

Mathematics

3 Points — Second Questionnaire

Instructions for examinees

א. Duration of the exam: One and a half hours.

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.

מ ת מ ט י ק ה

3 יחידות לימוד - שאלון שני

הוראות לנבחן

א. משך הבחינה: שעה וחצי.

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 !

/Continued on the following page/

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.

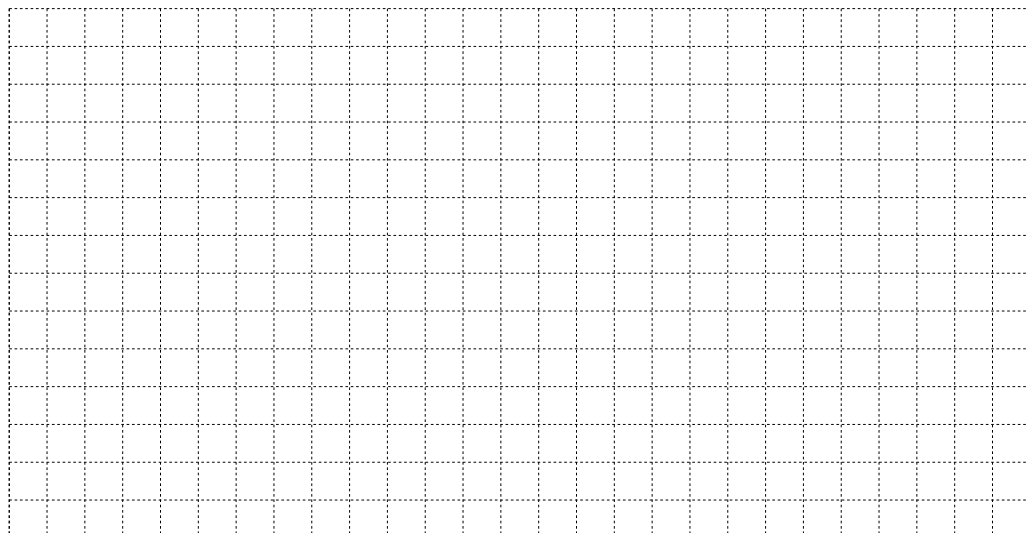
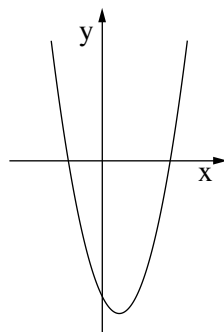
Write all of your calculations and answers in the test booklet.

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. The function $f(x) = x^2 - 2x - 8$ is given.
 - א. Find the points at which the function intersects the axes.
 - ב. Find the coordinates of the vertex [קדקוד] of the parabola.
 - ג. Over which values of x does the function increase?





2. Yossi walked for 8 hours continuously.

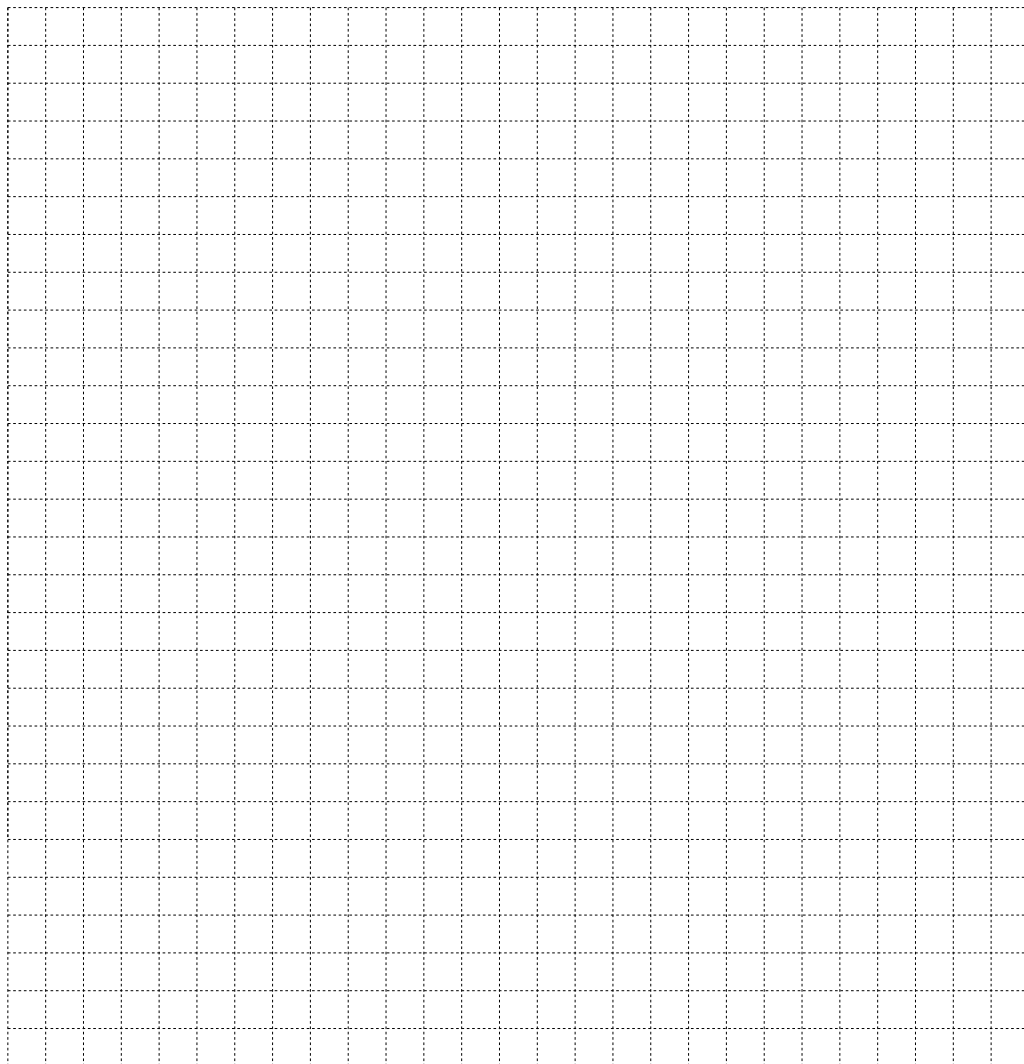
Each hour, he walked $\frac{2}{3}$ of the distance that he had walked the previous hour.

