

Mathematics

3 Points — First Questionnaire

מ ת מ ט י ק ה

3 יחידות לימוד - שאלון ראשון

Instructions for examinees

א. Duration of the exam: One hour and 15 minutes.

ב. Exam structure and breakdown of points:

This exam has six questions.

Each question is worth 25 points.

You may answer as many questions as you like, but the maximum number of points you can earn is 100.

ג. Material that may be used during the exam:

(1) A non-graphing calculator. You may not use the programming options of a programmable calculator. Use of a graphing calculator or programming options may lead to the disqualification of the exam.

(2) Formula sheets (attached).

(3) A Hebrew-foreign language / foreign language-Hebrew dictionary.

ד. Special instructions:

(1) **Write all of your calculations and answers in the test booklet.**

(2) For draft paper, use pages in the test booklet (including those at the end of the booklet) or paper you receive from the proctors. Use of other draft paper may lead to the disqualification of the exam.

(3) Explain all of your work, including calculations, in detail and in a clear and organized fashion. Lack of detail may lower your score or lead to the disqualification of the exam.

הוראות לנבחן

א. משך הבחינה: שעה ורבע.

ב. מבנה השאלון ומפתח ההערכה:

בשאלון זה שש שאלות.

לכל שאלה — 25 נקודות.

מוותר לך לענות על מספר

שאלות כרצונך, אך סך

הנקודות שתוכל לצבור

לא יעלה על 100.

ג. חומר עזר מותר בשימוש:

(1) מחשבון לא גרפי. אין להשתמש

באפשרויות התכנות במחשבון

הניתן לתכנות. שימוש במחשבון גרפי או

באפשרויות התכנות במחשבון עלול לגרום

לפסילת הבחינה.

(2) דפי נוסחאות (מצורפים).

(3) מילון עברי-לועזי/לועזי-עברי.

ד. הוראות מיוחדות:

(1) **כתוב את כל החישובים והתשובות**

בגוף השאלון.

(2) לטייטה יש להשתמש בדפים שבגוף השאלון

(כולל הדפים שבסופו) או בדפים שקיבלת

מהמשגיחים. שימוש בטייטה אחרת עלול

לגרום לפסילת הבחינה.

(3) הסבר את כל פעולותיך, כולל חישובים,

בפירוט ובצורה ברורה ומסודרת.

חוסר פירוט עלול לגרום לפגיעה בציון או

לפסילת הבחינה.

Note! You may answer in your mother tongue only if you have the special permission slip with you.

Good Luck !

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בהצלחה !

/המשך מעבר לדף/

Questions

This exam has six questions. A complete answer is worth 25 points. You may answer as many questions as you like, completely or partially, but the maximum number of points that you can earn is 100.

Write all of your calculations and answers in the test booklet.

Note! Explain all of your work, including calculations, clearly and in detail.

Lack of detail may lower your score or lead to the disqualification of the exam.

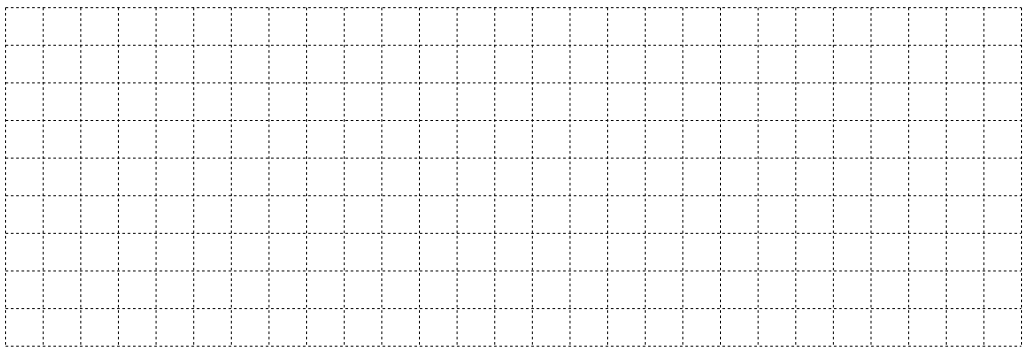
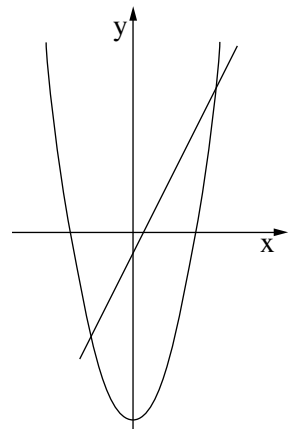
Algebra

