

**The State of Israel
Ministry of Education**

Exam Type: *Bagrut* for high schools

Exam Date: 2011, *Moed Bet*

Exam Number: 035801

Appendix: Formula sheets for 3 points

English Translation (3)

מדינת ישראל

משרד החינוך

סוג הבחינה: בגרות לבתי ספר על-יסודיים

מועד הבחינה: תשע"א, מועד ב

מספר השאלון: 035801

נספח: דפי נוסחאות ל-3 יחידות לימוד

(תרגום לאנגלית) (3)

Mathematics

3 Points — First Questionnaire

Experimental Program

(First questionnaire for examinees in the
experimental program, 3 points)

מ ת מ ט י ק ה

3 יחידות לימוד - שאלון ראשון

תכנית ניסוי

(שאלון ראשון לנבחנים בתכנית ניסוי, 3 יחידות לימוד)

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.

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

הוראות לנבחן

א. משך הבחינה: שעה ורבע.

ב. מבנה השאלון ומפתח ההערכה:

בשאלון זה שש שאלות.

לכל שאלה — 25 נקודות.

מותר 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 מהמסגיחים. 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.

Good Luck !

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ב ה צ ל ח ה !

/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.

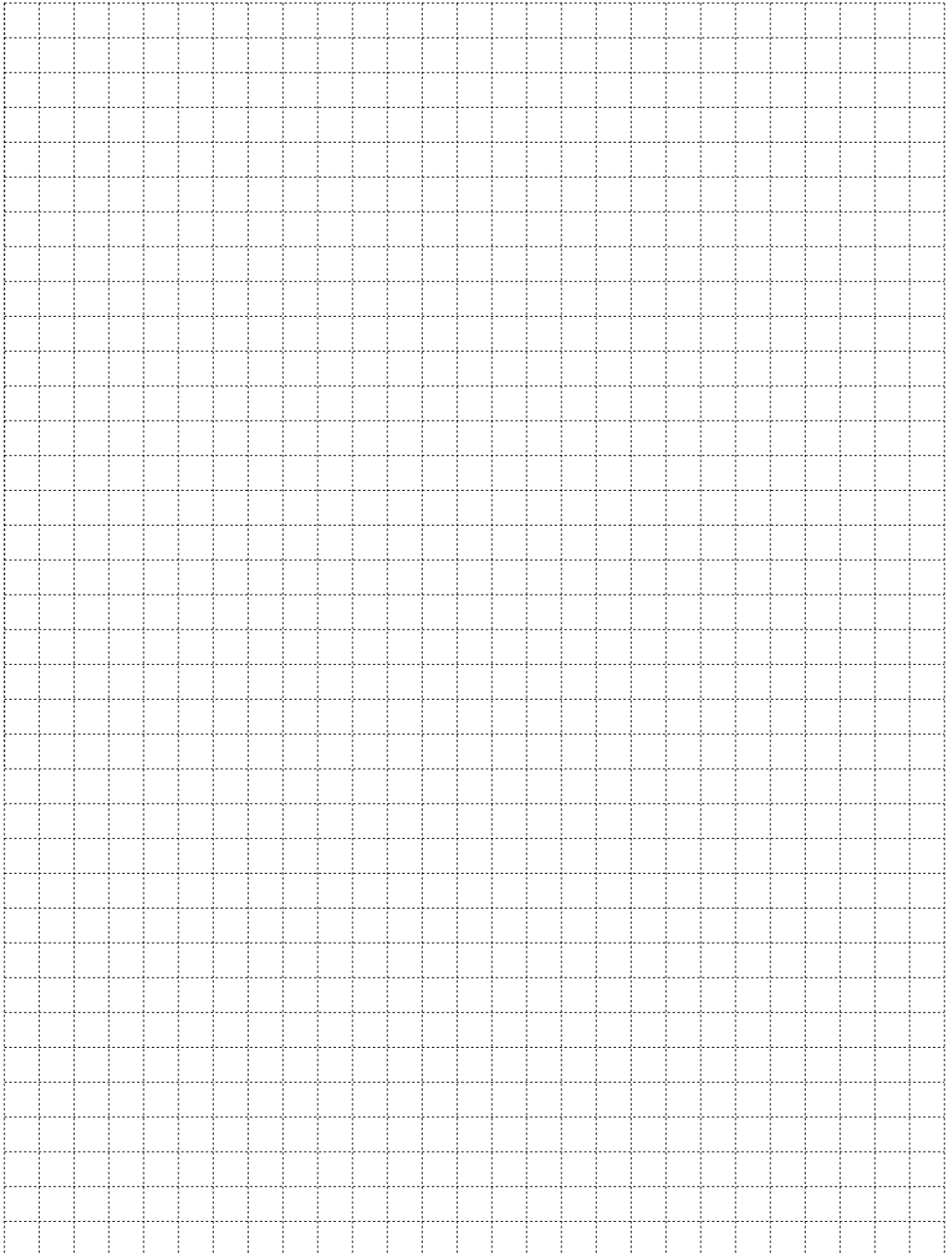
Write all of your calculations and answers in the test booklet.