In the third hour, he covered 2368 meters.

א. Calculate the distance that Yossi covered during the first hour.

ב. Calculate the total distance that Yossi covered in the 8 hours.

(Be precise to two digits after the decimal point.)





3. Gilad bought a car exactly 3 years ago.

The current value of the car is 50,000 shekels.

This type of car depreciates in value by 11% each year.

א. How much did Gilad pay for the car?

ב. How much will the car be worth four years from today?

A large rectangular area filled with a grid of dashed lines, intended for students to show their calculations and work for the problems.



Trigonometry

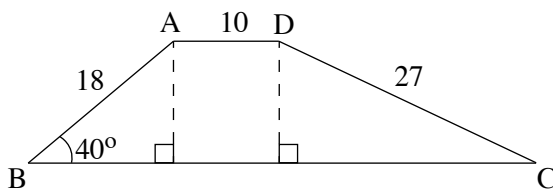
4. Here is a drawing of Trapezoid ABCD.

Given: $AD = 10$ cm

$AB = 18$ cm

$DC = 27$ cm

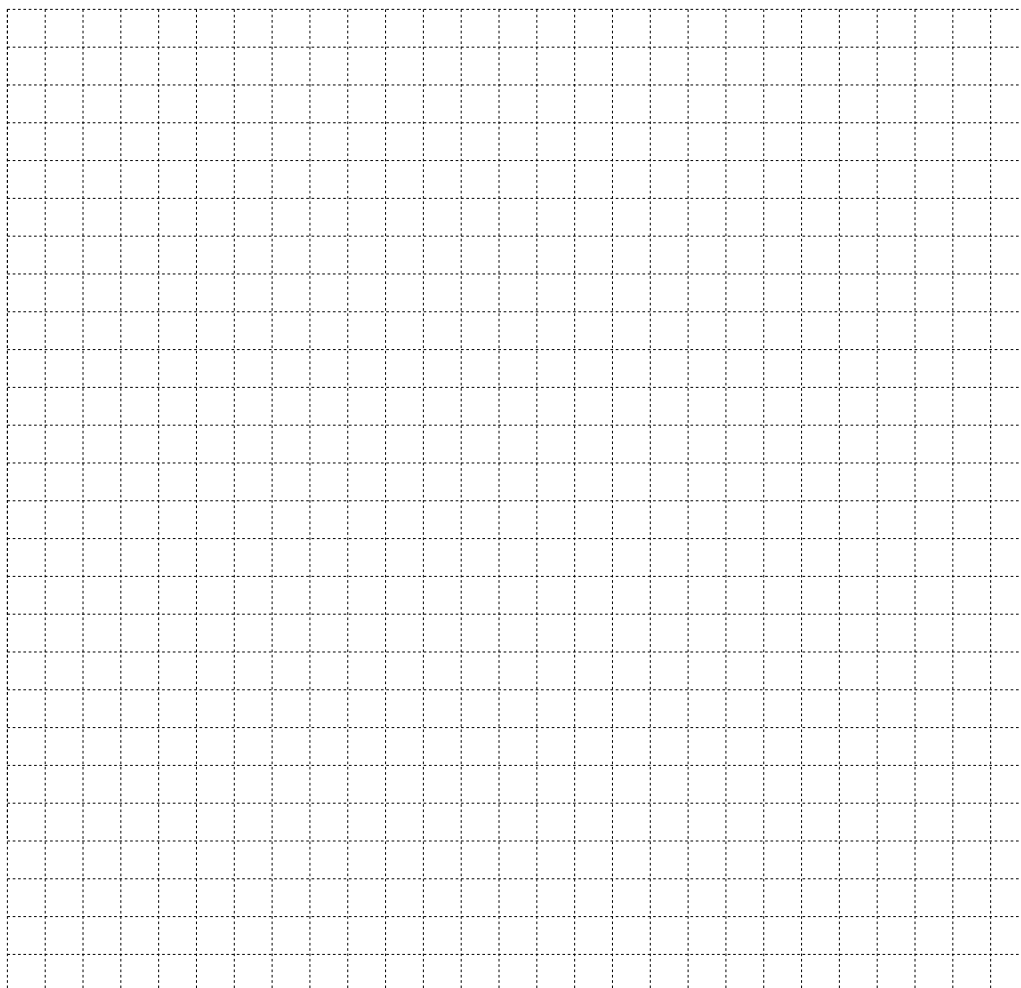
$\angle ABC = 40^\circ$



א. Find the height of the trapezoid.

ב. Find the size of the acute angle $\angle DCB$.

ג. Find the area of the trapezoid.





Statistics and Probability