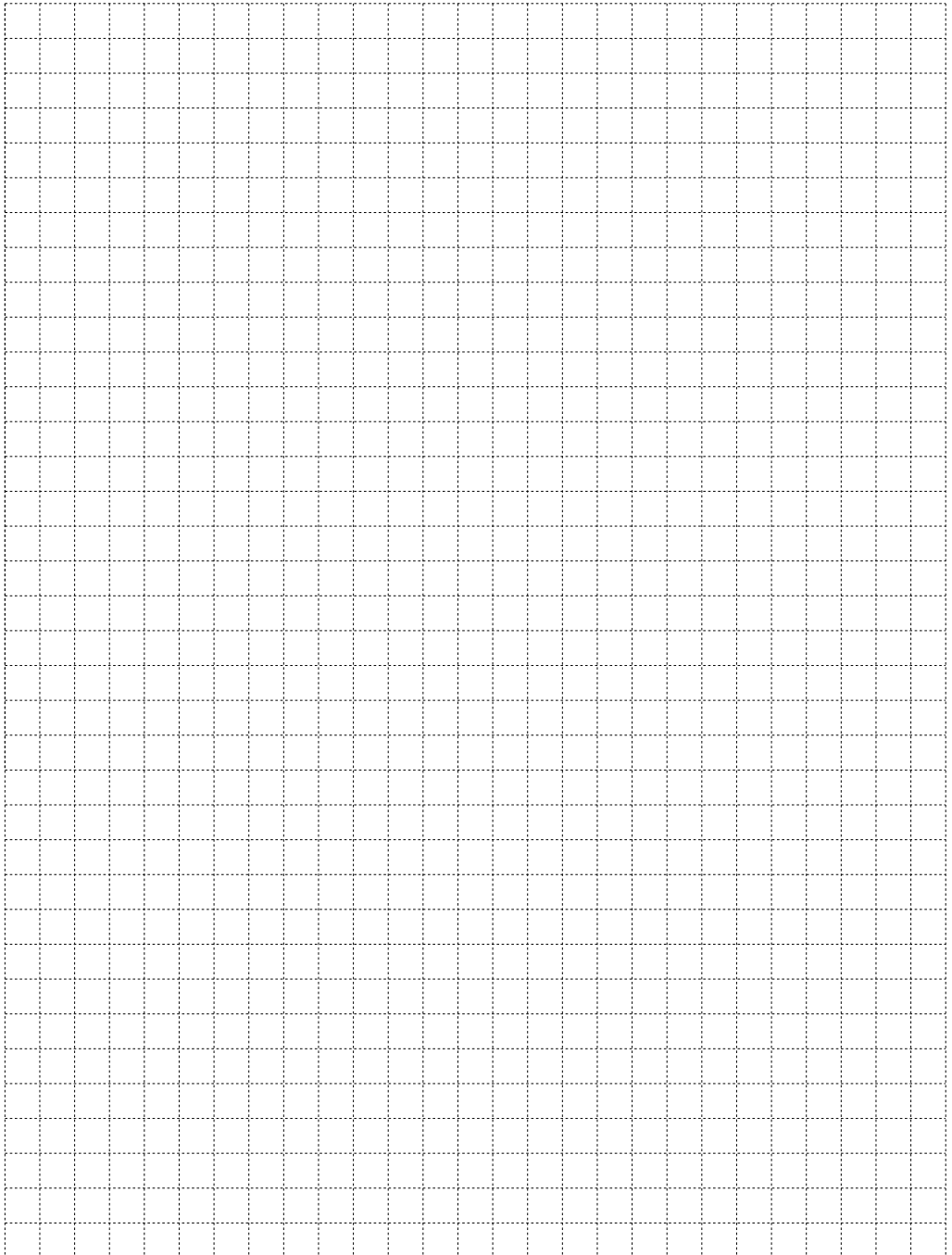
1. Here is a sketch of a parabola and a line whose equations are as follows:

$$y = x^2 - 9$$

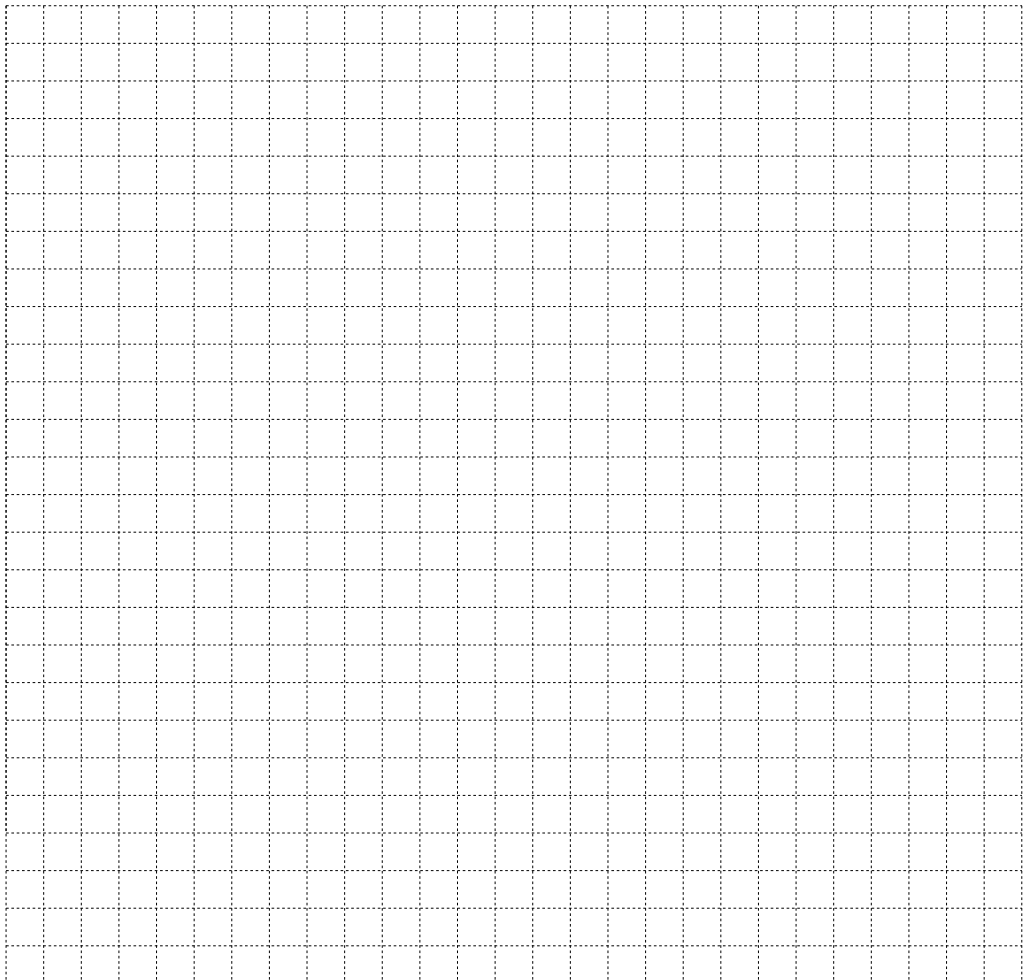
$$y = 2x - 1$$

- א. Determine the points at which the parabola and the line intersect.
- ב. Provide an example of a value of x for which the line is located above the parabola.
- ג. Provide an example of a point on the parabola whose y -coordinate is positive.





2. Dana was saving money for a trip. The first week, she saved 6 shekels.
During each of the following weeks, she put away 5 shekels more than she
did the previous week.
Dana saved a total of 782 shekels.
- א. How much money did Dana put away in the eighth week?
 - ב. For how many weeks (in total) did Dana save up for her trip?





3. Here are the equations of two lines:

$$y = \frac{1}{2}x - 1 \text{ and } y = 2x + 5.$$

Together with the y-axis, these lines form Triangle GHI.

א. Find the coordinates of the vertices [קודקים]

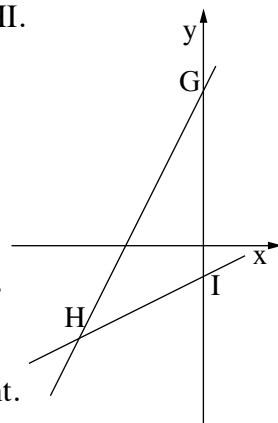
G, H and I.