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

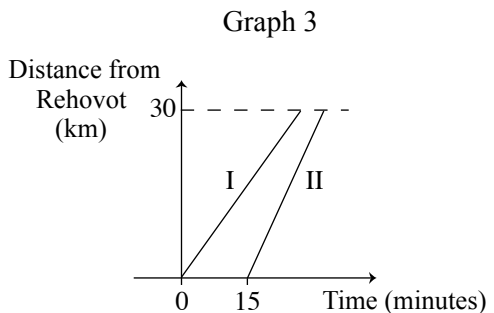
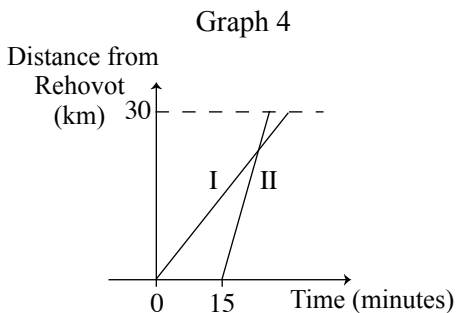
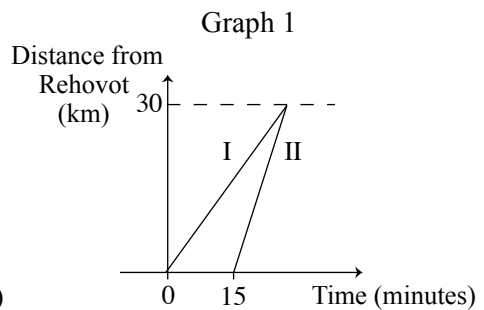
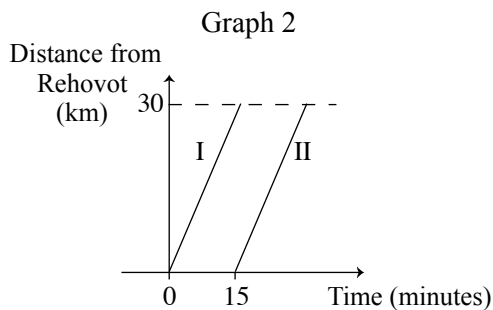
Lack of detail may lower your score or lead to the disqualification of the exam.

Algebra

1. A person who rents a car pays a fixed amount per day and an additional 0.16 shekels for each kilometer driven. Shmuel rented a car for one day, drove a certain number of kilometers, and calculated that he needed to pay 175 shekels. When he came to pay, he found out that the fixed amount was discounted by 20%, and so he paid only 160 shekels (the price per kilometer did not change).
- א. By how many shekels was the fixed price reduced?
- ב. What was the fixed price before the discount?
- ג. How many kilometers did Shmuel drive that day?



2. Gali and Rami left Rehovot traveling toward Tel Aviv (a distance of approx. 30 km). Rami left 15 minutes after Gali. Graphs 1-4 below show possible scenarios that describe their trip (assuming that they each drove at a constant speed).



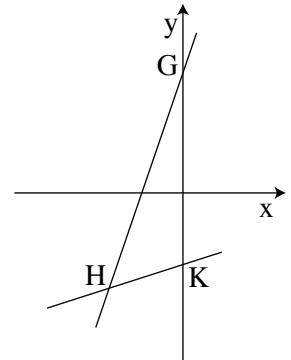
- א. Determine which line, I-II, represents Gali's trip and which line represents Rami's trip. Explain.
- ב. Which graph represents a situation in which Rami and Gali arrive in Tel Aviv at the same time?
- ג. Which graph represents a situation in which Rami arrives in Tel Aviv before Gali? Explain.
- ד. Which graph represents a situation in which Rami drove faster than Gali, but arrived several minutes after her? Explain.



