The State of Israel
Ministry of Education
Exam Type: *Bagrut*
Exam Date: Summer 2017
Exam Number: 035182
Appendix: Formula sheets for 3 points
English Translation (3)

מדינת ישראל
משרד החינוך
סוג הבחינה: בגרות
מועד הבחינה: קיץ תשע"ז, 2017
מספר השאלון: 035182
נספח: דפי נוסחאות ל־3 יחידות לימוד
תרגום לאנגלית (3)

Mathematics
Reform for Meaningful Learning Program
First Questionnaire — 3 Points

מ ת מ ט י ק ה
על פי תכנית הרפורמה ללמידה משמעותית
שאלון ראשון מ-3 יחידות לימוד

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 your 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 Hebrew test booklet.**
Do not write in the shaded margins.
(2) 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.
(3) For draft paper, use pages in the **Hebrew test booklet** (including those at the end of the booklet).
Use of other draft paper may lead to the disqualification of your exam.

Good Luck!

הוראות לנבחן

א. משך הבחינה: שעה וחצי.

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 בנוסח העברי של השאלון.**
אסור לכתוב על הפסים שבשוליים.
(2) הסבר את כל פעולותיך, כולל חישובים, בפירוט ובצורה ברורה ומסודרת.
חוסר פירוט עלול לגרום לפגיעה בציון או לפסילת הבחינה.
(3) לטיוטה יש להשתמש בדפים ש**בנוסח העברי של השאלון** (כולל הדפים שבסופו).
שימוש בטיוטה אחרת עלול לגרום לפסילת הבחינה.

בהצלחה!

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 Hebrew 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. On Sunday, a group of 45 people went on a trip. The cost of participating in the trip was x shekels per person.

   On Monday, a group of 50 people went on a trip. The cost per person on Monday was 8 shekels less than the cost per person on Sunday.

   The total sum that the Sunday group paid is equal to the total sum that the Monday group paid.

   Find x.

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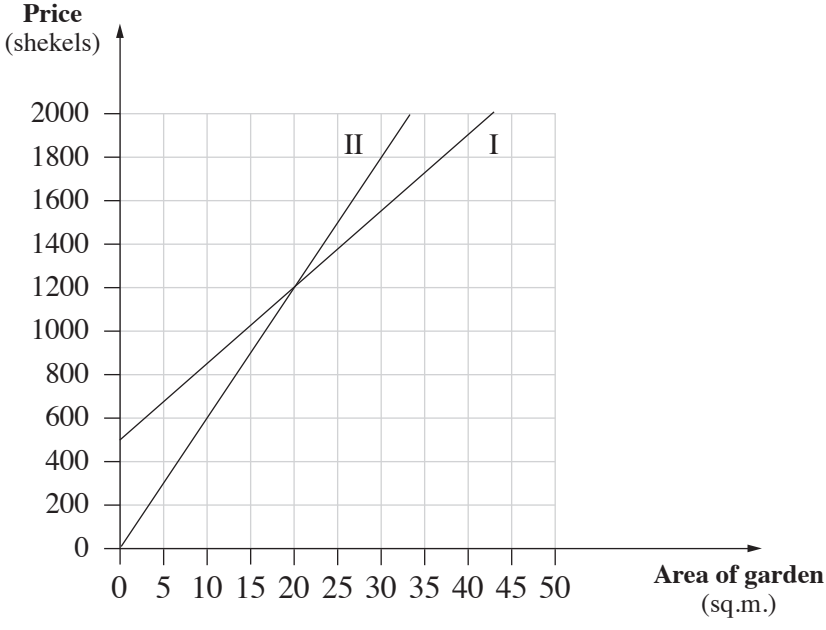
2. Two gardeners, Erez and Alon, advertised rates for gardening in the neighborhood newspaper.

Erez charges 500 shekels for consulting and an additional 35 shekels per square meter of garden.

Alon charges 60 shekels per square meter of garden (the price includes consulting).

The two graphs below, I and II, depict these two rates.



א. Which graph, I or II, depicts Erez's rate? Explain.

ב. (1) What is the area of a garden for which Erez and Alon would charge the same price?

(2) What would be the price in this case?

ג. The Levi family has a garden whose area is 100 sq.m.

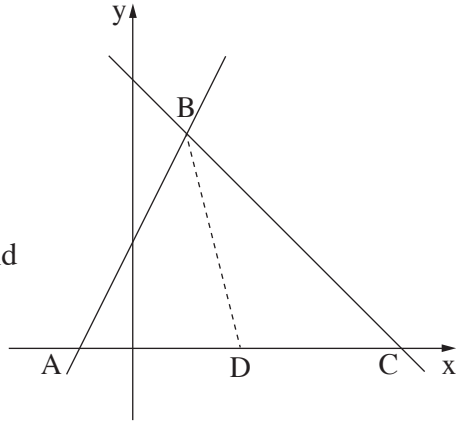
(1) Which of the two gardeners would offer a cheaper quote for this area? Explain.

(2) Calculate the difference in price (in shekels) between the two quotes.

/Continued on page 4/

3. An arithmetic sequence [סדרה חשבונית] has 12 terms [איברים]. The sixth term is 7 and the eighth term is 13.
   א. Find the common difference of the sequence [הפרש הסדרה].
   ב. Find the first term of the sequence.
   ג. Find the sum of the sequence.

4. A line whose equation is $y = 2x + 4$ and a line whose equation is $y = -x + 10$, together with the x-axis, form the triangle ABC, as shown in the figure.



   א. (1) Determine which equation corresponds to the side AB and which equation corresponds to the side BC.
   (2) Find the coordinates of Vertices A, B and C.
   ב. Find the distance between A and C.
   ג. Calculate the area of Triangle ABC.
   ד. Point D is the midpoint of Side AC.
   (1) Find the coordinates of Point D.
   (2) Find the slope of the line BD.

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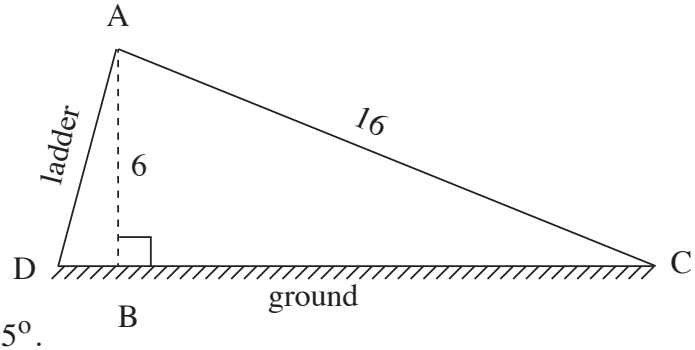
Trigonometry

5. In a playground, a slide with a ladder was set up, as shown in the figure.

The length of the slide, AC, is 16 meters.

The height of the slide, AB, is 6 meters.



א. Calculate the size of Angle ACB.

ב. Given: $\sphericalangle ADB = 75^{o}$.

(1) Calculate the length of Segment DB.

(2) Calculate the length of Segment DC (the distance from the foot of the ladder to the end of the slide).

Statistics and Probability

6. The table below shows the distribution of grades obtained by students in a certain class.

Grade	6	7	8	9	10
Number of students	5	x	9	7	3

A quarter of the students in the class received a grade of 8.

א. Calculate the number of students in the class.

ב. Calculate the number of students who received a grade of 7.

ג. Calculate the average grade in the class.

Good Luck!

בהצלחה!