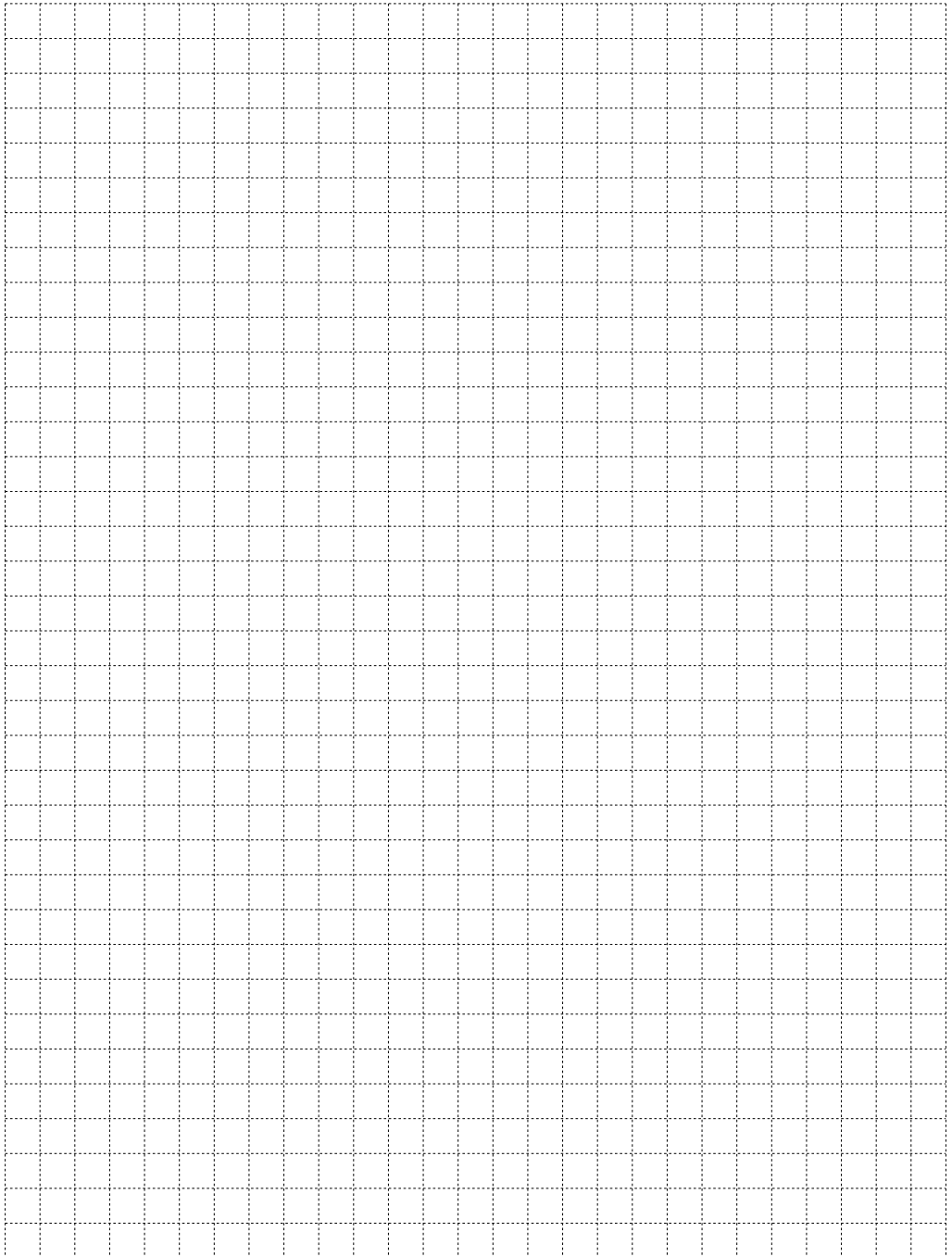
ב. Find the distance between the two vertices of the triangle that are located on the y-axis.

ג. A segment that is perpendicular [אנך] to the y-axis was drawn from Point H to the y-axis.

(1) Find the length of the perpendicular segment.

(2) Calculate the area of Triangle GHI.