5. A history test was given to 11th-graders in a certain school. The average scores and standard deviations [סטיות התקן] for each of the 11th grade classes are presented in the table below.

Class	1 класс	2 класс	3 класс	4 класс
Number of students	25	30	35	40
Average score	60	80	50	70
Standard deviation	11	4	10	0

Study the table and answer Items 3-8:

8. (1) How many students are there in 11th grade?
(2) Find the average history score for all of the students in the grade.
9. One class is chosen at random from among all the 11th grade classes.
What is the probability that the average score in that class is higher than 60?
10. The principal of the school claimed that, in one class, the scores of each of the students were all the same. Which class was he referring to?
Explain.



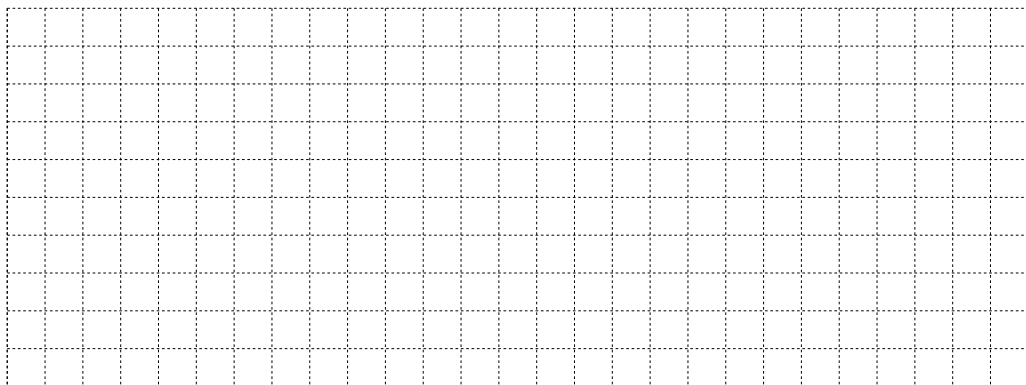
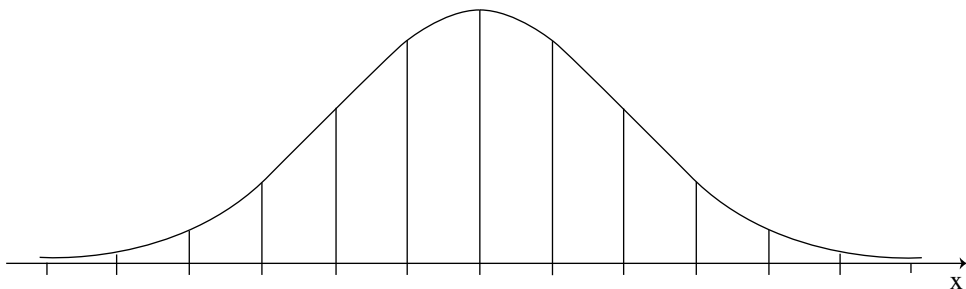
6. The scores on a psychometric test are normally distributed [מתפגלים נורמלית] with an average of 530 points and a standard deviation [סטטיית תקן] of 90 points.

