

To the student - Information about the oral part

You will be given a problem that you will solve in writing, and then you will present your solution orally. If you need, you can ask your classmates and your teacher for help when solving the problem. Your oral presentation starts with you presenting what the problem is about and then you describe and explain your solution. You must present all steps in your solution. However, if you have done the same calculation several times (for example in a table) it might be sufficient if you present some of the calculations. Your presentation should take a maximum of 5 minutes, and be held to a smaller group of your classmates and one or more teachers.

The problem given to you should, on the whole, be solved algebraically. You might need a calculator to do some of the calculations but, when presenting your solution, you should avoid referring to the use of your calculator for drawing graphs and/or symbolic handling (if that is the type of calculator you are using).

When assessing your oral presentation, the teacher will take into consideration:

- how complete, relevant and structured your presentation is,
- how well you describe and explain the train of thought behind your solution,
- how well you use the mathematical terminology.

How complete, relevant and structured your presentation is

Your presentation must contain the necessary parts in order for a listener to follow and understand your thoughts. What you say should be in a suitable order and be relevant. The listener must understand how calculations, descriptions, explanations and conclusions are connected with each other.

How well you describe and explain the train of thought behind your solution

Your presentation should contain both descriptions and explanations. To put it simple, a description answers the question *how* and an explanation answers the question *why*. You describe something when you for instance tell *how* you have done a calculation. You explain something when you for instance justify *why* you could use a certain formula.

How well you use the mathematical terminology

In your presentation you should use a language that contains mathematical terms, expressions and symbols, suitable for the problem you have solved.

Mathematical terms are for example words like “exponent”, “function” and “graph”.

An example of a mathematical expression is that x^2 is read “ x to the power 2” or “ x squared”. Some examples of mathematical symbols are π and $f(x)$, which are read “pi” and “ f of x ”.

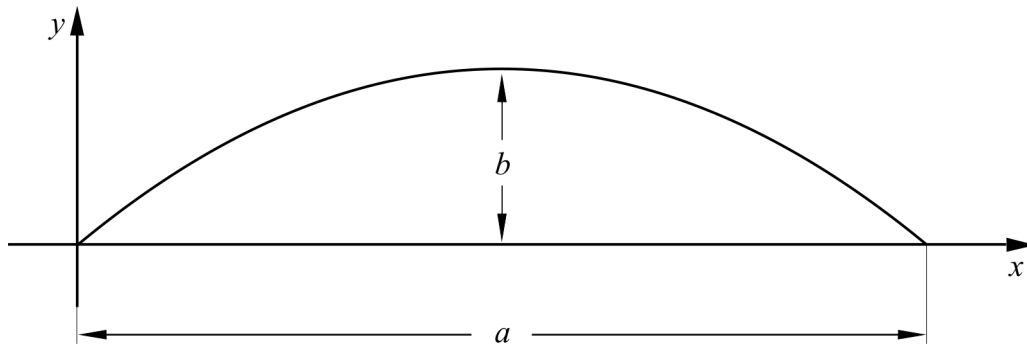
Problem 1. Quadratic function

Name: _____

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The figure below shows the graph to the quadratic function $y = 3x - x^2$



- a) What is the length of distance a ?
- b) What is the length of distance b , that is the distance between the highest point of the curve and the x -axis?