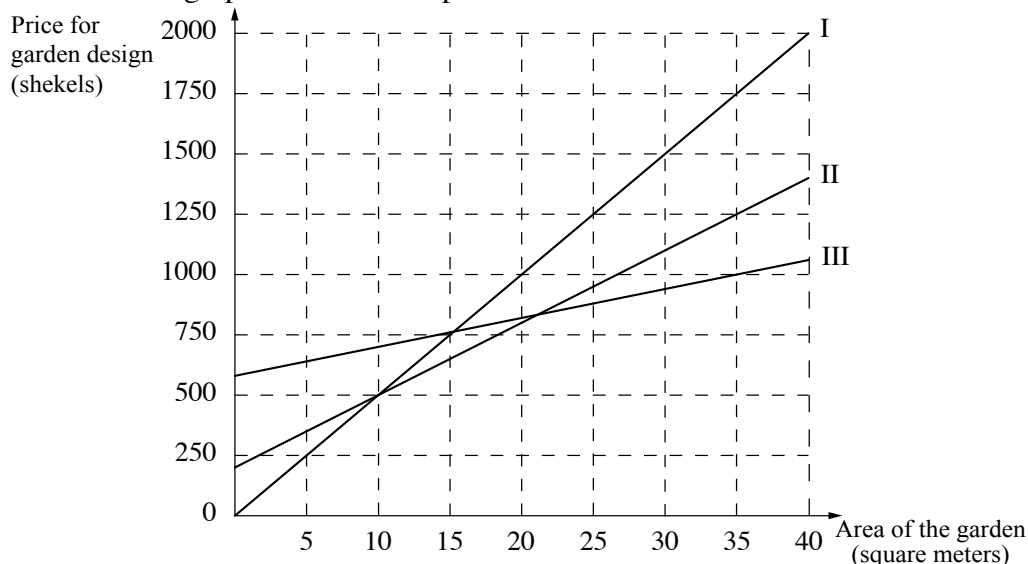
4. Three landscaping contractors advertised garden-design deals in the local newspaper. Each of the advertised deals included a price based on the area of the garden (in square meters) and two of the deals also included a flat fee for consultation.

Contractor ברוך (Baruch) offered a price of 580 shekels for consultation + 12 shekels per square meter of garden.

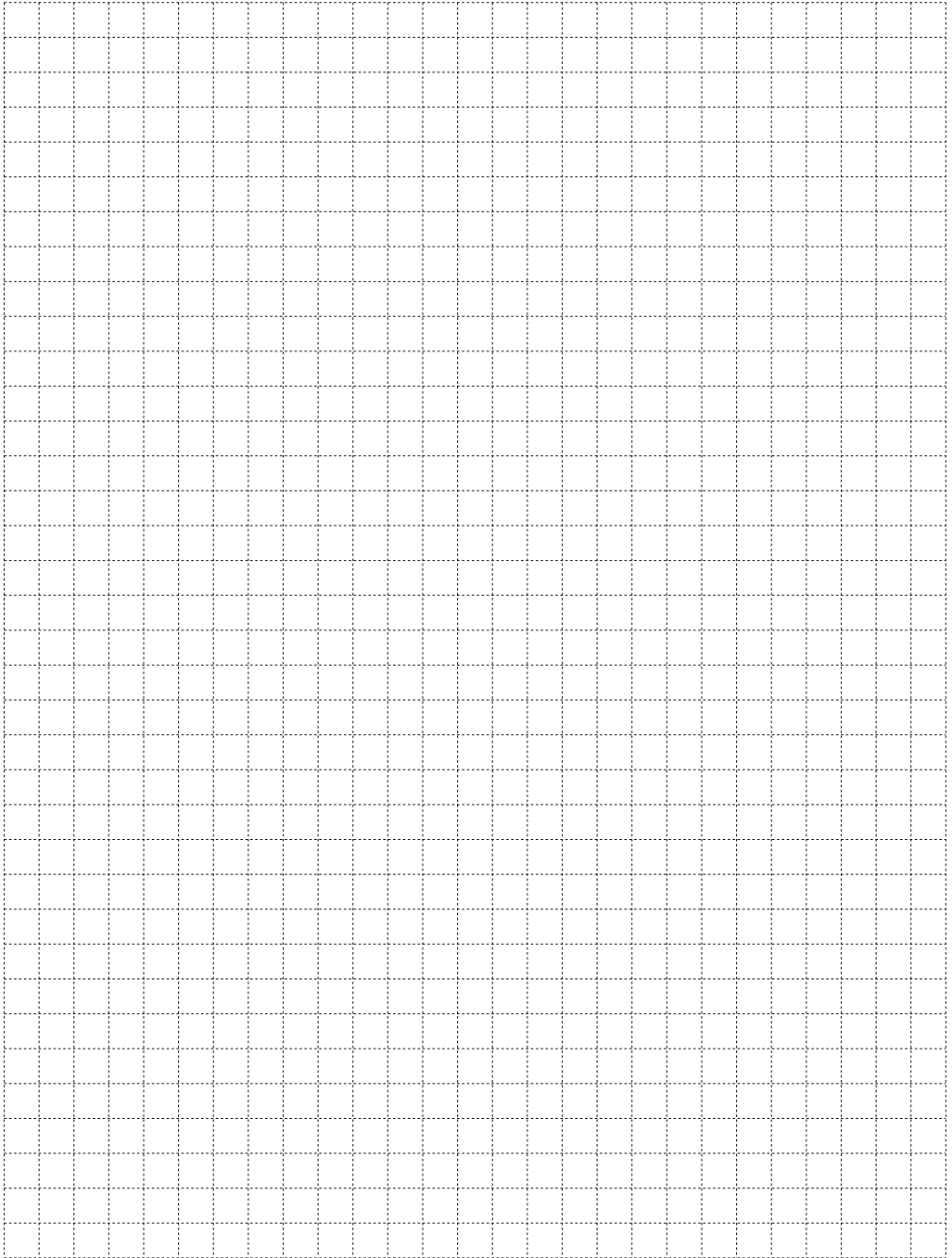
Contractor גדי (Gadi) offered a price of 200 shekels for consultation + 30 shekels per square meter of garden.