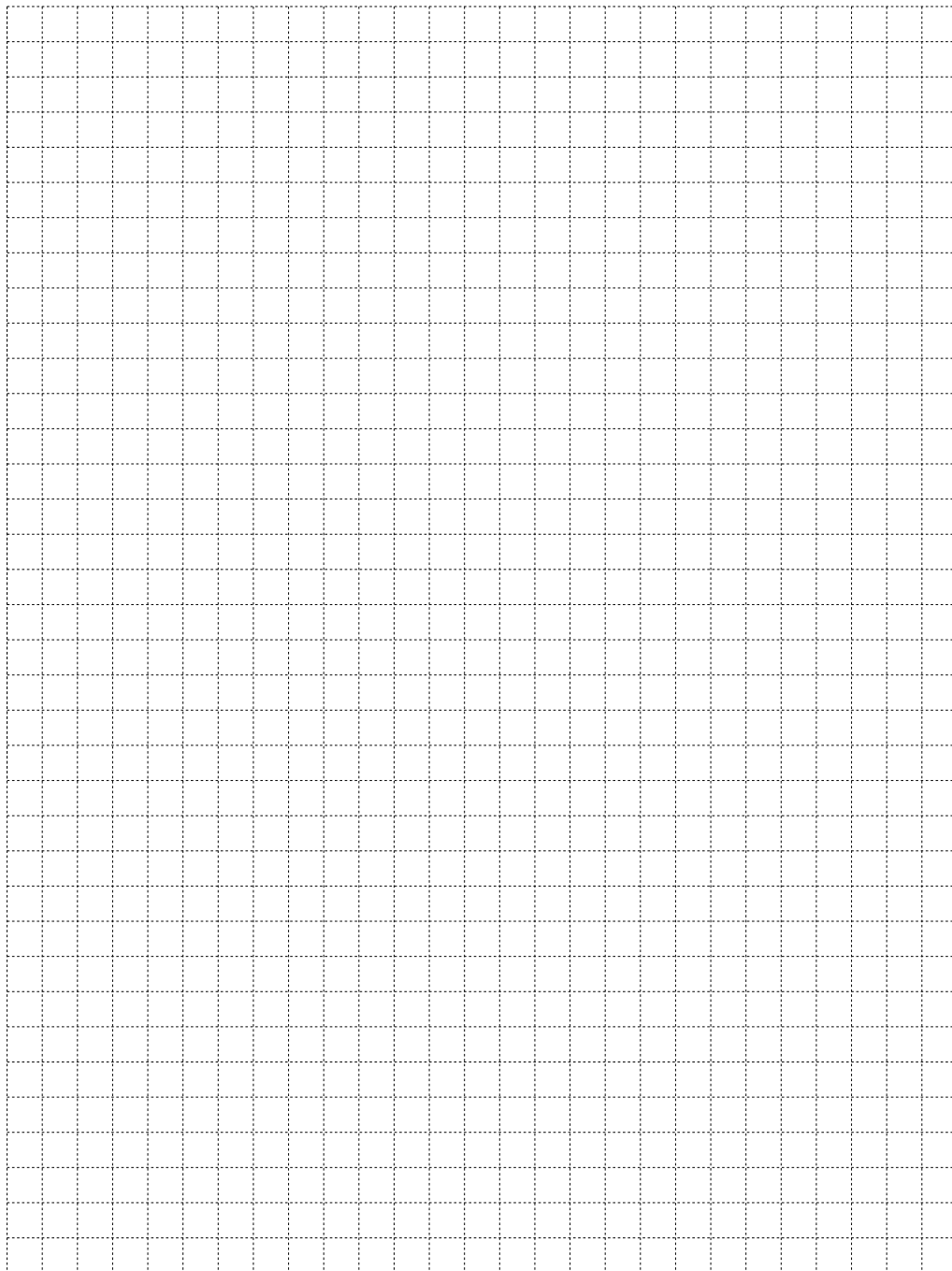
The table below presents the threshold scores (minimal scores) necessary for admission to three different programs at a certain university.

	Program א	Program ב	Program ג
Threshold score	440	530	620

- א. What is the probability that a student who took the psychometric test can be admitted to Program ג at the university?
- ב. What is the probability that a student who took the psychometric test can be admitted to Program ב, but not Program ג?

The outline of a graph of a normal distribution (from the formula sheet) is shown below. You may refer to it as you do your calculations.





Good Luck!

All rights reserved by the State of Israel.
Copying or publication without the consent of the
Ministry of Education is prohibited.

בהצלחה!

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

/Extra notebook pages are attached./