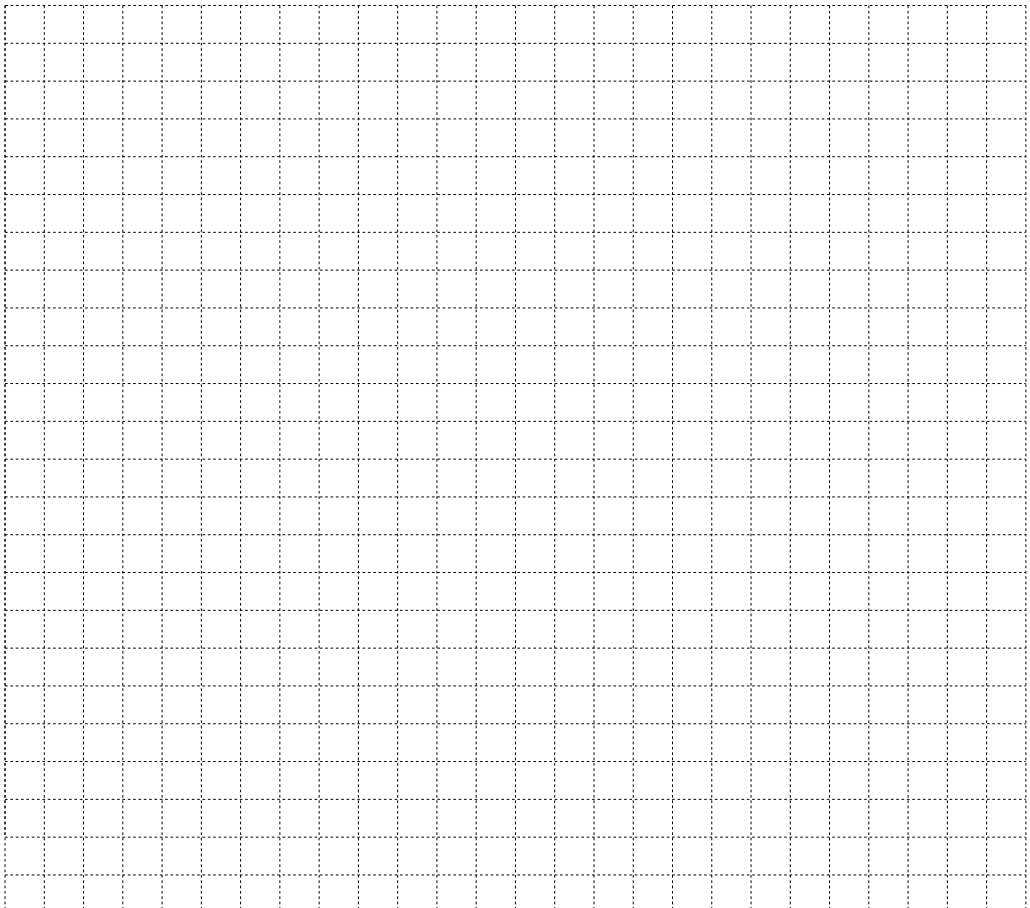
3. Here are the equations of two lines: $y = 3x + 5$
 $y = \frac{1}{3}x - 3$

The lines and the y-axis form the triangle GHK

(see figure).



- א. Find the coordinates of the vertices G, H and K.
- ב. Find the distance between the two vertices of the triangle that rest on the y-axis.
- ג. A line segment perpendicular to the y-axis was drawn from Vertex H.
 Find the length of this perpendicular line segment.
- ד. Calculate the area of Triangle GHK.

