theorems — such as that the sum of the angles in a triangle is 180 degrees — and provide a step-by-step explanation of one proof.

64 Write a 150-word text on what a counterexample is and how it is used for Mathematics 4, and create 4 questions focusing on identifying incorrect statements.

65 Create 5 tasks for Mathematics 2c where students work with logic puzzles that require reasoning, and provide an explanation of how to solve one of the puzzles.

66 Create a list of 5 mathematical theorems that can be proved, and provide a task for Mathematics 5 where students write a 200-word text about how they proved one of the theorems.

67 Write a 200-word text on how direct proofs are used to demonstrate algebraic identities for Mathematics 4, and create 5 practice tasks for students.

68 Create 5 tasks for Mathematics 3b where students analyse logical reasoning in everyday situations, and provide an explanation of how to identify logical errors.

69 Write a 150-word text on how to prove trigonometric identities for Mathematics 5, and create 4 questions focusing on simplifying expressions.

70 Create a task for Mathematics 4 where students write a proof for a given theorem and write a 200-word text about how they reasoned to arrive at the proof. Mathematics in Society

71 Create 5 word problems for Mathematics 1b where students use percentages to analyse economic data — such as calculating inflation — and provide a solution for one of them.

72 Write a 200-word text on how mathematics is used in urban planning for Mathematics 2c, and create 5 questions focusing on geometry and statistics in planning.

73 Create 5 word problems for Mathematics 3b where students use exponential functions to model the spread of infection, and provide a step-by-step solution for one of them.

74 Write a 150-word text on how statistics is used in opinion polls for Mathematics 4, and create 4 questions focusing on interpreting data and margins of error.

75 Create 5 word problems for Mathematics 1a where students use arithmetic to plan a budget for a project, and provide an explanation of how to calculate costs.

76 Create a list of 5 societal problems that can be solved using mathematics, and provide a task for Mathematics 2b where students write a 200-word text about one of the problems.

77 Write a 200-word text on how mathematics is used in climate models for Mathematics 5, and create 5 questions focusing on modelling and analysis.

78 Create 5 word problems for Mathematics 3c where students use trigonometry to solve problems in architecture, and provide a solution for one of them.

79 Write a 150-word text on how probability theory is used in the insurance industry for Mathematics 4, and create 4 questions focusing on risk assessment.

80 Create a task for Mathematics 2c where students analyse data on energy consumption and write a 200-word text about how they used mathematics to draw conclusions.

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