Problem 2. School equipment

Name: _____

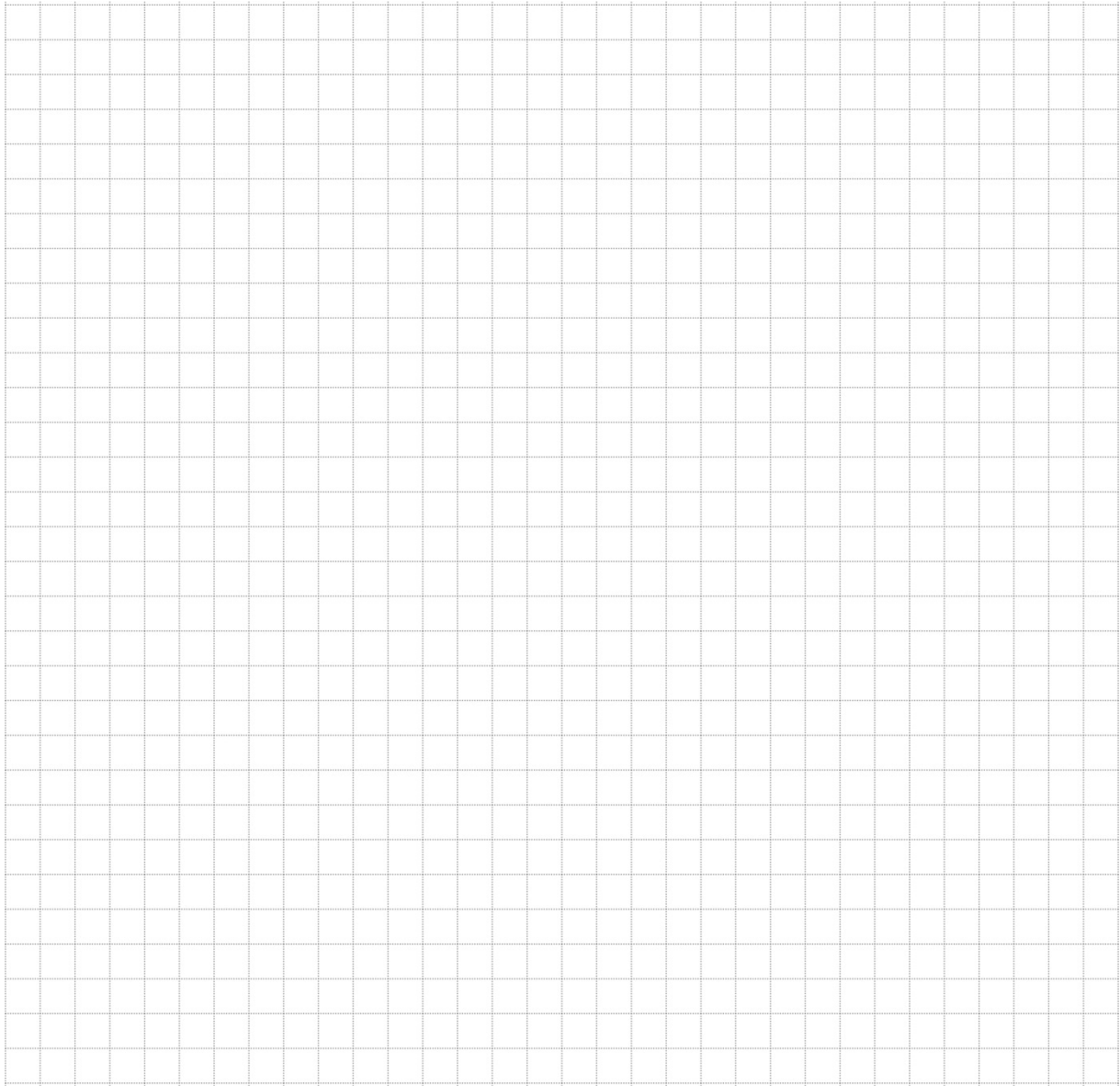
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School is about to start so Hanna and Lukas go to the book shop to buy note books and other school equipment. The book shop sells note books for SEK 12 each but also pencils and rubbers. Hanna buys four note books, three pencils and six rubbers and pays SEK 78.

Lukas buys seven note books, eight pencils and two rubbers and pays SEK 122.

What is the price of a pencil and a rubber respectively?