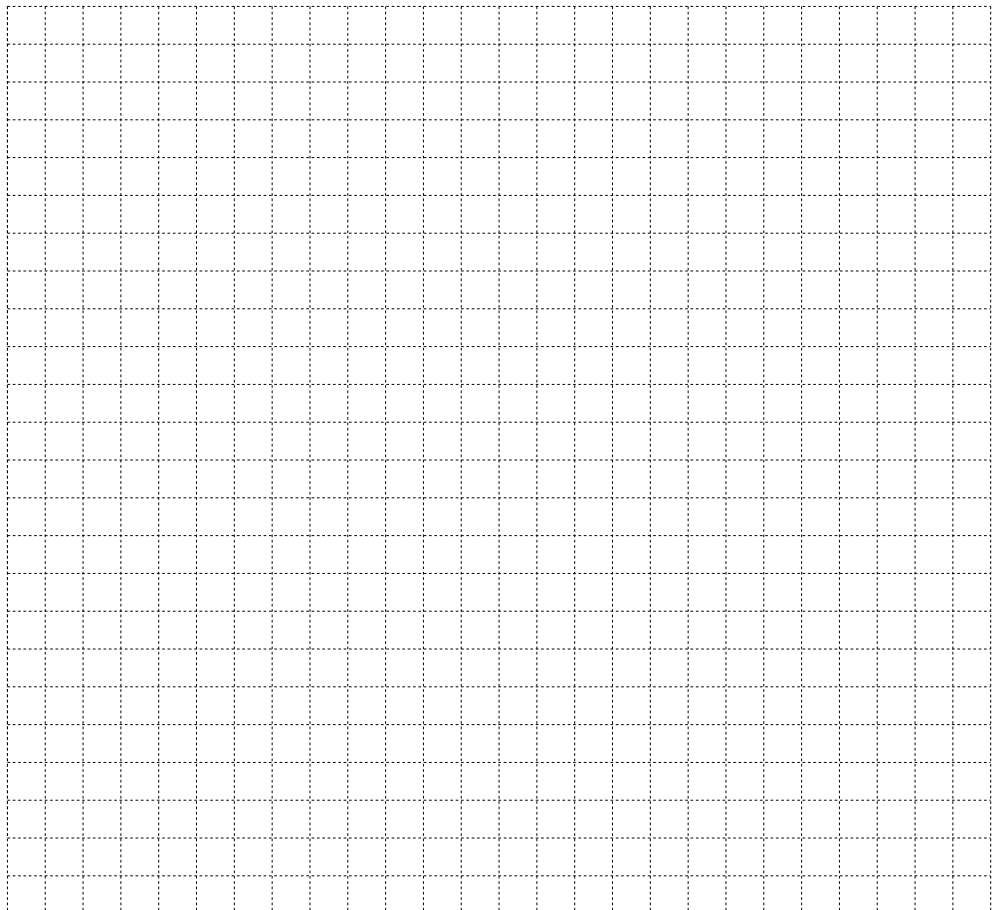
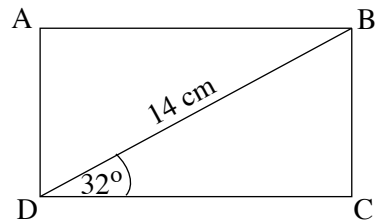




Trigonometry

4. The length of the diagonal in Rectangle ABCD is 14 cm and Angle BDC is 32° (see figure).

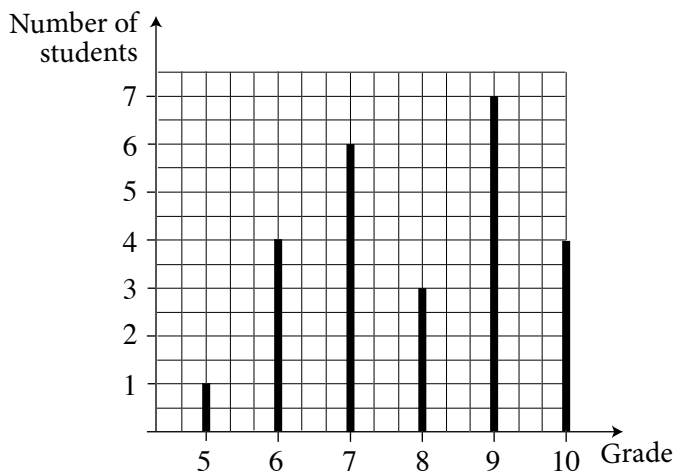
- א. Calculate the lengths of Sides BC and DC of the rectangle.
- ב. Calculate the perimeter of the rectangle.
- ג. Calculate the area of the rectangle.
- ד. Calculate the size of the acute angle [הזווית החדה] between the diagonals of the rectangle.





Mathematics, 2011, **Moed Bet**, No. 035801 + appendix

5. The bar graph below describes the distribution of grades in Tanach in a certain class.



- א. How many students are there in the class?
- ב. What is the average grade in Tanach in the class?
- ג. What is the median [חציון] grade and what is the mode [שכיח]? Explain.
- ד. A student is randomly chosen from the class.

What is the probability that his grade is between 7 and 9 (inclusive)?



6. Two regular playing dice are thrown and the difference between the numbers on which the dice land is noted (the larger number minus the number that is smaller or equal to it).
- What numbers can be obtained as the difference?
 - List all of the options that would yield a difference of 4.
 - What is the probability of getting a difference of 3?
- Show detailed calculations.





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./