Contractor אורי (Uri) offered free consultation (0 shekels) + 50 shekels per square meter of garden.

The three graphs below correspond to the three offers.

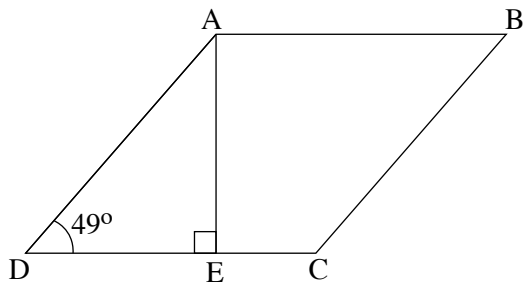


- א. Write the name of the contractor next to the graph that corresponds to his offer (I, II and III).
- ב. (1) For what size garden [שטח הגינה] will contractors Uri and Gadi charge the same price?
(2) What price will they charge in that case?
- ג. The Israeli family has a garden with an area of 35 square meters. Mrs. Israeli wanted to hire the most expensive contractor, because she believed he would do the best job. Mr. Israeli insisted on hiring the contractor who offered the cheapest deal. In the end, Mrs. Israeli agreed with her husband. How much money did the Israeli family save by deciding to go with the husband's suggestion? Explain.

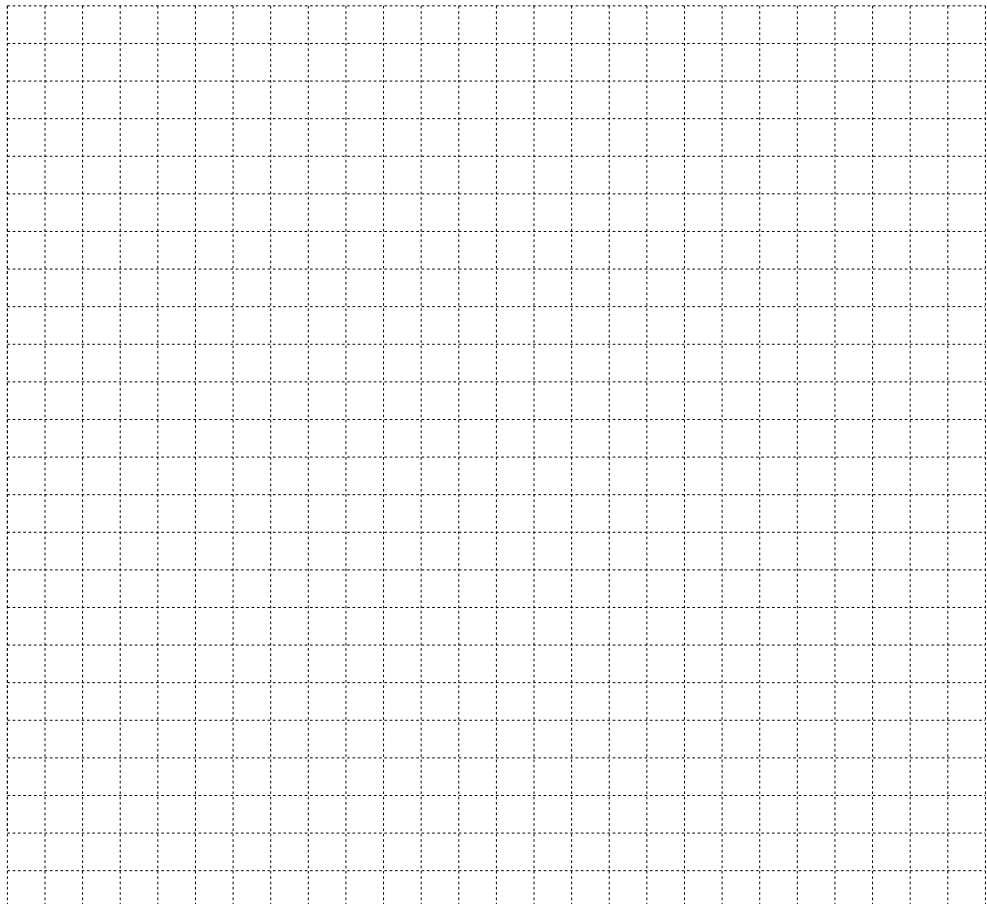


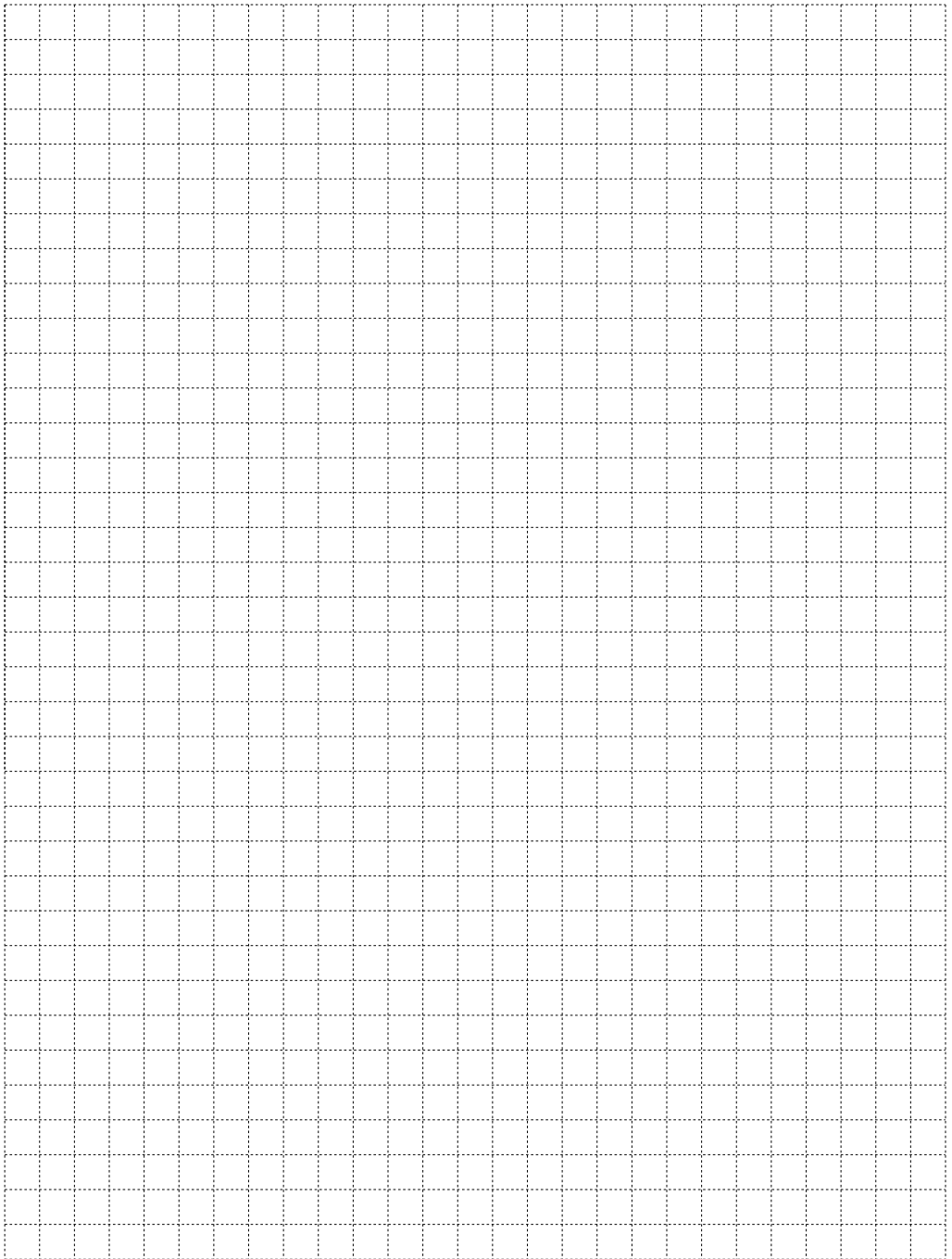
Trigonometry

5. In the rhombus [מעיין] ABCD,
 the length of the height AE
 to Side DC is 12 cm.
 The acute angle of the rhombus
 is 49° (see figure).



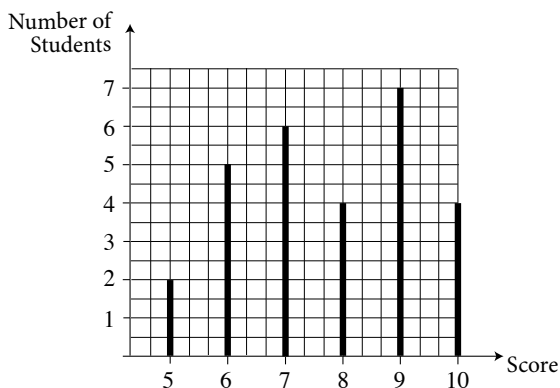
- א. Calculate the perimeter
 of the rhombus.
- ב. Calculate the length of Segment CE.



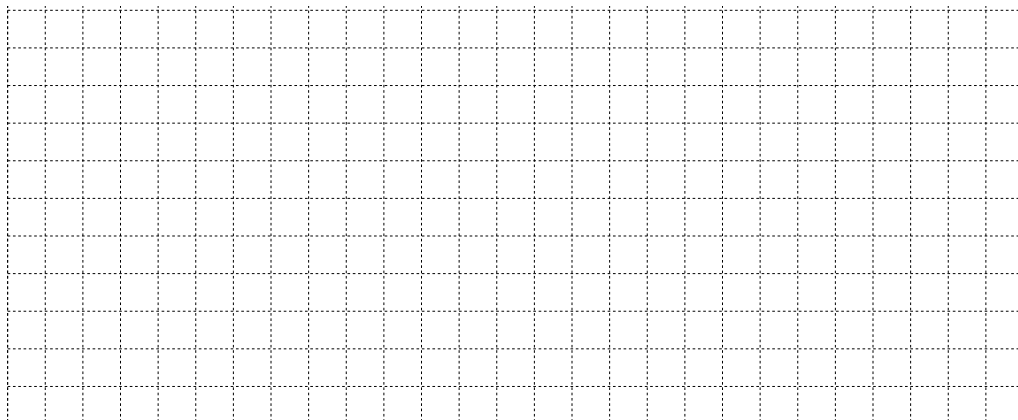


Statistics and Probability

6. The bar graph below shows the distribution of geography scores in a certain class.



- א. How many students are there in the class?
- ב. What is the average geography score in this class?
- ג. What is the modal score [הציון השכיח]?
- ד. A student is selected at random from the class.
 - (1) What is the probability that his score is less than the average?
 - (2) What is the probability that his score is between 6 and 9 (including 6 and 9)?





Good Luck!

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בהצלחה!

זכות היוצרים שמורה למדינת ישראל
אין להעתיק או לפרסם אלא ברשות משרד החינוך

/Extra notebook pages are attached./