Problem 3. Magic square

Name: _____

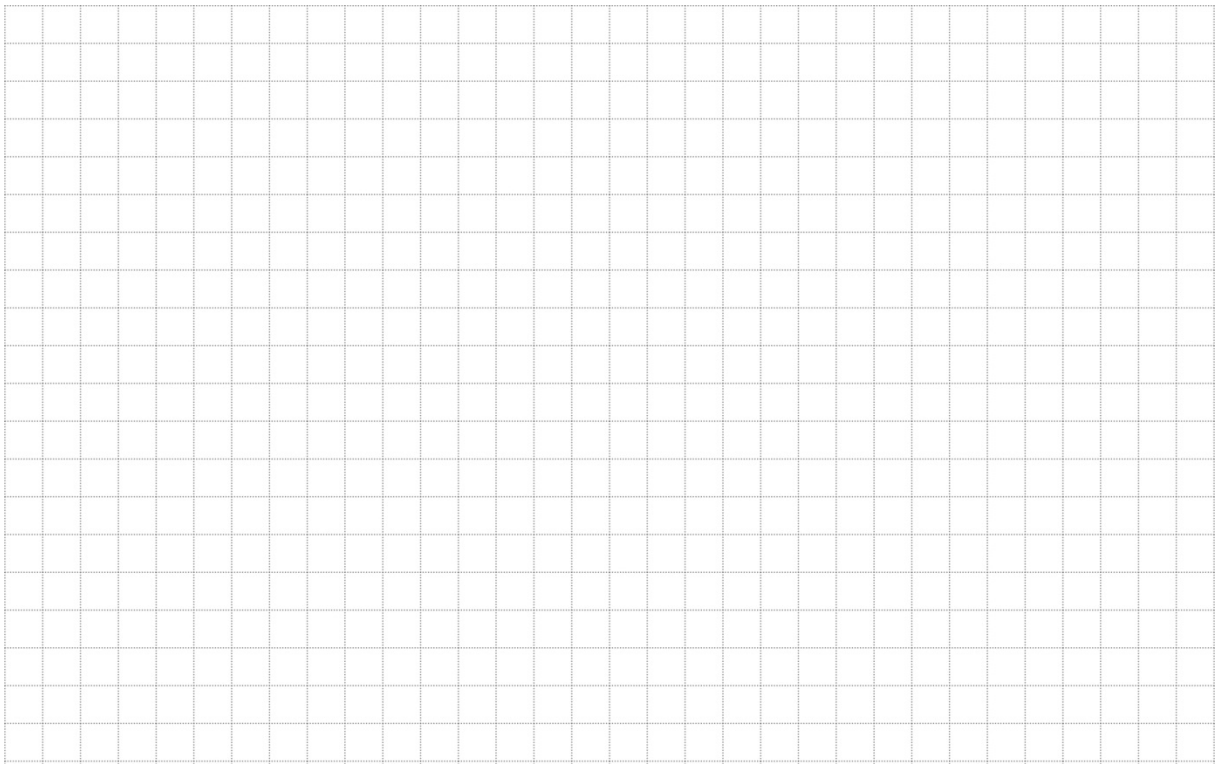
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In a magic square, the sum of the numbers in the squares is equal for every row, every column and every diagonal. In the square below different expressions have been printed in some of the squares.

x^2-20	?	?
x^2	$3x+2$	$x-2$
$x+2$?	?

- Find the positive x -value that makes the values of the expressions in the filled-in squares satisfy the requirements of a magic square.
- Calculate the values for each one of the nine squares and then draw the complete magic square.



Problem 4. Women’s maximum pulse rate

Name: _____

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A group of women are part of a study that investigates how the women’s maximum pulse rates vary with their age. The women are 15 years old the first time their maximum pulse rate is measured. Two further measurements are made when the women are 30 years old and 40 years old respectively.

Age x (years)	Maximum pulse rate y (beats/minute)
15	194
30	182
40	174

The table shows values from Lisa, one of the women in the group.

- a) Investigate if the values in the table form a linear relationship.
- b) Determine, with the aid of the table, an algebraic relationship of how Lisa’s maximum pulse rate y beats/minute depends on age x years and use your relationship to determine at what age she has a maximum pulse rate of 146 beats/minute.

Bedömningsmatris för bedömning av muntlig kommunikativ förmåga

Kommunikativ förmåga	E	C	A	Max
<p><i>Fullständighet, relevans och struktur</i></p> <p>Hur fullständig, relevant och strukturerad elevens redovisning är.</p>	<p>Redovisningen kan sakna något steg eller innehålla något ovidkommande.</p> <p>Det finns en övergripande struktur men redovisningen kan bitvis vara fragmentarisk eller rörig.</p> <p>(1/0/0)</p>		<p>Redovisningen är fullständig och endast relevanta delar ingår.</p> <p>Redovisningen är välstrukturerad.</p> <p>(1/0/1)</p>	(1/0/1)
<p><i>Beskrivningar och förklaringar</i></p> <p>Förekomst av och utförlighet i beskrivningar och förklaringar.</p>	<p>Någon förklaring förekommer men tyngdpunkten i redovisningen ligger på beskrivningar.</p> <p>Utförligheten i de beskrivningar och de förklaringar som framförs kan vara begränsad.</p> <p>(1/0/0)</p>		<p>Redovisningen innehåller tillräckligt med utförliga beskrivningar och förklaringar.</p> <p>(1/0/1)</p>	(1/0/1)
<p><i>Matematisk terminologi</i></p> <p>Hur väl eleven använder matematiska termer, symboler och konventioner.</p>	<p>Eleven använder matematisk terminologi med rätt betydelse vid enstaka tillfällen i redovisningen.</p> <p>(1/0/0)</p>	<p>Eleven använder matematisk terminologi med rätt betydelse och vid lämpliga tillfällen genom delar av redovisningen.</p> <p>(1/1/0)</p>	<p>Eleven använder matematisk terminologi med rätt betydelse och vid lämpliga tillfällen genom hela redovisningen.</p> <p>(1/1/1)</p>	(1/1/1)
Summa				(3/1/3)